

Comprehensive Guide to
IBPS

BANK PO/MT

Preliminary & Main Exam

- **Quantitative Aptitude**
- **Data Interpretation & Data Sufficiency**
- **Reasoning Ability**
- **English Language**
- **Computer Knowledge**
- **General Knowledge and Banking Awareness**

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IBPS

PO Main Exam 2016

Held on : 20-11-2016

(Based On Memory)

Time : 2 Hrs.

QUANTITATIVE APTITUDE

- Ankita borrows ₹ 7000 at simple Interest from a lender. At the end of 3 years, she again borrows ₹ 3000 and settled that amount after paying ₹ 4615 as interest after 8 years from the time she made the first borrowing. What is the rate of interest?
(a) 5.5% (b) 9.5%
(c) 7.5% (d) 6.5%
(e) None of the Above
- The difference between compound interest compounded every 6 months and simple interest after 2 years is 248.10. The rate of interest is 10 percent. Find the sum
(a) 12000 (b) 14000
(c) 16000 (d) 18000
(e) None of these
- Deepak found that he had made a loss of 10% while selling his smartphone. He also found that had he sold it for ₹ 50 more, he would have made a profit of 5%. The initial loss was what percentage of the profit earned, had he sold the smartphone for a 5% profit ?
(a) 100% (b) 200%
(c) 75% (d) 85%
(e) None of the Above
- An inspector is 228 meter behind the thief. The inspector runs 42 meters and the thief runs 30 meters in a minute. In what time will the inspector catch the thief?
(a) 19 minutes (b) 20 minutes
(c) 18 minutes (d) 21 minutes
(e) None of these
- Ashok can row upstream at 8 kmph and downstream at 12 kmph. What is the speed of the stream ?
(a) 6 km/hr (b) 3 km/hr
(c) 2 km/hr (d) 4 km/hr
(e) 4.5 km/hr
- James' present age is $\frac{2}{7}$ th of his father's present age. James' brother is three year older to James. The respective ratio between present ages of James' father and James' brother is 14:5. What is the present age of James?
(a) 12 years (b) 23 years
(c) 19 years (d) 27 years
(e) 13 years
- The average value of property of Agil, Mugilan and Anitha is ₹ 130cr. The Property of Agil is 20cr greater than the property value of Mugilan and Anitha property value is 50cr greater than the Agil property value. The value of property of Anitha is
(a) 120 cr (b) 170 cr
(c) 100 cr (d) 150 cr
(e) None of these
- A and B can do a piece of work in 24 and 30 days respectively. Both started the work and worked for 6 days. Then B leaves the work and C joins and the remaining work is completed by A and C together in 11 days. Find the days in which C alone can do the work
(a) 80 (b) 100 (c) 120 (d) 130
(e) None of these
- Three pipe P, Q and R can fill a tank in 12 minutes, 18 minutes and 24 minutes respectively. The pipe R is closed 12 minutes before the tank is filled. In what time the tank is full?
(a) $\left(8\frac{5}{13}\right)$ hrs (b) $\left(8\frac{4}{13}\right)$ hrs
(c) $\left(7\frac{4}{13}\right)$ hrs (d) $\left(8\frac{6}{13}\right)$ hrs
(e) None of these
- A company reduces his employee in the ratio 14 : 12 and increases their wages in the ratio 16:18. Determine whether the bill of wages increases or not and in what ratio.
(a) Decreases, 28: 27 (b) Increases, 27:28
(c) Decreases, 29:28 (d) Increases, 28:29
(e) None of these
- A slice from a circular pizza of diameter 14 inches is cut in a such a way that each slice of pizza has a central angle of 45° . What is the area of each slice of Pizza(in square inches)?
(a) 16.25 (b) 19.25 (c) 18.25 (d) 17.25
(e) None of the Above
- 8 litres are drawn from a flask containing milk and then filled with water. The operation is performed 3 more times. The ratio of the quantity of milk left and total solution is $\frac{81}{625}$. How much milk the flask initially holds?
(a) 10ltr (b) 20ltr (c) 30ltr (d) 40ltr
(e) None of these
- Two persons A and B invested in a business with 115000 and 75000 rupees respectively. They agree that 40% of the profit should be divided equally among them and rest is divided between them according to their investment. If A got 500 rupee more than B, then the total profit is.
(a) 3599.34 (b) 699.34
(c) 3958.34 (d) 999.34
(e) None of these
- The ratio of the monthly salaries of A and B is in the ratio 5 : 16 and that of B and C is in the ratio 17 : 18. Find the monthly income of C if the total of their monthly salary is ₹ 1,87,450.
(a) ₹ 66,240 (b) ₹ 72,100
(c) ₹ 62,200 (d) ₹ 65,800
(e) ₹ 60,300

15. Pipes A and B can fill a cistern in 15 hours together. But if these pipes operate separately A takes 40 hours less than B to fill the tank. In how many hours the pipe A will fill the cistern working alone?
- (a) 60 (b) 20
(c) 40 (d) 15
(e) 25

DIRECTIONS (Qs. 16-20) : In these questions, a number series is given. Find out the missing number.

16. 20 39 74 ? 262 499
(a) 146 (b) 169
(c) 166 (d) 139
(e) 129
17. 14 8 6 6 7 ?
(a) 6.5 (b) 7.5
(c) 8.5 (d) 9.5
(e) None of these
18. 6 13 20 65 256 ?
(a) 1283 (b) 1756
(c) 2786 (d) 2686
(e) None of these
19. 14 6 4 4 8 ?
(a) 26 (b) 32
(c) 46 (d) 27
(e) None of these
20. 6 16 45 184 917 ?
(a) 5506 (b) 4756
(c) 5786 (d) 5686
(e) None of these

DIRECTIONS (Qs. 21-25) : In the following questions two equations numbered I and II are given. You have to solve both the equations and give answer.

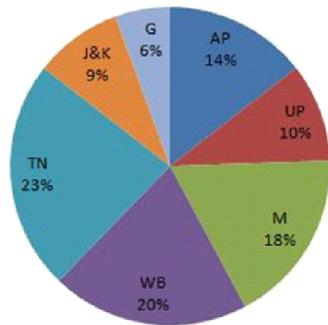
21. $\frac{1}{x+4} - \frac{1}{x-7} = \frac{11}{30}$
 $\frac{1}{y-3} + \frac{1}{y+5} = \frac{1}{3}$
(a) $x > y$ (b) $x < y$
(c) $x \geq y$ (d) $x \leq y$
(e) $x = y$ or relation cannot be established
22. $5x + 2y = 31$
 $3x + 7y = 36$
(a) $x > y$ (b) $x < y$
(c) $x \geq y$ (d) $x \leq y$
(e) $x = y$ or relation cannot be established
23. $7x + 6y + 4z = 122$
 $4x + 5y + 3z = 88$
 $9x + 2y + z = 78$
(a) $x < y = z$ (b) $x \leq y < z$
(c) $x < y > z$ (d) $x = y > z$
(e) $x = y = z$ or relation cannot be established
24. $4x + 2y = 8.5, 2x + 4y = 9.5$
(a) $x > y$ (b) $x < y$
(c) $x \geq y$ (d) $x \leq y$
(e) $x = y$ or relation cannot be established
25. I. $56 \times 2 + 37x + 6 = 0$
II. $66y^2 - 13y - 4 = 0$
(a) if $x \geq y$ (b) if $x > y$
(c) if $x < y$ (d) if $x \leq y$
(e) if the relation between x and y cannot be established.

DIRECTIONS (Qs. 26-30) : What approximate value should come in place of the question mark (?) in the following questions? (You are not expected to calculate the exact value.)

26. $(1444)^2 + \frac{56.007}{1.225}$ of 123
(a) 5600 (b) 6550
(c) 6552 (d) 5662
(e) 5500
27. $(0.0144)^{1/2} + (2.5)^2 = ?$
(a) 5 (b) 11
(c) 6 (d) 9
(e) 10
28. $276.75 + 4\% \text{ of } 678 + \sqrt{0.0169} = ?$
(a) 304 (b) 124
(c) 122 (d) 228
(e) None of these
29. $6(7/11) \times 5(4/9) \div 9(1/4) = ?$
(a) 21 (b) 13
(c) 9 (d) 4
(e) None of these
30. $56\% \text{ of } 4356 = 76\% \text{ of } 564 + ?$
(a) 1789 (b) 2100
(c) 2500 (d) 2011
(e) None of these
31. A five digit number is formed with the digits 0,1,2,3 and 4 without repetition. Find the chance that the number is divisible by 5.
(a) 3/5 (b) 1/5
(c) 2/5 (d) 4/5
(e) None of these
32. A box contains 5 green, 4 yellow and 3 white marbles. Three marbles are drawn at random. What is the probability that they are not of the same colour ?
(a) 40/44 (b) 44/41
(c) 41/44 (d) 40/39
(e) 44/39
33. Out of 6 green ball, 4 blue ball, in how many ways we select one or more balls ?
(a) 42 (b) 34
(c) 31 (d) 22
(e) None of these
34. From a pack of 52 cards, 3 cards are drawn together at random, What is the probability of both the cards are king?
(a) $\frac{1}{5225}$ (b) $\frac{1}{5525}$
(c) 5525 (d) $\frac{1}{525}$
(e) None of these
35. 16 persons are participated in a party. In how many different ways can they host the seat in a circular table, if the 2 particular persons are to be seated on either side of the host?
(a) $16! \times 2$ (b) $14! \times 2$
(c) $18! \times 2$ (d) $14!$
(e) $14! \times 3$

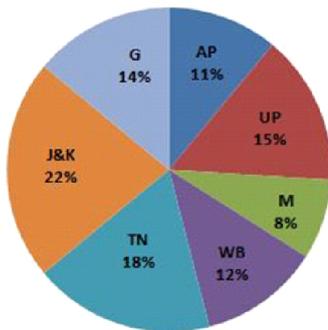
DIRECTIONS (Qs. 36-40) : Study the following graph to answer the given questions

Statewise Distribution of Male



Total population 39 lakh

Statewise distribution of Female

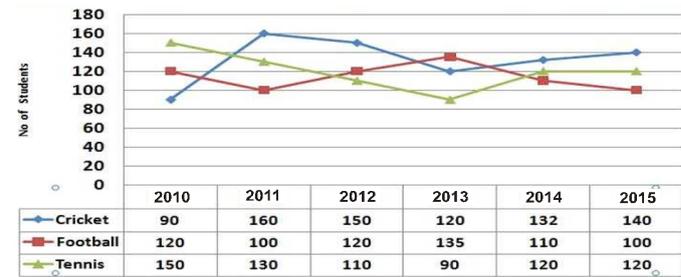


Total population 32 lakh

36. What is the ratio between the Female population of state UP and the male population of M?
 - (a) 60 : 95
 - (b) 80 : 117
 - (c) 85 : 112
 - (d) 45 : 77
 - (e) None of these
37. What is the total population of State J & K ?
 - (a) 11.55 lak
 - (b) 10.65 lak
 - (c) 10.55 lak
 - (d) 9.78 lak
 - (e) None of these
38. Find the difference between Male population and Female population in the state WB ?
 - (a) 5.76 lak
 - (b) 4.67 lak
 - (c) 3.69 lak
 - (d) 3.96 lak
 - (e) None of these
39. Find the average number of males in all the 7 states ?
 - (a) 5 lak
 - (b) 6 lak
 - (c) 5.57 lak
 - (d) 6.57 lak
 - (e) None of these
40. The angle corresponding to the female population in the states AP and M ?
 - (a) 56.9 degree
 - (b) 76.5 degree
 - (c) 48.6 degree
 - (d) 68.4 degree
 - (e) None of these

DIRECTIONS (Qs. 41-45) : Study the following graph carefully to answer the given Questions

No of students(in hundred) who participated in three different sports in six different years



41. What is the difference between the no of players participating in Football in the year 2012 and the no of players participating in Cricket in the year 2015 ?
 - (a) 1000
 - (b) 2000
 - (c) 2200
 - (d) 1700
 - (e) 1800
42. The total no of players who participated in all the 3 sports together in the year 2014 was What % of the total no of players who participated in Tennis over all the years together (approx) ?
 - (a) 50%
 - (b) 45%
 - (c) 47%
 - (d) 53%
 - (e) 52%
43. What was the average no of players who participated in Football over all the years together ?
 - (a) 11417
 - (b) 11490
 - (c) 12476
 - (d) 10976
 - (e) 10990
44. What was the % decrease in the no of players participating in Cricket in the year 2003 as compared to that in the year 2001 ?
 - (a) 45%
 - (b) 35%
 - (c) 25%
 - (d) None of these
 - (e) 47%
45. Find the ratio between the no of students participated in Cricket & Football in 2001 to the total no of students participated in Cricket and Tennis in 2004 ?
 - (a) 20 : 17
 - (b) 65 : 63
 - (c) 60 : 43
 - (d) 55 : 52
 - (e) 52 : 55

DIRECTIONS (Qs. 46-50) : Study the following information to answer the given questions

Dept	STAFF		STUDENTS	
	Number	M:F	Number	M:F
ECE	120	13:11	1800	7:11
EEE	80	9:7	1500	7:8
CSE	150	17:13	2200	9:13
IT	90	4:5	600	7:5
ME	140	4:3	1600	17:15
EIE	70	18:17	1200	9:11

M = male F = female

46. What is the ratio of total number of staff in ECE,EEE to the total no of students in CSE and IT ?
 (a) 14:1 (b) 1:14
 (c) 1:12 (d) 1:17
 (e) None of these
47. The total no of male staff in IT and EIE is what % of the total number of staff in these 2 dept ?
 (a) 44.5% (b) 45.7%
 (c) 47.5% (d) 45.00%
 (e) None of these
48. Total no of female students in CSE is what % more than the male students in the same Dept ?
 (a) 44.45% (b) 40.76%
 (c) 40.75% (d) 40.66%
 (e) None of these
49. Find the number of female students in ME dept ?
 (a) 850 (b) 650
 (c) 150 (d) 750
 (e) None of these
50. Find the average of total no of staff in all the dept ?
 (a) 103.8 (b) 108.3
 (c) 108.2 (d) 108
 (e) None of these
54. **Statements :** No photo is frame. All frames are sites. Some buckets are photos. Some sites are buckets.
Conclusions:
 I. No photo is site.
 II. All buckets being frames is a possibility
 III. Some sites are photos
 IV. Some buckets are frames.
 (a) All follows
 (b) Only II and III follow
 (c) Only II, III and IV follow.
 (d) Only either I or III follows
55. **Statements:** All seats are covers. No cover is bun. Some buns are roofs. Some sites are covers.
Conclusions:
 I. All sites being buns is a possibility
 II. All sites being roof is a possibility
 III. Some sites are not buns.
 IV. No seat is bun
 (a) Only II, III and either I or IV follow.
 (b) Only III follows
 (c) All follows.
 (d) Only II, III and IV follow

REASONING ABILITY

DIRECTIONS (Qs. 51-55) : Read the following information carefully and answer the questions that follow.

51. **Statements:** Some trees are plants. All trees are houses. No plant is pot. All tools are pots.
Conclusions:
 I. Some plants are tools is a possibility.
 II. All trees are tools is a possibility.
 III. No plant is house.
 IV. All plants are houses is a possibility.
 (a) Only I and III follow.
 (b) Either III or IV follows
 (c) Only IV follows
 (d) None follows.
52. **Statements:** All trees are plants. All houses are trees. Some pots are plants. All tools are plants.
Conclusions:
 I. Some plants are not houses
 II. Some tools being trees is a possibility
 III. All pots are tools is a possibility.
 IV. All houses are tools is a possibility.
 (a) Only III and IV follow
 (b) Only II, III, and IV follow
 (c) Only I and IV follow.
 (d) All follow.
53. **Statements:** Some roofs are figures. All figures are lions. All lions are goats. No tool is lion.
Conclusions:
 I. Some tools are figures is a possibility.
 II. All tools being goats is a possibility.
 III. No roof is tool.
 IV. Some goats are figures
 (a) Only II and IV follow
 (b) Only I and II follow
 (c) Only either I or II and IV follow
 (d) None follows.
56. The code for the word 'Table'
 (a) 26×A (b) 17%O
 (c) 14\$A (d) 22\$E
 (e) None of these
57. The code word 6\$A for the word
 (a) Later (b) Arrive
 (c) Earlier (d) Today
 (e) Either 1 or 3
58. Find the code word for the word 'Burn' ?
 (a) 25\$R (b) 22%U
 (c) 21\$R (d) 6×E
 (e) Can't be determined
59. According to the given code, what is the code for 'M' ?
 (a) 12 (b) 8
 (c) 10 (d) 7
 (e) Can't be determined
60. By using the given code word, find the code word for 'Better Luck Next Arrive' ?
 (a) 22\$E, 21\$R, 6×U, 8% E (b) 8×E, 21×R, 22%E, 6%U
 (c) 22×E, 6%U, 8%E, 21×R (d) 21%R, 22\$E, 6×U, 8%E
 (e) 6\$U, 22×E, 8×E, 21%R
61. Two Person P and Q are separated by a distance of 20 meter in west-east direction respectively. Now P and Q start walking in north and south direction respectively and walked for 5 meter. Now P and Q took a right turn and walked 10m each. Now P and Q took left turn and after walking 5 meter both of them stopped. Find the distance between them
 (a) 15 (b) 25
 (c) 30 (d) 35
 (e) None of these

DIRECTIONS (Qs. 56-60) : Study the information below and answer the following question:-

In a certain code language,

'Arrive today eagles later' is written as 21×R, 6\$A, 14\$O, 25×A
 'Begin work faster table' is written as 14\$A, 17%O, 26×A, 22\$E
 'Length error arrow burn' is written as 6×E, 25\$R, 22%U, 21\$R
 'Trial better than wisdom' is written as 14\$R, 14%H, 22×E, 17×I

DIRECTIONS (Qs. 62-66) : Study the following information carefully to answer the given questions.

Eight friends A, B, C, D, E, F, G and H are sitting around a circular table but not necessarily in the same order. Some of them are facing outward. They are working in four different companies Apple, IBM, Google and Intel. Two persons are working at each company.

G sits on the immediate right of B, who works at the Google. C sits third to the left of H, who works at the Apple and both are facing the same direction. C and B are not facing the same direction but C is an immediate neighbor of E, who is fourth to the left of G. E and G both are facing opposite directions but both work at the same company. Those who work at the Google sit adjacent to each other but face opposite direction. Those who work at the IBM sit opposite each other. The immediate neighbours of E are not facing outward. A person who works at the Apple is an immediate neighbor of the persons who work at the Intel. D and F are immediate neighbours of H. D is not facing the centre and works at the Intel. The one who is on the immediate left of F is not facing the centre. F sits second to the right of C.

62. Who among the following works at the Apple ?
 - (a) D and F
 - (b) H and F
 - (c) G and C
 - (d) C and H
 - (e) None of these
63. Who among the following sits on the immediate right of the person who works at the IBM?
 - (a) B
 - (b) D
 - (c) A
 - (d) F
 - (e) None of these
64. How many persons are facing outward?
 - (a) Two
 - (b) Three
 - (c) Four
 - (d) Can't be determined
 - (e) None of these
65. A works at which of the following?
 - (a) Either Google or Apple
 - (b) Either Intel or IBM
 - (c) Google
 - (d) Intel
 - (e) Can't be determined
66. If D and F interchange their places then who among the following is on the immediate left of G?
 - (a) B
 - (b) D
 - (c) H
 - (d) F
 - (e) None of these

DIRECTIONS (Qs. 67-71) : In the following Questions, \$, ×, %, @ and © are used with the following meaning as illustrated below

- A × B means A is not greater than B
- A @ B means A is neither greater than nor equal to B
- A © B means A is not smaller than B
- A % B means A is neither smaller than nor greater than B
- A \$ B means A is neither smaller than nor equal to B

67. **Statement :** X × W, W @ Z, Z % Y
Conclusion :
 I. Y \$ W II. Z \$ W III. X © Y
 - (a) Only I is true
 - (b) Only II is true
 - (c) Both I and II are true
 - (d) Both I and III are true
 - (e) None is true

68. **Statement :** D \$ E, E © C, C @ A
Conclusion :
 I. C × D II. A \$ E
 III. A \$ D
 - (a) Only I is true
 - (b) Only II is true
 - (c) Both I and II are true
 - (d) Both I and III are true
 - (e) None is true
69. **Statement :** M @ O, O % P, P © N
Conclusion :
 I. P © M II. N @ O
 III. N % O
 - (a) Only I is true
 - (b) Only II is true
 - (c) Both II and III are true
 - (d) Either II or III is true
 - (e) None is true
70. **Statement :** A © C, C \$ B, B % E
Conclusion :
 I. E @ C II. B @ A
 III. A © E
 - (a) Only I is true
 - (b) Only II is true
 - (c) Both I and II are true
 - (d) Both I and III are true
 - (e) None is true
71. **Statement :** P © S, S \$ R, R × Q
Conclusion :
 I. Q \$ S II. R @ P
 III. R % P
 - (a) Only I is true
 - (b) Only II is true
 - (c) Both I and II are true
 - (d) Either II or III is true
 - (e) All I, II and III are true

DIRECTION (Qs. 72-75) : Read the following information carefully & answer the questions that follow:

72. Who is the mother of R?
 - (a) Q
 - (b) Z
 - (c) Y
 - (d) X
 - (e) None of these
73. Who is Y's husband ?
 - (a) Q
 - (b) P
 - (c) X
 - (d) Can't be determined
 - (e) None of these
74. How many females are there in the family?
 - (a) One
 - (b) two
 - (c) three
 - (d) four
 - (e) None of these
75. Which of the following is the group of brothers ?
 - (a) PQZ
 - (b) PRZ
 - (c) XZP
 - (d) QRZ
 - (e) None of these

DIRECTIONS (Qs. 76-80): Each question is followed by two courses of actions. You have to decide which of the course of action follows for the statement implied. Give answer.

- (a) If only course of action I follows
- (b) If only course of action II follows
- (c) If either course of action I or II follows.
- (d) If neither course of action I nor II follows.
- (e) If both course of action I and II follow.

76. Next day, millions of pilgrims are expected to take dip the Ganga at the holy place.
- The state government should put a restriction on the number of people that can come to take dip each day.
 - During the next whole day, the state government should deploy personnel to maintain law and order.
77. During the workers laying cables underground in ABC locality, a main pipe supplying water to the houses burst and the locality was flooded.
- The concerned authority should immediately take an action and start repairing the damage.
 - The concerned authority should take an action against the company whose workers were laying the cables and ask them for the compensation.
78. Some college students were found guilty of travelling in a local train without tickets.
- The parents of these students should be contacted and asked to counsel their wards.
 - The students found guilty in such cases should be held behind bars.
79. Though private ferry systems have made going to holy places easy, today many pilgrims died in a stampede while boarding a private ferry.
- The state government should cancel the licenses of all such private ferry operators.
 - The state government should deploy some people to guide the pilgrims on their journey to the holy place.
80. Many of the people invited for a marriage at ABC Hotel fell ill due to food poisoning and were admitted to the hospitals.
- The government should keep on hold marriages till further notice.
 - The hospitals should be advised to give good services to the effected people.
- The one who likes Badminton sits opposite to the one, who sits third right of the one, who sits opposite to Sandeep . P.V.Sindhu is not an immediate neighbour of Sania Mirza. Abhinav Bindra, who likes neither Wrestling nor Boxing, does not face vacant seat.
 - Neither Sandeep nor Dipa Karmakar sits at an extreme ends. Sania Mirza faces Dipa Karmakar. Vacant seats are not opposite to each other. Two seats are there between P.V.Sindhu and M.S.Dhoni, who sits third right of the one, who likes Weight lifting.
 - The one who likes Swimming faces the one, who likes Tennis. The person who likes Hockey and Gymnastics are adjacent to each other. Vacant seat of row-1 is not an immediate neighbour of Sania Mirza.
81. Who among the following sits second to the right of the person who faces the vacant seat ?
- One who likes Cricket
 - One who likes Boxing
 - Sardana Singh
 - P.V.Sindhu
 - One who likes Weight lifting
82. Which of the following is true regarding Sardana Singh ?
- MSD and P.V. Sindhu are immediate neighbours of Sardana Singh
 - Only two people sit between Sardana Singh and P.V. Sindhu
 - Sardana Singh is an immediate neighbour of the person who faces Dipa Karmakar
 - Sardana Singh sits second to left of MSD
 - None of the given options is true
83. Which of the following groups of people represents the people sitting at extreme ends of both the rows ?
- MSD, P.V.Sindhu, Sardana Singh, Dipa Karmakar
 - Sakshi Malik, Abhinav Bindra, Sathish, P.V.Sindhu
 - Sakshi Malik, P.V. Sindhu, Sardana Singh, Dipa Karmakar
 - MSD, P.V.Sindhu, Sardana Singh, Abhinav Bindra
 - Sathish, P.V.Sindhu, Sardana Singh, Dipa Karmakar
84. Who amongst the following faces vacant seat of first row?
- MSD
 - P.V.Sindhu
 - Mary Kom
 - Sardana Singh
 - Dipa Karmakar
85. Which of the following is true with respect to the given information ?
- Mary Kom sits exactly between Abhinav Bindra and Dipa Karmakar
 - Sania Mirza faces immediate neighbour of Abhinav Bindra
 - Sathish is an immediate neighbour of Mary Kom
 - P.V.Sindhu faces Vacant seat
 - None of the given options is true

DIRECTIONS (Qs. 81-85) : Study the following information carefully to answer the given questions.

Ten famous sports personalities are sitting in twelve seats in two parallel rows containing five people each, in such a way that there is an equal distance between adjacent persons. In Row - 1 : Sardara Singh, M.S.Dhoni, P.V.Sindhu, Sania Mirza, and Sakshi Malik are seated and all of them are facing south, and in Row 2 : Mary Kom, Sathish, Dipa Karmakar, Sandeep and Abhinav Bindra are sitting and all of them are facing north. One seat is vacant in each row. Therefore, in the given seating arrangement each member seated in a row faces another member of the other row. All of them like different sports like i.e. Hockey, Cricket, Badminton, Tennis, Wrestling, Boxing, Weight lifting, Gymnastics, Swimming and Shooting.

- Sandeep sits third to the right of Dipa Karmakar and likes Tennis. Only two people sit between Sathish and Vacant seat. Sathish sits at one of the extreme ends. Dipa Karmakar does not like Hockey and Gymnastics.
- Sathish does not like Wrestling and Badminton. Sakshi Malik is not an immediate neighbour of P.V.Sindhu. M.S.Dhoni likes Shooting. The one who likes Badminton faces the one who likes Gymnastics. Vacant seat of row-1 does not face Sandeep also does not sit at any of the extreme ends.

DIRECTIONS (Qs. 86-90) : Study the following information carefully to answer the given questions

Ten students namely viz A, B, C, D, E, F, G, H, I and J of ten different colleges but not necessarily in the same order have seminar on five different days starting from Monday to Friday of the same week. Each student have seminar at two different time slots, i.e 10.00 AM and 3 P.M

I has a seminar on Tuesday at 10.00 A.M. The number of people who have seminar between G and D is same as the number of people who have seminar between C and H. B has a seminar immediately before I. I does not have seminar on any of the days before G. The one who has seminar at 10.00 A.M immediately before J. H does not has seminar at 3 P.M D has a seminar immediately after the day of one who has seminar on Monday. F does not have seminar at 3 P.M. D does not has seminar on any one of the days after E. Only three people have seminar between G and E. Neither E nor G does not have seminar on Friday. Only two people have seminar between F and J. F does not have seminar on any of the days after H.

86. How many persons have seminar at 3'0 clock between G and C?
 (a) 5 (b) 6
 (c) 2 (d) 4
 (e) None of these.
87. Who among the following person has seminar at 3 P.M?
 (a) C (b) G
 (c) I (d) F
 (e) E
88. Four among the following form a group in a certain way. Which of the following does not belong to Group?
 (a) G - Tuesday (b) I - Wednesday
 (c) F - Friday (d) G - Wednesday
 (e) E - Thursday
89. Which of the following is correctly matched?
 (a) D - Monday (b) C - Tuesday
 (c) A - Friday (d) G - Tuesday
 (e) E - Wednesday
90. Who among the following have seminar on Friday?
 (a) I, E (b) H, J
 (c) B, A (d) D, E
 (e) E, C

DIRECTIONS (Qs. 91-95) : Study the following information carefully to answer the given questions

Eight People - A, B, C, D, E, F, G and H live in eight different floors of building (but not necessarily in the same order). The lowermost floor of the building is numbered one, the one above that is numbered two, and so on till the topmost floor is numbered eight. Each one of them also owns a different brands of laptops, namely Acer, Lenovo, Dell, HP, Samsung, Apple, Asus and TOSHIBA (but not necessarily in the same order).

F lives an odd numbered floor above the floor numbered four. Only one person lives between B and the one who owns Samsung. Only three people live between D and the one who owns Apple. The one who owns Asus lives immediately above G, G owns neither Apple nor Acer. E does not own Asus. Only three people live between G and A. The one who owns TOSHIBA lives immediately above the one who owns Lenovo, but not on the topmost floor. C lives an one of the odd numbered floors above the one who owns Apple. Only one person lives between F and the one who owns DELL. Only one person lives between the one

who owns TOSHIBA and H. Only two people live between C and the one who owns Acer. The number of people leaving above F is same as the number of people living between F and D

91. Which of the following Statements is true with respect to the given information?
 (a) G lives immediately above the one who owns Apple
 (b) E lives immediately above C
 (c) Only three people live between F and the one who owns TOSHIBA.
 (d) D owns Samsung.
 (e) All the given statements are true.
92. Who amongst the following lives exactly between H and the one who owns Lenovo Laptop?
 (a) B, C (b) G D
 (c) F, G (d) A, B
 (e) E, A
93. Which of the following laptops does E own?
 (a) TOSHIBA (b) Lenovo
 (c) DELL (d) Samsung
 (e) Asus
94. Four of the following five are alike in a certain way and so form a group. Which one of the following does not belong to the group?
 (a) G - HP (b) C - Apple
 (c) F - Samsung (d) H - TOSHIBA
 (e) D - DELL
95. How many people live between C and the one who owns DELL?
 (a) Four (b) Three
 (c) Two (d) Five
 (e) None

DIRECTIONS (Qs. 96-100) : In each question below is given a statement followed by two assumptions numbered I and II. You have to consider the statement and the following assumptions and decide which of the assumptions is implicit in the statement.

Give answer

- (a) If only assumption I is implicit
 (b) If only assumption II is implicit
 (c) If either I or II is implicit
 (d) If neither I nor II is implicit
 (e) If both I and II are implicit.
96. **Statement:** "You are hereby appointed as a programmer with a probation period of one year and your performance will be reviewed at the end of the period for confirmation." - A line in an appointment letter.
Assumptions:
 I. The performance of an individual generally is not known at the time of appointment offer.
 II. Generally an individual tries to prove his worth in the probation period.
97. **Statement:** It is desirable to put the child in school at the age of 5 or so.
Assumptions:
 I. At that age the child reaches appropriate level of development and is ready to learn.
 II. The schools do not admit children after six years of age.

98. **Statement:** "In order to bring punctuality in our office, we must provide conveyance allowance to our employees." - In charge of a company tells Personnel Manager.

Assumptions:

- I. Conveyance allowance will not help in bringing punctuality.
- II. Discipline and reward should always go hand in hand.

99. **Statement:** Unemployment allowance should be given to all unemployed Indian youth above 18 years of age.

Assumptions:

- I. There are unemployed youth in India who needs monetary support.
- II. The government has sufficient funds to provide allowance to all unemployed youth.

100. **Statement:** "If you trouble me, I will slap you." - A mother warns her child.

Assumptions:

- I. With the warning, the child may stop troubling her.
- II. All children are basically naughty.

ENGLISH LANGUAGE

DIRECTIONS (Qs. 101-105) : Read the following passage carefully and answer the questions given below it.

The finance ministry on Monday said the Union budget would be growth-oriented, implicitly signaling that it will address the investment crisis in the Indian economy. "Given the fiscal constraints and other parameters under which the government has to function, the effort of the government is to present a budget which is growth-oriented, that maintains the momentum of growth and tries to develop on it," economic affairs secretary Shaktikanta Das said in an interview with DD News uploaded on YouTube on Monday.

According to Das, the budget will also detail new measures to support ongoing programmes such as Start-up India, Standup India, Make In India, Digital India and the Skill mission – all of which have a strong focus on creating jobs. Finance minister Arun Jaitley will be presenting his third budget on 29 February at a time when private investment has dried up and the exchequer has had to incur higher expenditure due to implementation of the One Rank One Pension scheme for the armed forces and the recommendations of the Seventh Pay Commission. That may cramp the government's ability to accelerate public investment to revive economic growth while sticking within the confines of its fiscal deficit targets. Some parts of the government believe that the emphasis should be on growth and not fiscal consolidation. Other parts, and the Reserve Bank of India, believe the finance minister should adhere to his fiscal commitments made in the last budget.

Without revealing whether the government will digress from the path of fiscal consolidation, Das said the government's priority is to take a balanced view on "the expenditure requirement to keep our growth momentum and to what extent we can borrow". Care Ratings chief economist Madan Sabnavis said the government has to increase its allocation for public investment

on infrastructure to stimulate growth. "I expect government to spend ₹ 10,000-20,000 crore additional amount on infrastructure. Given nominal GDP (gross domestic product) is not expected to expand significantly, the leeway for the government to spend more may not be there while keeping fiscal deficit within 3.7-3.9% of GDP. So I don't expect a big-bang push for infrastructure spending given the fiscal constraint," he said.

The finance ministry revealed more contours of its budget when minister of state for finance Jayant Sinha, also in an interview to DD News, said the four pillars of the budget will be poverty eradication, farmers' prosperity, job creation and a better quality of life for all Indian citizens. "This budget will be a forward looking budget that will ensure that India will continue to be a haven of stability and growth in a very turbulent and choppy global economic environment," he added.

The government has been contemplating tax incentives to companies in the manufacturing sector, including tax deductions on emoluments paid to new employees, to encourage firms to step up hiring and create jobs under its Make in India initiative. The government published suggestions that it has received internally from various government departments and other stakeholders on the mygov.in website, seeking further ideas and comments from the public. Suggestions being considered by the government include financial incentives, tax incentives under the Income Tax Act, 1961, and subsidies for equipping employees with job skills, and upgrading and improving employment exchanges. Another suggestion is to expand the scope of the tax deduction currently available to companies that add at least 10% to their workforce in a year by lowering the threshold. This incentive is available only in cases of employees who earn less than ₹ 6 lakh a year.

101. What is the main objective of the government to create the Union Budget?
- (a) It should meet the requirements of the society.
 - (b) It should be under some fiscal constraints.
 - (c) It should be growth oriented.
 - (d) It should meet the requirements of a developed country.
 - (e) It should change the momentum of growth.
102. Where is it expected to invest by government to stimulate growth?
- (a) On infrastructure
 - (b) On governments plans.
 - (c) On fiscal management
 - (d) On manufacturing sector
 - (e) On social development.
103. What does this mean that India will continue to be a "haven of stability"?
- (a) That new budget will make India stable forever.
 - (b) The four pillars of budget will lead to make stability.
 - (c) India will continue towards stability even in disturbed economic environment.
 - (d) The budget will remain unchanged even in turbulent and choppy economic environment.
 - (e) None of the above

104. Why is the government providing tax incentive to companies in manufacturing sector?
- For better infrastructure.
 - For tax deductions on emoluments paid to new employees,
 - To create new job opportunities and to initiate project 'Make in India'
 - to create new job opportunities and to initiate project Standup India.
 - to encourage firms to step up hiring new skilled employees
105. Which one of the following is NOT the suggestion considered by the government?
- To expand the scope of tax deduction to companies that add at least 10% to their workforce in a year.
 - To upgrade and improve employment exchange.
 - To provide incentive to employees who earn less than Rs.6 lakh a year.
 - Subsidies to train employees with job skills.
 - Tax penalty for high income people.

DIRECTIONS (Qs. 106-110) : Read the following passage carefully and answer the questions given below it.

The alarm bells should start ringing any time now. An important component of the economy has been sinking and needs to be rescued urgently. This critical piece is 'savings' and, within this overall head, household savings is the one critical subcomponent that needs close watching and nurturing.

While it is true that one of the primary reasons behind the current economic slowdown is the tardy rate of capital expansion - or, investment in infrastructure as well as plant and machinery - all attempts to stimulate investment activity are likely to come to naught if savings do not grow. Without any growth in the savings rate, it is futile to think of any spurt in investment and, consequently, in the overall economic growth. If we source all the investment funding from overseas, it might be plausible to contemplate investment growth without any corresponding rise in savings rate. But that is unlikely to happen.

Within the overall savings universe, the subcomponent 'household savings' is most critical. It provides the bulk of savings in the economy, with private corporate savings and government saving contributing the balance. The worrying factor is the near-stagnation in household savings over the last eight years or so. What's even more disconcerting is the fact that household savings remained almost flat during the go-go years of 2004-08.

This seems to be counter-factual. There are many studies that show that there is a direct relationship between overall economic growth and household savings. So, at a time when India's GDP was growing by over 9% every year, the household savings rate stayed almost constant at close to 23% of GDP. There was, of course, an increase in absolute terms, but it remained somewhat fixed as a proportion of GDP.

What is responsible for this contradictory movement? The sub-group on household savings, formed by the working group on savings for the 12th Plan set up by the Planning Commission and chaired by RBI deputy governor SubirGokarn, has this to say, "...a recent study had attributed the decline in the household saving ratio in the UK during 1995-2007 to a host of factors such as declining real interest rates, looser credit conditions, increase in asset prices and greater macroeconomic stability.

While recognising that one of the key differences in the evolving household saving scenario between the UK and India is the impact of demographics (dependency ratio), anecdotal evidence on increasing consumerism and the entrenchment of (urban) lifestyles in India, apart from the easier availability of credit and improvement in overall macroeconomic conditions, is perhaps indicative of some 'drag' on household saving over the last few years as well as going forward." India has another facet: a penchant for physical assets (such as bullion or land). After the monsoon failure of 2009, and the attendant rise in price levels that has now become somewhat deeply entrenched, Indians have been stocking up on gold. Consequently, savings in financial instruments dropped while those in physical assets shot up. This is also disquieting for policy planners because savings in physical assets stay locked in and are unavailable to the economy for investment activity. There is a counter view that higher economic growth does not necessarily lead to higher savings. According to a paper published by Ramesh Jangili (Reserve Bank of India Occasional Papers, Summer 2011), while economic growth doesn't inevitably lead to higher savings, the reciprocal causality does hold true. "It is empirically evident that the direction of causality is from saving and investment to economic growth collectively as well as individually and there is no causality from economic growth to saving and (or) investment."

Whichever camp you belong to, it is beyond doubt that savings growth is a necessary precondition for promoting economic growth. The Planning Commission estimates that an investment of \$1 trillion, or over 50 lakh crore, will be required for the infrastructure sector alone. And, a large part of this critical investment will have to be made from domestic savings.

106. What is the main concern of the author behind saying that 'the alarm bells should start ringing anytime now'?
- The current economic growth is slowing down due to regular failure of monsoon.
 - Due to power shortage industrial growth could not touch the target.
 - Household savings are sinking and they require to be revamped.
 - Due to a sharp decline in real interest rates people have lost their enthusiasm to invest in govt schemes.
 - All the above
107. What is/are the primary reasons behind the current economic slowdown?
- Slow rate of capital expansion
 - Tardy investment in infrastructure as well as plant and machinery
 - A rapid increase in the cases of corruption, and decreased FDI
- Only (A)
 - Both (A) and (B)
 - Either (A) or (C)
 - Both (B) and (C)
 - All (A), (B) and (C)
108. How is household savings related to overall economic growth? Give your answer in the context of the passage?
- Overall economic growth is directly related to household savings.
 - Overall economic growth is inversely proportional to household savings.
 - There is no specific relationship between overall economic growth and household savings.

- (a) Only (C) (b) Only (B)
 (c) Only (A) (d) Either (A) or (B)
 (e) Either (A) or (C)
109. What was/were the reason(s) of drop in savings in financial instruments after 2009?
 (a) Rise in price level of gold
 (b) Decrease in real interest rates on savings in financial instruments
 (c) Investment in physical assets, particularly land
 (d) Only (a) and (c)
 (e) Only (b) and (c)
110. Which of the following is/are the reasons of a drag on household savings in India over the last few years?
 (a) Increasing consumerism
 (b) Entrenchment of urban lifestyle
 (c) Easier availability of credit
 (d) Improvement in overall macroeconomic conditions
 (e) All the above

DIRECTIONS (Qs. 111-115) : *In each of the following questions five options are given, of which one word is most nearly the same or opposite in meaning to the given word in the question. Find the correct option having either same or opposite meaning.*

111. PRODIGY
 (a) Pauper (b) Despondent
 (c) Demure (d) Wanton
 (e) Epitome
112. NONDESCRIPT
 (a) Conducive (b) Discern
 (c) Tantamount (d) Defined
 (e) Emancipate
113. SAVANT
 (a) Glutton (b) Postulant
 (c) Shrink (d) Pluck
 (e) Itinerant
114. CORPULENT
 (a) Lean (b) Gaunt
 (c) Emaciated (d) Obese
 (e) Nobble
115. EMBEZZLE
 (a) Misappropriate (b) Balance
 (c) Remunerate (d) Clear
 (e) Perfection

DIRECTIONS (Qs. 116-120) : *Which of the pair of phrases (a), (b), (c) and (d) given below should replace the phrase given in bold in the following sentence to make the sentence grammatically meaningful and correct? If the sentence is correct as it is and no correction is required, mark (e) as the answer.*

116. According to author Dishantgautam, a novel is **difficult** to write when compared to a play is like **going for** an election where one has to appeal to a thousand people at a time whereas in a book one appeals to one only person.
 (a) simpler, running in
 (b) faster, voting through
 (c) easier, running for
 (d) fool proof, voting on
 (e) No correction required
117. We have in America a **collection** speech that is neither American, Oxford English, nor colloquial English, but a **mixture** of all three.

- (a) motley, an enhancement
 (b) hybrid, a combination
 (c) nasal, a blend
 (d) mangled, a medley.
 (e) No correction required
118. Alice Walker's The Temple of My Familiar, far from being a tight, **focused** Narrative, is instead a **cheaper** novel that roams freely and imaginatively over a halfmillion
 (a) traditional, a chronological
 (b) provocative, an insensitive
 (c) forceful, a concise
 (d) focused, an expansive
 (e) circuitous, a discursive
119. Jayashree was habitually so docile and **erratic** that her friends could not understand her sudden **hostile** her employers.
 (a) accommodating, outburst against
 (b) erratic, envy of
 (c) truculent, virulence toward
 (d) hasty, annoyance toward
 (e) apologetic, hostile
120. The village headman was unlettered, but he was no fool, he could see through the **mystery** of the businessman's proposition and promptly **moved** him down.
 (a) deception, forced (b) naivete, turned
 (c) potential, forced (d) sophistry, turned
 (e) No correction required

DIRECTIONS (Qs. 121-125) : *In each of the following questions a short passage is given with one of the lines in the passage missing and represented by a blank. Select the best out of the five answer choices given, to make the passage complete and coherent (coherent means logically complete and sound).*

121. The Time Traveler (for so it will be convenient to speak of him) was expounding a recondite matter to us. His grey eyes shone and twinkled, and his usually pale face was flushed and animated. The fire burned brightly, and the soft radiance of the incandescent lights in the lilies of silver caught the bubbles that flashed and passed in our glasses. Our chairs, being his patents, embraced and caressed us rather than submitted to be sat upon, and there was that luxurious after-dinner atmosphere when thought roams gracefully free of the trammels of precision. (_____
 (a) And slowly and steadily, the atmosphere grew stale and lost all the vibrancy it had
 (b) And he put it to us in this way—marking the points with a lean forefinger—as we sat and lazily admired his earnestness over this new paradox (as we thought it) and his fecundity
 (c) We sat like toddlers do in a nursery, eagerly anticipating the show the Time Traveler would put on for us
 (d) We sat benumbed by the proceedings, for the radiance of the Time Traveler was unimaginable and unbearable
 (e) I caught Filby's eye over the shoulder of the Medical Man, and he winked at me solemnly.
122. Let us understand the definition of metaphysics, a purely speculative science, which occupies a completely isolated

130. The company's sales were low at the beginning of the year. Its sales have picked up in the past few months.
- (A) Though the company's sales were low
 (B) Despite low sales at
 (C) However the company's sales have picked
 (a) Only (A) (b) Only (A) and (B)
 (c) All (A), (B) and (C) (d) Only (B) and (C)
 (e) None of these

DIRECTIONS (Qs. 131-135) : Five statements are given below, labelled a, b, c, d and e. Among these, four statements are in logical order and form a coherent paragraph/passage. From the given options, choose the option that does not fit into the theme of the passage.

131. (a) The reference was to China, a country that has been courting Pakistan for several years through a number of means including assistance in its nuclear programme.
 (b) After the Uri attacks, Pakistan's special Kashmir envoy Mushahid Hussain Syed declared that the US was a waning power, suggesting that Pakistan was seeking out other allies.
 (c) The most important concern relates to the possible conflict in Pakistan between votaries of economic development and supporters of militancy.
 (d) This corridor—which includes road, rail and port infrastructure—is expected to allow China to avoid the vulnerable Indian Ocean route currently used to transport oil from the Gulf.
 (e) Of late, there has been much talk of the China-Pakistan Economic Corridor (CPEC) that stretches from the autonomous region of Xinjiang to the Gwadar port.
132. (a) India recently ratified the Paris Agreement, assuring it a seat at the 55/55 table
 (b) ratification by at least 55 countries and accounting for at least 55% of global greenhouse gas (GHG) emissions was required for the agreement to come into force
 (c) where countries will negotiate the mechanisms and provisions under the agreement.
 (d) With the ratification, India has demonstrated leadership in climate negotiations but left some with concerns about signing an agreement without realizing its full implications.
 (e) There are certain targets India wants to achieve and to achieve that there is a need to allocate mitigating burden among states and also prioritize adaptation efforts.
133. (a) Corporate Social Responsibility has entered India's legal corridors.
 (b) Given the need for proper legal help for a diverse section of society even the PM, in his address at the Bar Council's centenary celebrations earlier this year, urged lawyers to take on more pro bono cases.
 (c) Top law firms and lawyers are doing pro bono so that they can give back to society.
 (d) In India, traditionally, pro bono legal work was carried out by lawyers who had dedicated themselves to helping society.
 (e) There are a number of socially aware and generous souls who are increasingly lending their expertise for pro bono work.
134. (a) A look at the historical data on forecasts made by the IMF in its World Economic Outlook (WEO) reports seems to suggest that optimism bias may be the bigger culprit.
 (b) The large negative forecast errors in the recession years skewed the historical averages.
 (c) Over the past few years, the growth forecasts made by the International Monetary Fund (IMF) have displayed one consistent pattern
 (d) the forecasts are rosy at the start of the year, then revised downwards towards the end of the year, and the actual estimates of real growth turn out to be even lower.
 (e) Has predicting the fate of the global economy become more difficult in a volatile post-crisis world, or does the IMF suffer from an inherent optimism bias?
135. (a) India has 13 of the 20 most polluted cities in the world, according to the World Health Organization.
 (b) The government should redouble its efforts to combat climate change, which will naturally slash not just greenhouse-gas emissions but particulates as well.
 (c) Every year, more than half a million people are estimated to die prematurely because of air pollution.
 (d) While air quality tends to worsen around this time of year as millions of Indians light firecrackers to celebrate the Diwali festival, the problem isn't limited by season or geography.
 (e) This week, air pollution in New Delhi has been truly off the charts: Tiny particulates, which are especially deadly, topped 999 micrograms per cubic meter—40 times what is considered safe and beyond what the scale was designed to measure.

DIRECTIONS (Qs. 136-140): Please select the most appropriate option, out of the five options given for each of the following sentences, which, in your view, should be grammatically and structurally correct. Please note that the meaning & context of the sentence must not change.

136. (a) Although I already knew the answer and he invited me to visit him often, since I just have seen her in the square, I was never determined to yield this point.
 (b) Although I have already known the answer and he invited me to visit him often but since I just have seen her in the square, I was not determined to yield this point.
 (c) Although I knew the answer already, and he has often invited me to visit him, since I just have seen her in the square, I am never determined to yield this point.
 (d) Although I already know the answer and he often invited me to visit him, since I have just seen her in the square, I am determined never to yield this point.
 (e) None is true.
137. (a) If I have enough money I would have backpack around Europe. But unfortunately I was broken.
 (b) If I have had enough money, I would have done backpack around Europe. But, unfortunately I am broke.
 (c) If I had enough money I would backpack around Europe. But, unfortunately I am broke.

- (d) If I have enough money I would backpack around all over the Europe. But unfortunately I am broke.
- (e) None is true.
138. (a) The judges finally distributed the awards among the most active children talking at length among themselves.
- (b) The judges finally distributed the awards talking at length among themselves.
- (c) The judges, talking at length among themselves finally distributed the awards among the most active children.
- (d) The judges distributed finally talking at length among themselves the awards among the most active children.
- (e) None is true.
139. (a) I have been ill for fortnight and the Management and the school sports committee as well prefer to elect me the Captain of school team. Initially I thought that it is only in a fun but I was wrong.
- (b) I had been ill for the fortnight and the Management and the school sports committee preferred to elect me the Captain of school team. Initially I thought that it was only in a fun but I was wrong.
- (c) I have been ill for a fortnight and the Management as well as the school sports committee prefers to elect me Captain of school team. Initially I thought that it was only in fun but I was wrong.
- (d) I was ill for fortnight thus the Management as well as the school sports committee preferred to elect me the Captain of school team. Initially I thought that it was only in a fun but I was wrong.
- (e) All are true
140. (a) If you try to understand the concept in the class you will not only remember it but also will not be able to put to use while solving even the difficult exercises.
- (b) If you tried to understand the concept of the whole class, you will not only remember it, but also can put to use while solving even the difficult exercises.
- (c) If you tried to understand the concept in the class, you would not only remember it but also can put it to use while solving even the difficult exercises.
- (d) If you tried to understand the concept in the class, you would not only remember it but also could put it to use while solving even the difficult exercises.
- (e) None is true.

COMPUTER KNOWLEDGE

141. Assembly is a _____ based low-level language replacing binary machine-code instructions, which are very hard to remember, it is the classic and uncontroversial example of a low level language.
- (a) Memory (b) High Level
- (c) Key (d) Mnemonic
- (e) FORTRAN
142. China now has more of the world's fastest supercomputers than other countries. Which among the following is a Chinese super computer?
- (a) BlueGene/Q system (b) Cray XC30
- (c) Shaheen II (d) Fujitsu's K
- (e) Tianhe-2
143. AT&T designed its first commercial modem, specifically for converting digital computer data to analog signals for transmission across its long distance network. What is the name of the modem?
- (a) Telex (b) Memex
- (c) CompuServe (d) Bell 103 dataset
- (e) Dataphone
144. In Computer programming there is set of subroutine definitions, protocols, and tools for building software and applications. Which among the following is a term for sets of requirements that govern how one application can talk to another?
- (a) UPS (b) API
- (c) CGI (d) J2EE
- (e) OLE
145. BSODS can be caused by poorly written device drivers or malfunctioning hardware, such as faulty memory, power supply issues, overheating of components, or hardware running beyond its specification limits. Which color screen is displayed when encountered a BSOD Error?
- (a) Red (b) Grey
- (c) Black (d) Blue
- (e) Green
146. Which among the following is a cloud computing platform and infrastructure created by Microsoft?
- (a) Simple Storage Service
- (b) Atmos
- (c) Openstack Swift
- (d) OceanStore
- (e) Azure
147. After a credit card transaction has been authorized by the issuing bank by sending an authorization code to the merchant, the settlement stage of the process begins. Which of the following is a system type used to process such statements?
- (a) Multitasking (b) Memory Processing
- (c) Level Processing (d) Batch Processing
- (e) Online Processing
148. There is a network that can connect networks ranging from small location or area to a bigger range including public packet network and large corporate networks. That network's enterprise allows users to share access to applications, services and other centrally located resources. Its ability for a huge geographical access has transformed networking. Which among the following is that network?
- (a) SAN (b) CAN
- (c) LAN (d) WAN
- (e) MAN
149. Which cloud is a cloud computing environment that uses a mix of on-premises, private cloud and third-party, public cloud services with orchestration between the two platforms and it is particularly valuable for dynamic or highly changeable workloads?
- (a) Dynamic Cloud (b) Advance Cloud
- (c) Hybrid Cloud (d) Sharing Cloud
- (e) Combined Cloud
150. Which among the following is not an Object Oriented Programming Language?
- (a) Python (b) PASCAL
- (c) Java (d) C++
- (e) Ruby

151. Which among the following is a term representing unit of data storage in computer memory?
 (a) Pixel (b) Decimal
 (c) Octet (d) Point
 (e) Fragment
152. Which among the following is a recently debated principle that Internet service providers and governments regulating the Internet should treat all data on the Internet the same, not discriminating or charging differentially by user, content, website, platform, application, type of attached equipment, or mode of communication?
 (a) Comcast (b) Net Neutrality
 (c) Oblique-net (d) Net Fraternity
 (e) Fair Web
153. Which among the given options is IBM's Supercomputer?
 (a) Tihane-2 (b) SunwayTaihu Light
 (c) Watson (d) Shasra-T
 (e) Brain
154. Which among the following is an important circuitry in a computer system that directs the operation of the processor?
 (a) Memory (b) Address Bus
 (c) Accumulator (d) ALU
 (e) Control Unit
155. Which is a feature included in Microsoft PowerPoint software that allows the user to see all the slides in a presentation at one time?
 (a) Slide Sorter (b) Slide Master
 (c) Handout Master (d) Slide Header
 (e) Reading View
156. Which of the following error occurs when software tries to access protected memory?
 (a) Segmentation Fault (b) Displaytime Error
 (c) IO Error (d) Runtime Error
 (e) Zero Division Error
157. In Computer programming API is set of subroutine definitions, protocols, and tools for building software and applications. Which among the following is an application programming interface for the programming language Java, which defines how a client may access a database?
 (a) J2EE (b) JDK
 (c) JAVASE (d) JDBC
 (e) JSX
158. A router is a networking device that forwards data packets and is connected to two or more data lines from different networks. Which among the following was the earliest device which had almost the same functionality as that of a router?
 (a) Interface Delay Device
 (b) Interface Traffic Manager
 (c) Interface Routing Processor
 (d) Interface Message Processor
 (e) Interface Data Manager
159. Android is a mobile operating system designed primarily for touch screen mobile devices such as smartphones and tablets. Which among the following was the first Android Operating System?
 (a) Cupcake (b) Alpha
 (c) Gingerbread (d) Doughnut
 (e) Eclair
160. Which among the following key can be used as a shortcut to rename a folder in Microsoft Windows 8 and higher versions?
 (a) F2 (b) F4
 (c) F6 (d) F9
 (e) F11

**GENERAL AWARENESS WITH
REFERENCE TO SPECIAL
BANKING**

161. The Nobel Peace Prize 2016 has been awarded to _____.
 (a) Juan Manuel Santos (b) Oliver Hart
 (c) Bengt Holmstrom (d) Svetlana Alexievich
 (e) Bob Dylan
162. Who among the following India's Paralympic athletes has won the title of Gold Javelin F46 in Rio 2016 Paralympic Games?
 (a) Varun Singh Bhati
 (b) Deepa Malik
 (c) Amit Kumar Saroha
 (d) Mariyappan Thangavelu
 (e) Devendra Jhajaria
163. What is the Ramanujam committee constituted for?
 (a) To keep tab on the child trafficking
 (b) To check corruption in Banks
 (c) To oversee the foreign trade
 (d) To avoid obsolete laws
 (e) To check border dispute with Bangladesh
164. How much per cent of the Indian population have access to internet in India in 2015?
 (a) 20 percent (b) 23 percent
 (c) 29 percent (d) 26 percent
 (e) None of the above
165. According to the 2016 Jane's Defence Budgets Report, India's position among the global defence spender is _____.
 (a) Fourth (b) Third
 (c) Ninth (d) Fifth
 (e) Seventh
166. Which e-commerce website has partnered with National Highways Authority of India (NHAI) to enable cashless payments at all national and city toll plazas?
 (a) Paytm (b) Mobikwik
 (c) Freecharge (d) Oxigen
 (e) UPI
167. Who among the following has been named as the 2016 ITF World Champions by the International Tennis Federation?
 (a) Rafael Nadal (b) Andy Murray
 (c) Roger Federer (d) Novak Djokovic
 (e) None of the above
168. The National Green Tribunal (NGT) in December 2016 imposed a ban on the procurement, sale and use of glass powder coated 'manja' for flying kites. Who is the Chairman of NGT?
 (a) Lokeshwar Singh Panta
 (b) Jagdish Singh Khehar
 (c) Dinesh Saxena
 (d) Jasmine Sharma
 (e) Swatanter Kumar

169. Which state government has enacted a stringent law called Protection of Internal Security Act to deal with the challenges of terrorism, insurgency, communalism and caste violence?
- (a) Gujarat (b) Uttar Pradesh
(c) Bihar (d) Maharashtra
(e) Nagaland
170. India signed an MoU with which country for strengthening cooperation in the field of Tourism?
- (a) Tajikistan (b) Turkmenistan
(c) Uzbekistan (d) Kyrgyzstan
(e) UAE
171. Which of the following does not fall into the functions of Payments Banks?
- (a) acceptance of demand deposits
(b) Internet banking
(c) remittance services
(d) lending services
(e) Sell mutual funds, insurance and pension products
172. Loan and Advances of a bank come under the category of _____.
- (a) Deposits (b) Expenditure
(c) Liabilities (d) Assets
(e) None of the above
173. If the rupee depreciates, how the exporters are affected?
- (a) They are unaffected
(b) They are in loss
(c) They are in profit
(d) They get credit crunch
(e) None of these
174. The rate of inflation increases when the purchasing power of money _____.
- (a) Decreases (b) Increases
(c) Stable (d) Decrease just half
(e) None of these
175. The high-security banknote production facility which is credited with the design of the Rs 2000 banknote has been set up at _____.
- (a) Nasik (b) Dewas
(c) Mysuru (d) Noida
(e) Kolkata
176. For the buying and selling of precious metals such as Gold and Silver, the market established is termed as _____.
- (a) Capital Market (b) Money Market
(c) Bullion Market (d) wholesale cash market
(e) None of the Above
177. To release wages under the Mahatma Gandhi National Rural Employment Guarantee Scheme direct and faster, an electronic fund management system has been launched by _____.
- (a) State Bank of Hyderabad
(b) State Bank of Travancore
(c) State Bank of India
(d) Oriental Bank Corporation
(e) Exim Bank
178. Which among the following is the slogan of Allahabad Bank?
- (a) A tradition of trust
(b) World wise
(c) Honour your trust
(d) Invest with confidence
(e) Trusted family bank
179. Which among the following is the difference in value between a country's imports and exports?
- (a) Balance of Trade
(b) Balance of Payment
(c) Balance of power
(d) Credit Balance
(e) None of the above
180. What is Cash Reserve Ratio?
- (a) Deposits of banks in government securities
(b) Rate at which banks borrow funds from the RBI
(c) Deposits (as cash) which banks have to keep/maintain with the RBI
(d) Rate at which RBI borrows money from the banks
(e) Rate at which RBI borrows money from the government
181. What does 'GIFT' stand for?
- (a) Gujarat Institute of Fashion Technology
(b) Government of India Foreign Trade
(c) Gapping Income Free Of Tax
(d) Gujarat International Financial Tech
(e) Gujarat Institute of Future Technologies
182. To make India a cashless economy by pushing cashless transaction, which committee is constituted by the government?
- (a) Adhyarjuna Committee
(b) Amitabh Kant Committee
(c) A Ghosh Committee
(d) Abid Hussain Committee
(e) AK Bhuchar Committee
183. Which of the following is the first micro finance company to start operation as a commercial bank?
- (a) Oriental Bank of Commerce
(b) State Bank of India
(c) Reserve Bank of India
(d) Punjab National Bank
(e) Bandhan
184. Which of the following is not a primary function of a bank?
- (a) Facilitating import of goods
(b) Remittance facility
(c) Safe custody of articles
(d) Foreign Exchange
(e) Purchase and Sale of Foreign Exchange
185. Which agency in India provides refinance of export credit?
- (a) SIDBI (b) NABARD
(c) RBI (d) EXIM Bank
(e) Government of India
186. The Mumbai Stock Exchange was set up in _____.
- (a) 1880 (b) 1930
(c) 1847 (d) 1875
(e) None of the above
187. When is the World Energy Conservation Day celebrated?
- (a) November 15 (b) October 10
(c) December 25 (d) December 14
(e) March 31
188. The Maximum City: Bombay Lost and Found was written by _____.
- (a) Vikram Seth (b) Suketu Mehta
(c) Upamanyu Chatterjee (d) Arundhati Roy
(e) Kiran Desai

189. In the '10th Asia Pacific Screen Awards' who won the Best Actor Award?
 (a) Rajni Kant (b) Aamir Khan
 (c) Manoj Bajpayee (d) Anupam Kher
 (e) Om Puri
190. Which of the following awards is given in the field of literature?
 (a) Arjuna Award (b) Ashok Chakra
 (c) Vyas Samman (d) Bharat Award
 (e) None of the above
191. In the Union Budget 2017-18, the MGNREGA allocation is to be _____
 (a) Rs. 48,000 crore (b) Rs. 38,000 crore
 (c) Rs. 56,000 crore (d) Rs. 33,000 crore
 (e) None of the above
192. India was the highest ranked country by capital investment in 2015, with how much worth of FDI projects announced according to FDI Intelligence?
 (a) \$63 billion (b) \$63 million
 (c) \$66 billion (d) \$44 billion
 (e) \$44 million
193. According to 2011 Census figures, which state has recorded the highest sex ratio?
 (a) Uttar Pradesh (b) Haryana
 (c) Punjab (d) Manipur
 (e) Kerala
194. To curb black money in the economy, which of the following committees has been formed in 2016?
 (a) Deepak Mohanty Committee
 (b) Suresh Prabhu Committee
 (c) Justice BM Shah committee
 (d) Nachiket Mor Committee
 (e) Justice CS Dharmadhikari Committee
195. Which of the following schemes is NOT related to the Digital India?
 (a) Digital Locker
 (b) e-education
 (c) e-health
 (d) National Scholarship Portal
 (e) Make in India
196. The term 'Zero Based Budgeting' refers to _____.
 (a) A specified sum of money authorized by the Legislature for a specific period of time
 (b) To ensure that every rupee spent is result oriented
 (c) A statutorily mandated form of reimbursement or up-front payment for state expenditures
 (d) A cost item for which payment is made by one state agency to another
 (e) A shortfall in an existing appropriation, or an additional amount needed to accomplish a new or expanded purpose
197. In which year in India, was the demonetisation announced for the first time?
 (a) 1978 (b) 1999
 (c) 1946 (d) 1962
 (e) 1935
198. According to the Constitution (122nd Amendment) GST Bill 2014, which of the following is exempted from its purview?
 (a) Tobacco Products (b) Alcohol
 (c) Steel (d) Jute Products
 (e) None of the above
199. What does the term 'Call Money' refer to?
 (a) A loan made for a very short period of a few days or a week
 (b) Student loans to help cover the cost of higher education
 (c) Loans to allow consumers to buy homes they can't pay for upfront
 (d) Personal loans for any personal expenses which don't have a designated purpose
 (e) Loans to veterans and their families
200. India has signed a Grant Agreement for Additional Financing in Financing Energy Efficiency at MSMEs Project- Programmatic Framework for Energy Efficiency with _____.
 (a) Asian Development Bank (ADB)
 (b) International Fund for Agricultural Development (IFAD)
 (c) European Bank for Reconstruction and Development (EBRD)
 (d) International Bank for Reconstruction and Development (IBRD)
 (e) World Bank

Answers & Explanations

1. (d) SI for Rs.7000 for 8 years = $\frac{7000 \times r \times 8}{100}$
 Again borrowed = 3000
 $SI = \frac{3000 \times r \times 5}{100}$
 Total interest = $\left[\frac{7000 \times r \times 8}{100} \right] + \left[\frac{3000 \times r \times 5}{100} \right] = 4615$
 $560r + 150r = 4615$
 $710r = 4615$
 $r = 6.5\%$

2. (c) $P \left(1 + \frac{5}{100} \right)^4 - P - \left(\frac{P \times 2 \times 10}{100} \right) = 208.10$

3. (b) Profit = 5%
 5% of CP = ₹50
 CP = ₹1000
 Now, Loss% = 10%
 Loss = ₹100

Required % = $\frac{100}{50} \times 100 = 200\%$

4. (a) Inspector is 228 meter behind the thief and now after some x distance he will catch the thief. So,
 $\frac{x}{30} = \frac{228 + x}{42}$, we will get x = 570m
 So time taken by inspector to catch the thief = $\frac{228 + 570}{42} = 19$ minutes

5. (c) If the speed downstream is a kmph and the speed upstream is b kmph then

Speed of the stream = $\frac{1}{2}(a-b)$ kmph

Speed downstream a = 12 kmph
 Speed upstream b = 8 kmph

Speed of the stream = $\frac{1}{2}(a-b) = \frac{1}{2}(12-8)$

= $\frac{4}{2} = 2$ kmph

Speed of the stream = 2 kmph

6. (a) James' father present age = x

James' age = $\frac{2}{7}x$

James' brother age = $\frac{2}{7}x + 3$

$\frac{x}{\frac{2}{7}x + 3} = \frac{14}{5}$

x = 42

James' age = $\frac{2x}{7} = \frac{2}{7} \times 42 = 12$

7. (b) Property value of Mugilan x
 $130 \times 3 = x + x + 20 + x + 20 + 50$
 $390 = 3x + 90$
 $3x = 300$
 $x = 100$
 Anitha = 100 + 20 + 50 = 170

8. (c) $\left(\frac{1}{24} + \frac{1}{30} \right) \times 6 + \left(\frac{1}{24} + \frac{1}{C} \right) \times 11 = 1$

9. (b) Let T is the time taken by the pipes to fill the tank
 $\left(\frac{1}{12} + \frac{1}{18} + \frac{1}{24} \right) \times (T-12) + \left(\frac{1}{12} + \frac{1}{18} \right) \times 12 = 1$

We will get T = $108/13 = 8\frac{4}{13}$ hrs

10. (a) Let initial employee be 14a and final employee be 12a similarly initial wage is 16b and final wage be 18b
 Total initial wage = 14a × 16b = 224ab, total final wage = 12a × 18b = 216ab
 So clearly wages decreases and ratio = 224ab : 216ab = 28 : 27

11. (b) D = 14
 R = D/2 = 14/2 = 7

Area of each slice of Pizza = $\pi r^2 \frac{\theta}{360^\circ}$

= $\frac{22}{7} \times 7 \times 7 \times \left(\frac{45}{360} \right)$
 = 19.25

12. (b) Let initial quantity be Q, and final quantity be F

$F = Q \left(1 - \frac{8}{Q} \right)^4$

$\frac{81}{625} = \left(1 - \frac{8}{Q} \right)^4$

$\frac{3}{5} = \frac{1-8}{Q}$

Q = 20

13. (c) Ratio in which the profit will divide – 23:15. Let the profit be P

Now, $\left[\left(\frac{23}{38} \right) - \left(\frac{15}{38} \right) \right] \times \left(\frac{60}{100} \right) \times P = 500$

P = 3958.34

14. (a) $\frac{A}{B} = \frac{15}{16}$ and $\frac{B}{C} = \frac{17}{18}$

So A : B : C = 15 × 17 : 16 × 17 : 16 × 18
 = 255 : 272 : 288

So C's salary = $\frac{288}{255 + 272 + 288} \times 187450 = 66,240$

15. (b) Let A takes x hours, then B = (x+40) hours

$$\frac{1}{x} + \frac{1}{x+40} = \frac{1}{15}$$

Solve, x = 20

16. (d) $20 \times 2 - 1^2 = 39$

$$39 \times 2 - 2^2 = 74$$

$$74 \times 2 - 3^2 = 139 \dots$$

17. (c) $\frac{14}{2} + 1 = 8, \frac{8}{2} + 2 = 6$

$$\frac{6}{2} + 3 = 6$$

18. (a) $6 \times 1 + 7 = 13$

$$13 \times 2 - 6 = 20$$

$$20 \times 3 + 5 = 65 \dots$$

19. (b) $14 \times 1 - 8 = 6$

$$6 \times 2 - 8 = 4$$

$$4 \times 3 - 8 = 4$$

20. (a) $6 \times 2 + 4 = 16$

$$16 \times 3 - 3 = 45$$

$$45 \times 4 + 4 = 184 \dots$$

21. (e) $\frac{1}{x+4} - \frac{1}{x-7} = \frac{11}{30}$
x = 1, 2

$$\frac{1}{y-3} - \frac{1}{x+5} = \frac{1}{3}$$

$$y = -3, 7$$

22. (a) $5x + 2y = 31$ —(1)

$$3x + 7y = 36$$
 —(2)

By solving eqn(1) and (2)

$$x = 5; y = 3$$

23. (a) $7x + 6y + 4z = 122$ —(1)

$$4x + 5y + 3z = 88$$
 —(2)

$$9x + 2y + z = 78$$
 —(3)

$$\text{From (1) and (2)} \Rightarrow 5x - 2y = 4$$
 —(a)

$$\text{From (2) and (3)} \Rightarrow 23x + y = 146$$
 —(b)

$$\text{From (a) and (b)} \Rightarrow x = 6, y = 8. \text{ Put values in eqn (3)} \Rightarrow z = 8$$

24. (b) $4x + 2y = 8.5$ —(I)

$$2x + 4y = 9.5$$
 —(II)

By solving eqn (I and II)

$$x = 1.25, y = 1.75$$

25. (c)

26. (d) $38 + 45.72(123) = 5661.56 = 5662$

27. (c) $0.12 + 6.25 = 6.37$

28. (a) $276.75 + 27.12 + 0.0169 = 304$

29. (d) $73/11 \times 49/9 \times 4/37 = 3.9 = 4$

30. (d) $2439.36 = 428.64 + ?$

$$? = 2010.72 = 2011$$

31. (b) 5 digit number = 5! = 120

Divisible by 5 then the last digit should be 0

Then the remaining position have the possibility = 4!

$$= 24$$

$$P = (4!/5!) = 24/120 = 1/5$$

32. (c) $n(E) = {}^5C_3 + {}^4C_3 + {}^3C_3 = 10 + 4 + 1 = 15$

$$n(S) = {}^{12}C_3 = 220$$

$$P = n(E)/n(S) = \frac{15}{220} = \frac{3}{44}$$

$$\text{Required probability} = \frac{1-3}{44} = \frac{41}{44}$$

33. (b) $7 \times 5 = 35$

$$35 - 1 = 34$$

34. (b) $n(S) = {}^{52}C_3 = \frac{132600}{6} = 22100$

$$n(E) = {}^4C_3 = \frac{24}{6} = 4$$

$$p = \frac{4}{22100} = \frac{1}{5525}$$

35. (b) $(16-2)! \times 2 = 14! \times 2$

36. (b) $F = 32 \times \frac{15}{100} = 4.8 \text{ lak}$

$$M = 39 \times \frac{18}{100} = 7.02 \text{ lak}$$

$$480 : 702 = 80 : 117$$

37. (c) $M = 39 \times \frac{9}{100} = 3.51 \text{ lak}$

$$F = 32 \times \frac{22}{100} = 7.04 \text{ lak}$$

$$\text{Total} = 10.55 = 10.55 \text{ lak}$$

38. (d) $M = 39 \times \frac{20}{100} = 7.8 \text{ lak}$

$$F = 32 \times \frac{12}{100} = 3.84$$

$$\text{Diff} = 7.8 - 3.84 = 3.96 \text{ lak}$$

39. (c) $AP = 39 \times \frac{14}{100} = 5.46 \text{ lak}$

$$UP = 39 \times \frac{10}{100} = 3.9 \text{ lak}$$

$$M = 39 \times \frac{18}{100} = 7.02 \text{ lak}$$

$$WP = 39 \times \frac{20}{100} = 7.81 \text{ lak}$$

$$TN = 39 \times \frac{23}{100} = 8.97 \text{ lak}$$

$$J \& K = 39 \times \frac{9}{100} = 3.51 \text{ lak}$$

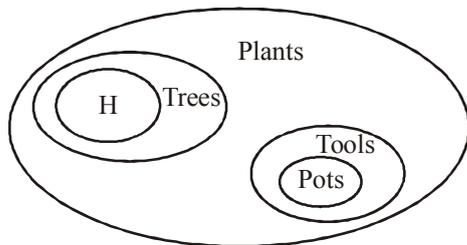
$$G = 39 \times \frac{6}{100} = 2.34 \text{ lak}$$

$$\text{Avg} = 38.99/7 = 5.57 \text{ lak}$$

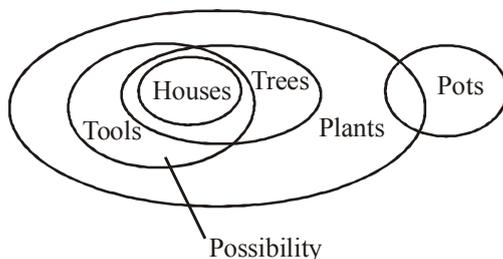
40. (d) $AP + M = 11 + 8 = 19\%$

$$\text{Angle} = 19 \times \frac{360}{100} = 68.4 \text{ degree}$$

41. (b) 2002 F = 12000
2005 C = 14000
D = 14000 - 12000 = 2000
42. (a) 2004 total = 132 + 110 + 120 = 36200
Tennis total = 72000
 $\% = 36200 \times \frac{100}{72000} = 50.28\% \approx 50$
43. (a) $120 + 100 + 120 + 135 + 110 + 100/6 = 685/6 = 114.17$
 $114.17 \times 100 = 11417$
44. (c) 2003 = 12000
2001 = 16000
 $\% = \frac{(16000 - 12000 / 16000)}{100} = 25\%$
45. (b) 2001 = 260
2004 = 252
R = 260:252 = 65:63
46. (b) Staff = 200
Students = 2800
200:2800 = 2:28 = 1:14
47. (c) IT = 90 => 4:5 => 40 (male)
EIE = 70 => 18:17 => 36 (male)
40 + 36 = 76
Total = 90 + 70 = 160
 $76 \times 100 / 160 = 47.5\%$
48. (a) 2200 => 9:13 => 900:1300
 $400 \times \frac{100}{900} = 44.45\%$
49. (d) 1600 => 17:15 = 850:750(f)
50. (c) $\frac{(120 + 80 + 150 + 90 + 140 + 70)}{6} = \frac{650}{6} = 108.3$
51. (c) If some plants are tools, then some plants will be pots too which is not possible.
If all trees are tools, then also some plants will be pots too which is not possible.
Some plants are definitely houses.
IV is a possibility
52. (b) All plants are houses is a possibility, so I does not follow.
II is a possibility.

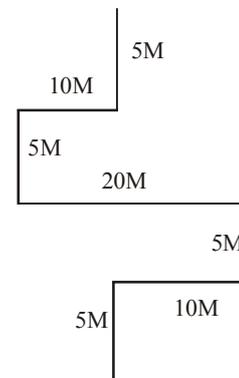


III is a possibility as



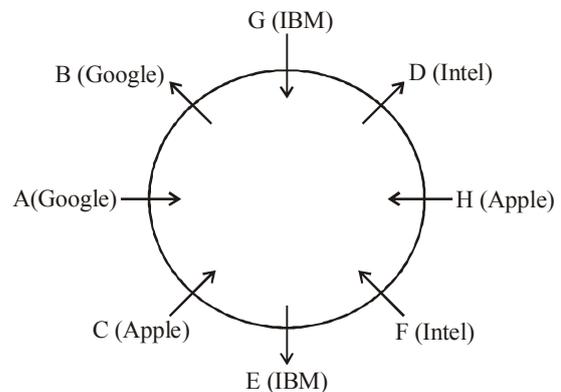
IV is possibility as

53. (a) If some tools are figures, then some lions will be tools which is not possible.
II is a possibility.
III is not definite. Roofs can be tools
54. (d) I and III are false, subject and predicate same so either or occurs
IV is not definite.
II. If all buckets are frames, then some frames will be photos which is not possible.
55. (d) If all sites are buns, then some covers will be buns which is not possible.
II is a possibility.
All sites are buns is not a possibility, so III follows.
No seat is bun, because no cover is bun
56. (c) 57. (a) 58. (b) 59. (d) 60. (c)
61. (e)



20 meter.

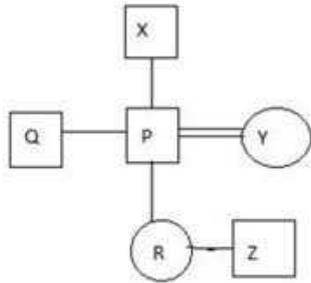
Sol. (62-66)



62. (d) 63. (a) 64. (b) 65. (c) 66. (d)
67. (c) $X \leq W < Z = Y$
 $Y > W \Rightarrow \text{true}$
 $Z > W \Rightarrow \text{true}$
 $X \geq Y \Rightarrow \text{false}$
68. (e) $D > E \geq C < A$
 $C \leq D \Rightarrow \text{False}$
 $A > E \Rightarrow \text{false}$
 $A > D \Rightarrow \text{false}$
69. (d) $M < O = P \geq N$
 $P \geq M = \text{false}$
 $N < O$
 $N = O$
70. (c) $A \geq C > B = E$, $E < C \Rightarrow \text{true}$
 $B < A \Rightarrow \text{true}$, $A \geq E \Rightarrow \text{false}$

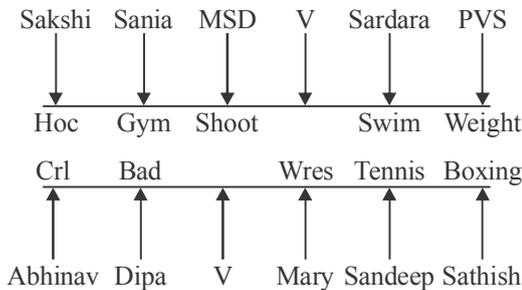
71. (b) $P \geq S > R \leq Q$
 $Q > S \Rightarrow$ false
 $R < P \Rightarrow$ true
 $R = P \Rightarrow$ false

Sol. (72-75)



72. (c) 73. (b) 74. (b)
 75. (a) P and Q are brothers and Z is the brother of R
 76. (b) Since millions of people are expected for 1 day at the Ganga, this means there is some festival or alike. And govt. cant ban entry on any festival. And yes law and order should be maintained by the police.
 77. (e) Since the locality is getting flooded by water, immediate action should be taken to start repairing. And also the compensation should be asked by the company since its workers did not done their work properly because of which outburst happened.
 78. (a) The parents should be contacted, but for this act students cannot be put behind bars.
 79. (b) The licenses should not be cancelled.
 80. (b) The marriages cannot be put on hold like that.

Sol. (81-85)



81. (b) 82. (d) 83. (b) 84. (c) 85. (b)

Sol. (86-90)

Person	Day	Time Slot
G	Mon	10.00 AM
B	Mon	3.00 PM
I	Tue	10.00 AM
D	Tue	3.00 PM
E	Wed	10.00 AM
C	Wed	3.00 PM
F	Thu	10.00 AM
A	Thu	3.00 PM
H	Fri	10.00 AM
J	Fri	3.0 M

86. (c) 87. (a) 88. (d) 89. (e) 90. (b)

Sol. (91-95)

Floor No	Person	Bike
8	B	HP
7	C	Asus
6	G	Samsung
5	F	Apple
4	H	Acer
3	E	DELL
2	A	TOSHIBA
1	D	Lenovo

91. (a) 92. (e) 93. (c) 94. (c) 95. (b)
 96. (e) The performance of the individual has to be tested over a span of time as the statement mentions. So, I is implicit. The statement mentions that the individual's worth shall be reviewed (during probation period) before confirmation. So, II is also implicit.
 97. (a) Since the statement talks of putting the child in school at the age of 5, it means that the child is mentally prepared for the same at this age. So, I is implicit. But nothing about admission after 6 years of age is mentioned in the statement. So, II is not implicit.
 98. (b) Assumption I goes against the statement. So, it is not implicit. The allowance will serve as a reward to the employees and shall provoke them to come on time. So, II is implicit.
 99. (a) I directly follows from the statement and so is implicit. Also, the statement is a suggestion and does not tell about a government policy or its position of funds. So, II is not implicit.
 100. (a) The mother warns her child with the expectation that he would stop troubling her. So, I is implicit. The general nature of children cannot be derived from the statement. So, II is not implicit.
 101. (c) With an interview given by economic affairs secretary Shaktikanta Das it is clearly mentioned that government has to work under some fiscal constraints and it is making efforts to present a growth oriented budget. Fiscal constraints are characteristics and not an objective and hence option (b) is wrong.
 102. (a) In the fifth passage it is said by economist Madan Sabnav is the government has to increase its allocation for public investment on infrastructure to stimulate growth.
 103. (c) The new budget is based on four pillars: poverty eradication, farmers' prosperity, job creation and a better quality of life for all Indian citizens. The new budget will ensure that India will continue towards stability even in disturbed and choppy situations.
 104. (c) In the second last passage it is mentioned that the government has been providing tax incentives to companies in the manufacturing sector, including tax deductions on emoluments paid to new employees, to encourage firms to step up hiring and create jobs under its Make in India initiative.
 105. (e) The government has considered various suggestions which includes a, b, c and d. The option (e) is not mentioned anywhere in the passage.

106. (c) In the opening paragraph it is clearly mentioned that, 'This critical piece is 'savings' and, within this overall head, household savings is the one critical subcomponent that needs close watching and nurturing.' Therefore the main concern behind the alarm bells is option (c). Option (a) is a regular phenomenon. Option (b) is not the main concern as it is a temporary problem. Option (d) is not mentioned. Option (e) is ruled out.
107. (b) In the opening line of the second paragraph it is stated that, 'while it is true that one of the primary reasons behind the current economic slowdown is the tardy rate of capital expansion - or, investment in infrastructure as well as plant and machinery - all attempts to stimulate investment activity are likely to come to naught if savings do not grow.' Therefore option (b) is the only correct choice.
108. (a) In the second paragraph it is said that, 'Without any growth in the savings rate, it is futile to think of any spurt in investment and, consequently, in the overall economic growth.' Therefore, option (a) overall economic growth is directly related to household savings is correct.
109. (c) It is mentioned in the passage that, 'India has another facet: a penchant for physical assets (such as bullion or land). After the monsoon failure of 2009, and the attendant rise in price levels that has now become somewhat deeply entrenched, Indians have been stocking up on gold. Consequently, savings in financial instruments dropped while those in physical assets shot up.' Therefore option (c) is correct.
110. (e) It is clearly mentioned in the passage that, 'While recognising that one of the key differences in the evolving household saving scenario between the UK and India is the impact of demographics (dependency ratio), anecdotal evidence on increasing consumerism and the entrenchment of (urban) lifestyles in India, apart from the easier availability of credit and improvement in overall macroeconomic conditions, is perhaps indicative of some 'drag' on household saving over the last few years as well as going forward.' Therefore option (e) is the correct answer.
111. (e) Prodigy refers to a particular quality and its close meaning is the word 'epitome' that refers to, example of a particular quality or type.
112. (b) Nondescript refers to, lacking distinctive or interesting features or characteristics. Option (b) 'discern' has the nearest meaning that refers to, distinguish someone or something with difficulty by sight or with the others senses which means it lacks distinctive characteristics.
113. (b) Savant means a person who knows a lot about a particular subject. Option (b) postulant refers to a candidate, especially one seeking admission into a religious order that means he knows more about religion.
114. (d) Corpulent means fat or well-built and its same meaning is expressed in option (d) obese that means grossly fat or overweight.
115. (a) Embezzle means, steal or misappropriate money placed in one's trust or belonging to the organization for which one works. Its near word, option (a) 'misappropriate' means; dishonestly or unfairly take something, especially money, belonging to another for one's own use.
116. (c) Difficult will replace easier and going for an election will be running for election.
117. (b) We have in America a hybrid speech..... But a combination of all three is the correct improvement.
118. (d) Far from being a tight focused Narrative.....instead an expansive novel
119. (c) So docile and truculent that.....sudden virulence toward
120. (a) See through the deception.....and promptly forced him down.
121. (d) The description of the radiant lights and the last line logically invites option (d) we sat benumbed by the proceedings, for the radiance of the Time Traveler was unimaginable and unbearable.
122. (c) It is said that Metaphysics is a purely speculative science.... It deals with mere conceptions and the last sentence, It is the oldest of the science, logically concludes option (c), But it has never had and never will have the good fortune to attain to the sure scientific method.
123. (d) The second sentence--- In such a case.....Indian entity could be treated..... Again the sentence that runs after the blank....During the last decade or so, suggests option (d), A new trend is seen in last decade is the correct choice.
124. (d) Capital allocation (about how much) would be based on such strategies of risk aggregation which is really a new concept to Indian banks.
125. (e) The most serious consequence of inflation is its unfavourable bearing on day to day commodities that are used by the common man.
126. (a) At the risk of investing in mutual funds RBI is likely to ask banks to reduce their investments in mutual funds.
127. (b) Since twelve million youth enter the Indian work force every year, eight per cent of these youth are unskilled.
128. (a) Although food inflation is touching twenty per cent, the government will have to tighten monetary policy to prevent further rise.
129. (e) None of these
130. (a) Though the company's sales were low at the beginning of the year, its sales have picked up in the past few months.
131. (c) This option deviates from main line of thought which is centered round China-Pak developing relationship.
132. (e) This option deviates from the Paris Agreement and India's ratification.
133. (a) Logically Corporate Social Responsibility does not fit with pro bono cases.
134. (e) This statement differs from IMF's optimism bias.
135. (b) The statement differs as the logical sequence talks about pollution in Indian cities.
136. (e) None of the above sentence is structurally and grammatically correct.
137. (c) If I had enough money I would backpack around Europe. But, unfortunately I am broke.

138. (c) The judges, talking at length among themselves finally distributed the awards among the most active children.
139. (c) I have been ill for a fortnight and the Management as well as the school sports committee prefers to elect me Captain of school team.
140. (b) If you tried to understand the concept of the whole class, you will not only remember it, but also can put to use while solving even the difficult exercises.
141. (d) Assembly language is mnemonic based low level language. Mnemonics are short codes of assembly language which chosen to remind the programmer of the instructions of binary machine-code which are apparently which are very hard to remember, write down, or correct.
142. (e) Tianhe-2 is China's Supercomputer. It was the fastest until its position being taken up by Sunway Tiahu Light as the Fastest Supercomputer.
143. (e) In 1960's AT&T introduces its Data phone, the first commercial modem. The first commercial modem made for converting digital computer data at analog signals for transmission across long distance networks
144. (b) An API may be for a web-based system, operating system, database system, computer hardware, or software library. It is an acronym for Application Programming Interface. An API specifies how software components should interact and APIs are used when programming graphical user interface (GUI) components.
145. (d) BSODs appear when Microsoft Windows encounters a critical error it can't recover from, requiring a reboot and possibly resulting in lost work. It stands for blue screen of death. Blue screens are generally caused by problems with your computer's hardware or issues with its hardware driver software. A blue screen occurs when Windows encounters a "STOP Error." This critical failure causes Windows to crash and stop working
146. (e) Microsoft is a cloud computing platform and infrastructure created by Microsoft for building, deploying, and managing applications and services through a global network of Microsoft-managed data centers. Azure was announced in October 2008 and released on 1 February 2010 as Windows Azure, before being renamed to Microsoft Azure on 25 March 2014.
147. (d) After a credit card transaction has been authorized by the issuing bank by sending an authorization code to the merchant, the settlement stage of the process begins. This is called batch processing because a number (or batch) of transactions is settled all at one time.
148. (d) WAN stands for Wide Area Network. A wide area network (WAN) is a geographically distributed private telecommunications network that interconnects multiple local area networks (LANs). In an enterprise, a WAN may consist of connections to a company's headquarters, branch offices, collocation facilities, cloud services and other facilities.
149. (c) Hybrid cloud is a cloud computing environment which uses a mix of on-premises, private cloud and third-party, public cloud services with orchestration between the two platforms. By using a Hybrid approach, companies can maintain control of an internally managed private cloud while relying on the public cloud as needed.
150. (b) Pascal is an imperative and procedural programming language designed in 1968/1969 and published in 1970 by Nicklaus Wirth as a small and efficient language intended to encourage good programming practices using structured programming and data structuring.
151. (c) Octet is another name for a byte=8bits
152. (b) Net Neutrality means an Internet that enables and protects free speech. It means that Internet service providers should provide us with open networks - and should not block or discriminate against any applications or content that ride over those networks.
153. (c) Watson is IBM's Super Computer
154. (e) The Control Unit (CU) is digital circuitry contained within the processor that coordinates the sequence of data movements into, out of, and between a processor's many sub-units.
155. (a) Slide Sorter view is a feature included in Microsoft PowerPoint software that allows the user to see all the slides in a presentation at one time. The slides appear in the task pane as small graphics that are arranged in rows and columns.
156. (a) A segmentation fault is a common condition that causes programs to crash; they are often associated with a file named core. They are caused by a program trying to read or write an illegal memory location. In other words, this is a memory access violation error.
157. (d) Java Database Connectivity (JDBC) is an application programming interface (API) for the programming language Java, which defines how a client may access a database. It is part of the Java Standard Edition platform, from Oracle Corporation.
158. (d) The very first device that had fundamentally the same functionality as a router does today was the Interface Message Processor (IMP); IMPs were the devices that made up the ARPANET, the first TCP/IP network.
159. (b) Alpha was android version 1.0 released on 23rd September 2008. Android is continually developed by Google and the Open Handset Alliance (OHA), and has seen a number of updates to its base operating system since the initial release.
160. (a) F2 is a shortcut to rename selected object in Windows 8 and higher versions.
161. (a) 162. (e) 163. (d) 164. (d) 165. (a)
166. (a) 167. (b) 168. (e) 169. (d) 170. (d)
171. (d) 172. (d) 173. (c) 174. (a) 175. (c)
176. (c) 177. (b) 178. (a) 179. (a) 180. (c)
181. (d) 182. (b) 183. (e) 184. (a) 185. (d)
186. (d) 187. (d) 188. (b) 189. (c) 190. (c)
191. (a) 192. (a) 193. (e) 194. (c) 195. (d)
196. (b) 197. (c) 198. (b) 199. (a) 200. (d)

IBPS

PO Prelim Exam 2016

Held on : 16-10-2016

(Based On Memory)

Time : 1 Hr.

QUANTITATIVE APTITUDE

- Vikram invests some money in three different schemes for 4 years, 8 years and 12 years at 10%, 15% and 20% Simple Interest respectively. At the completion of each scheme, he gets the same interest. The ratio of his investments is
(a) 6 : 2 : 1 (b) 5 : 2 : 1
(c) 5 : 2 : 3 (d) 5 : 2 : 7
(e) None of these
- A sum of ₹ 3903 is divided between P and Q such that the share of P at the end of 8 years is equal to the share of Q after 10 years. Find the share of P if rate of interest is 4% compounded annually.
(a) 2012 (b) 2029
(c) 2028 (d) 2081
(e) None of these
- Shopkeeper purchased some goods for ₹900 and sold one-third of the goods at a loss of 12%, then at gain % should the remainder goods he sold to gain 18% profit on the whole transaction ?
(a) 31% (b) 26% (c) 33% (d) 18%
(e) None of these
- A truck covers a distance of 376 km at a certain speed in 8 hours. How much time would a car take at an average speed which is 18 kmph more than that of the speed of the truck to cover a distance which is 14 km more than that travelled by the truck ?
(a) 6 hours (b) 5 hours
(c) 7 hours (d) 8 hours
(e) 7.5 hours
- Two trains are moving in opposite directions at 60 km/hr and 90 km/hr. Their lengths are 1.10 km and 0.9 km respectively. The time taken by the slower train to cross the faster train in seconds is:
(a) 58 sec (b) 50 sec (c) 48 sec (d) 56 sec
(e) None of these
- James' father was 30 years old when he was born. His mother's age was 24 when his sister who is 5 years younger to him, was born. What is the difference between the age of James' father and mother?
(a) 8 (b) 10 (c) 6 (d) 11
(e) 9
- The average monthly expenditure of Mr. Ravi's family for the first three months is ₹2,750, for the next three months is ₹2,940 and for the last three months ₹3,150. If his family saves ₹4980 for nine months, find the average monthly income of the family for the 9 months?
(a) ₹3800 (b) ₹3500
(c) ₹3400 (d) ₹4200
(e) ₹4500
- A and B undertake to complete a piece of work for Rupees 1200. A can do it in 8 days, B can do it in 12 days and with the help of C they complete the work in 4 days. Find the share of C?
(a) 100 (b) 200
(c) 300 (d) 400
(e) None of these
- Three pipes A, B, and C can fill the tank in 10 hours, 20 hours and 40 hours respectively. In the beginning all of them are opened simultaneously. After 2 hours, tap C is closed and A and B are kept running. After the 4th hour, tap B is also closed. The remaining work is done by tap A alone. What is the percentage of the work done by tap A alone?
(a) 30% (b) 35%
(c) 45% (d) 50%
(e) None of these
- In a school the number of boys and girls are in the ratio of 4:7. If the number of boys are increased by 25% and the number of girls are increased by 15%. What will be the new ratio of number of boys to that of girls?
(a) 100:131 (b) 100:151
(c) 100:161 (d) 100:181
(e) None of these

DIRECTIONS (Qs. 11-15) : In these questions, a number series is given. Find out the missing number.

- 279936, 46656, 7776, 1296, 216, ?
(a) 60 (b) 66 (c) 46 (d) 26
(e) 36
- 139, 142, 133, 160, 79, ?
(a) 326 (b) 322 (c) 331 (d) 340
(e) 355
- 164, 40, ?, 43, 188
(a) 224 (b) 68 (c) 90 (d) 176
(e) None of these
- 96, 320, 800, 1600, ?
(a) 640 (b) 2666.7 (c) 2500 (d) 2400
(e) None of these
- 6 4 6 12 22 ?
(a) 26 (b) 36 (c) 86 (d) 66
(e) 46

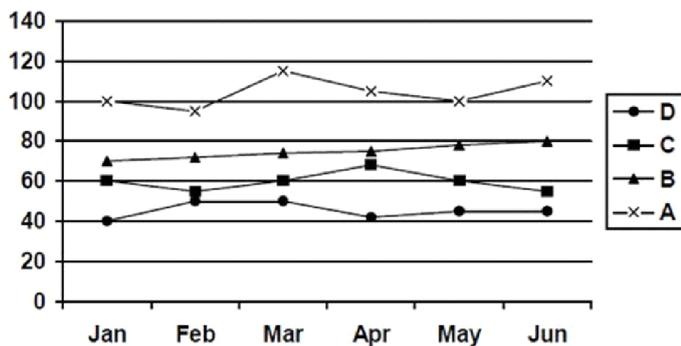
DIRECTIONS (Qs. 16-20) : In the following questions two equations numbered I and II are given. You have to solve both the equations and give answer

- (a) $x > y$ (b) $x < y$
 (c) $x \geq y$ (d) $x \leq y$
 (e) $x = y$ or relation cannot be established
16. $x^2 + 30x + 221 = 0$
 $y^2 - 53y + 196 = 0$
17. $2x^2 - 9x + 10 = 0$
 $y^2 - 18y + 72 = 0$
18. $x(35 - x) = 124$
 $y(2y + 3) = 90$
19. $1/(x - 3) + 1/(x + 5) = 1/3$
 $(y + 2)(27 - y) = 210$
20. $\sqrt{36x} + \sqrt{64} = 0$
 $\sqrt{81y} + (4)^2 = 0$

DIRECTIONS (Qs. 21-25) : What approximate value should come in place of the question mark (?) in the following questions? (You are not expected to calculate the exact value.)

21. 25.675% of 1321 + 64.328% of 4001 = ?
 (a) 2912 (b) 3016
 (c) 3126 (d) 3254
 (e) 3348
22. $8(2/7) + 30\%$ of 60 + $10(5/9) = ?$
 (a) 32 (b) 34
 (c) 37 (d) 44
 (e) 41
23. 46% of ? = 46916
 (a) 101993.3 (b) 101991.3
 (c) 101993.1 (d) 101993.2
 (e) None of these
24. $[(729)^{1/2} + (0.0016)^{1/2}] / 8$ of 134.567 = ?
 (a) 451 (b) 453
 (c) 455 (d) 456
 (e) 457
25. $299 \div 12 \times 13.95 + ? = 252$
 (a) 277 (b) 270
 (c) 287 (d) 275
 (e) None of these

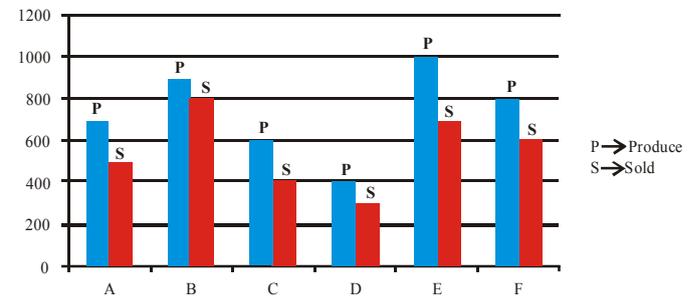
DIRECTIONS (Qs. 26-30) : The graph below shows the end of the month market values of 4 shares for the period from January to June. Answer the following questions based on this graph



26. Which share showed the greatest percentage increase in market value in any month during the entire period?
 (a) A (b) B
 (c) C (d) D
 (e) Both a and b

27. In which month was the greatest absolute change in market value for any share recorded?
 (a) March (b) April
 (c) May (d) June
 (e) Feb
28. In which month was the greatest percentage increase in market value for any share recorded?
 (a) February (b) March
 (c) April (d) May
 (e) June
29. An individual wishes to sell 1 share of C and 1 share of D to buy 1 share of A at the end of a month. At which month-end would the individual's loss from this decision, due to share value changes, be the most?
 (a) February (b) March
 (c) April (d) June
 (e) Jan
30. An individual decides to sell 1 share of C and 1 share of D to buy 1 share of A at the end of the month. What can be the individual's greatest gain from this decision, due to share value changes?
 (a) 5 (b) 10
 (c) 15 (d) none
 (e) 20

DIRECTION (Qs. 31-35): Study the following graph carefully to answer the questions given below



31. What is the average number of units produce by all companies together?(approx)
 (a) 700 (b) 720
 (c) 733 (d) 740
 (e) 750
32. Which company had the lowest percentage of sales with respect to its production ?
 (a) Company A (b) Company B
 (c) Company C (d) Company D
 (e) Company E
33. What is the ratio of the total production of the company B and C together to the total sales of the same companies ?
 (a) 4:5 (b) 5:4
 (c) 5:2 (d) 2:3
 (e) None of these
34. The total unit sold by D, E, F together is approximately what percentage of the total units produced by these companies ?
 (a) 72% (b) 72.12%
 (c) 72.22% (d) 72.72%
 (e) 73.67%
35. What is the ratio of total production of all the companies to the total sales of all the companies ?
 (a) 4:3 (b) 3:4
 (c) 3:2 (d) 2:3
 (e) None of these

REASONING ABILITY

36. What should come in place of question mark in the expression $P > Q ? R < T < S$ so as to make the expressions $P > R$ and $S > Q$ always true?
 (a) = (b) >
 (c) < (d) \geq
 (e) None of these
37. What should come in place of question mark in the expression $A = B > C ? D < E = F$ so as to make the expression $F > C$ always true?
 (a) > (b) =
 (c) \geq (d) \leq
 (e) Both (b) and (d)
38. Statements: $P = S, P < Q, R \leq Q, R \leq T$
 Conclusions : a) $Q > S$ b) $Q = T$
 (a) Only one follow (b) Only two follow
 (c) Neither follows (d) Both follow
 (e) Either follow
39. Statements: $- A > N, K \geq N, K > M, R > M$
 Conclusions: - a) $M = N$ b) $R \geq A$
 (a) Only one follow (b) Only two follow
 (c) Neither follows (d) Both follow
 (e) Either follow
40. What should come in place of question mark to make $B > D$ always true?
 $A = B > C ? D < E$
 (a) > (b) <
 (c) \geq (d) \leq
 (e) both a and c

DIRECTIONS (Qs. 41-45): Read the information carefully and answer the questions that follows:

- (a) only I follows (b) only II follows
 (c) either I or II (d) neither I nor II
 (e) both I and II
41. **Statements:** Some pens are pencils. Some pencils are erasers. Some erasers are sharpeners. Some sharpeners are dusters.
Conclusions:
 I. Some sharpeners are not pencils.
 II. All dusters are pens.
42. **Statements:** All squares are circles. No circle is cone. Some cones are spheres. Some rectangles are circles.
Conclusions:
 I. All rectangles being cones is a possibility
 II. All rectangles being sphere is a possibility
43. **Statements:** All squares are circles. No circle is cone. Some cones are spheres. Some rectangles are circles.
Conclusions:
 I. Some rectangles are not cones.
 II. No square is cone
44. **Statements:** Some reds are greens. All greens are blues. All blues are oranges. No yellow is blue.
Conclusions:
 I. No red is yellow.
 II. Some oranges are greens
45. **Statements:** Some reds are greens. All greens are blues. All blues are oranges. No yellow is blue.
Conclusions:
 I. Some yellows are greens is a possibility.
 II. All yellows being oranges is a possibility

46. Anil starts walking in east direction and after travelling some distance he took a right turn and then a left turn followed by another left turn. Now he again took a right turn and finally took a left turn. In which direction is anil walking.
 (a) south (b) north
 (c) east (d) west
 (e) None of these

DIRECTIONS(Qs.47-51) Study the following information carefully to answer the given questions.

- Eight people A, B, C, D, E, F, G and H are sitting in a straight line with equal distances between each other, but not necessarily in the same order. Some of them are facing North and some of them are facing south.
- A sits at one of the extreme ends of the line. Only three people sit between A and G. E sits exactly between A and G.
 - H sits third to the right of (e) B is an immediate neighbour of H and faces south. C sits second to the right of F. C is not an immediate neighbour of G.
 - Immediate neighbour of G face opposite directions(i.e. if one neighbour faces North then the other neighbour faces south and Vice-Versa)
 - A and D face the same direction as E(i.e if E faces north then A and D also face North and Vice-Versa). Both the immediate neighbours of E face south.
47. In the given arrangement, if two people come and sit to the immediate left of E, how many people will sit between F and C?
 (a) Two (b) Three
 (c) Four (d) More than four
 (e) One
48. Who amongst the following sits third to the right of F?
 (a) A
 (b) B
 (c) Other than those given as options
 (d) D
 (e) E
49. How many people face North as per the given arrangement?
 (a) Two (b) Three
 (c) Four (d) More than four
 (e) One
50. Four of the following five are alike in a certain way based upon their seating arrangement and so form a group. Which of the following does not belong to the group?
 (a) EC (b) AF
 (c) BF (d) CG
 (e) DG
51. Who amongst the following sits at the extreme end of the row?
 (a) B (b) C
 (c) D (d) E
 (e) Other than those given as options
52. A person starts walking in south direction and walks a distance of 7 meters. Now he takes a left turn and walk 6m. Again he takes a left turn and walk 15m and reached a point P. Find the distance between starting point and P and in which direction is the person from the initial point.
 (a) 10m, south east (b) 10m, north west
 (c) 10m, north east (d) 10m, south west
 (e) None of these

DIRECTIONS(Qs. 53-55) : Read the information carefully and answer the questions that follows:

'P × Q' means 'P is son of Q'.
'P + Q' means 'P is daughter of Q'.
'P ÷ Q' means 'P is wife of Q'.
'P - Q' means 'P is father of Q'.

53. In the expression 'K + H - P ? Q', what will come in place of ? if Q is mother of K?
(a) + (b) -
(c) ÷ (d) ×
(e) None of these
54. Which of the following relation is true with regard to expression 'B ÷ P × Z - K + O'?
(a) P is brother of O
(b) B is daughter-in-law of K
(c) B is daughter-in-law of O
(e) O is daughter of Z
(e) None of these
55. Which of the following pairs represent the first cousins in the expressions - 'L ÷ V - J + P' and 'S × A - D + F - E + K' - if it is given that A is the sister of J?
(a) LP (b) SP
(c) SK (d) SF
(e) Cannot be determined

DIRECTIONS(Qs. 56-60): Study the given information carefully and answer the questions that follow: -

- Eight friends - P, Q, R, S, T, U, V and W - are sitting around a circular table facing the centre but not necessarily in the same order. Each of them likes different cricketers - Kohli, Rohit, Dhawan, Smith, Warner, Root, Gayle and Nehra.
 - There are two persons between those two persons who like Kohli and Rohit and neither of them sits opposite P. R and V are immediate neighbours and neither of them likes Nehra or Rohit. P, who likes Gayle, sits second to the right of the girl who likes Nehra. Q and T neither like Nehra nor sit adjacent to P. T, who likes Rohit, sits second to the left of V, who likes Smith. R does not like Kohli.
 - The immediate neighbour of T faces R, who sits third to the left of the one who likes Gayle. U does not like Nehra. Both S and W do not like Kohli and Dhawan. Q likes Root while S likes Warner. Q is not an immediate neighbour of P.
56. Which of the following is the favourite cricketer of P?
(a) Warner (b) Kohli
(c) Dhawan (d) Gayle
(e) None of these
57. Dhawan is the favourite cricketer of which of the following?
(a) P (b) Q
(c) R (d) S
(e) None of these
58. Who among the following is exactly between Q and S?
(a) R (b) U
(c) V (d) T
(e) None of these
59. Four of the following five are alike in a certain way based on the given arrangement and thus form a group. Which of the following does not belong to that group?
(a) V-Smith (b) P-Gayle
(c) Q-Kohli (d) R-Dhawan
(e) S-Warner

60. Who is sitting opposite to the person who likes Nehra?
(a) Q (b) T
(c) P (d) R
(e) None of these

DIRECTIONS (Qs. 61-65): Study the following information carefully to answer the given questions

- Gopi, Nithya, Shilpa, Renu, Gowtham, Priya, Prasanth and Sridhar are sitting around a square table in such a way that four of them sit at four corners of the square while four sit in the middle of each of the four sides. The ones who sit at the four corners face the centre while those who sit in the middle of the sides face outside.
 - Two females sit in the middle of the sides and two at the corners. Shilpa sits second to the left of Prasanth. Prasanth sits in the middle of one of the sides. Gopi sits fourth to the right of his wife and his wife is not an immediate neighbour of Shilpa or Prasanth.
 - Nithya sits third to right of her husband. Nithya does not sit at any of the corners. Only Renu sits between Nithya and Sridhar. Sridhar is the husband of Shilpa. Gowtham is a male.
61. Which of the following is true with respect to the given seating arrangement?
(a) No two males are immediate neighbours of each other
(b) Prasanth and Sridhar do not face each other in the seating arrangement
(c) Gowtham and Renu are immediate neighbours of each other
(d) Priyasits diagonally opposite to Gowtham
(e) Gowtham sits in the centre of one of the sides of the square table
62. Who amongst the following is Nithya's husband?
(a) Gopi (b) Prasanth
(c) Gowtham (d) Priya
(e) Cannot be determined
63. How many people sit between Nithya and Gopi when counted in anti-clockwise direction from Nithya?
(a) None (b) One
(c) Two (d) Three
(e) Four
64. Who amongst the following is the wife of Gopi?
(a) Renu (b) Priya
(c) Nithya (d) Shilpa
(d) Cannot be determined
65. What is the position of Gowtham with respect to Gopi?
(a) Immediately to the left (b) Second to the left
(c) Third to the right (d) Immediately to the right
(e) Second to the right

DIRECTIONS (Qs. 66-70): Study the following information carefully and answer the questions given below:

Six friends - Arun, Sathish, Yogesh, Ganesh, Peter and Hemanth are studying six different specialisations of engineering which are - metallurgy, telecommunication, software, mechanical, electrical and hardware not necessarily in the same order. Each one likes a different sport - hockey, cricket, swimming, football, badminton and tennis again not in the same order.

Ganesh is not studying hardware Peter is studying software and likes hockey. Yogesh likes swimming and is not studying hardware. The one who likes football is studying electrical.

Hemanth is studying mechanical and does not like tennis. The one who likes badminton is studying telecommunication. Arun and Sathish do not like badminton. Arun does not like tennis.

66. Which specialisation is Sathish studying?
 (a) Metallurgy (b) Mechanical
 (c) Hardware (d) Electrical
 (e) None of these
67. Which sport does Arun like?
 (a) Football (b) Cricket
 (c) Hockey (d) Cannot be determined
 (e) None of these
68. Which of the following person-specialization combination is correct according to the given information?
 (a) Ganesh-Hardware (b) Sathish-Electrical
 (c) Yogesh-Metallurgy (d) Hemanth-Software
 (e) None is correct
69. If all six friends are asked to sit in a straight line, facing north, in an alphabetical order (according to their names), from left to right, then who will be to the immediate left of the one studying electrical?
 (a) The one who likes badminton
 (b) The one who is studying telecommunication
 (c) The one who is studying hardware
 (d) The one who likes hockey
 (e) None of these
70. If all six friends are asked to sit in a straight line, facing north, in an alphabetical order (according to their names), from left to right, then which of the following combinations will represent the favourite sport of the immediate neighbours of Peter?
 (a) Badminton - Football (b) Cricket-Tennis
 (c) Cricket-Football (d) Tennis - Football
 (e) Cricket - Badminton

ENGLISH LANGUAGE

DIRECTIONS (Qs. 71-77) : Read the following passage carefully and answer the questions given below it. Certain words are printed in bold to help you locate them while answering some of the questions.

Globalization is the objective trend of economic development in the world today, featured by free flow and optimized allocation of capital, technology, information and service in the global context. It is the inevitable result of the development of productive forces and advances of science and technology, especially the revolution of information technology since the 1980s and 1990s.

The influence of globalization on countries at different stages of development is entirely different. The "dividends" derived from globalization are not fairly distributed. The developed countries have apparent advantages in capital, technology, human resources and administrative expertise and in setting the "rules of the game". They are usually the biggest beneficiaries of globalization. The developing countries on the other hand are on the whole in an unfavorably position. Developing countries can obtain some foreign investment, advanced technologies and management expertise, but at the same time they are the most vulnerable to the negative impacts of globalization and lack the ability to effectively fend off and reduce the risks and pitfalls that come along with globalization.

In the 1990s, especially in recent years, the gap between the North and the South has further widened. The economic sovereignty and economic security of the developing countries are confronted with enormous pressure and stern challenges. Some least-developed countries are even on the brink of being marginalized by globalization. Therefore, in participation of globalization, developing countries should always be on alert and try by all means to exploit the advantages and avoid all kinds of risk and harm.

In the past 20-odd years, China has maintained an annual growth rate of over 9.3% on average. China is now the 6th largest economy and the 5th largest trading nation in the world. More than 200 million people have been lifted out of poverty. The above accomplishments were achieved against the backdrop of a volatile international situation. The reason why China was so successful in such a short period of time and in a constantly changing international environment is because China has found its own road of development i.e, to base what we do on the realities of China while sticking to the basic system of socialism, reforms should be carried out to solve the problems of incompatibility between the productive forces and the relations of production, and between economic base and the superstructure, so as to achieve self-perfection of socialism. Every country is different from the other.

It opens not only to developed countries, but also to developing countries, not only in economic field, but also in all areas of social development. At the same time, it is not a blind opening, but a self-conscious one, not a disorganized opening but a systematic one. China's opening proceeds and deepens in a gradual and step by step fashion. It started from the 4 special economic zones, to coastal cities, then to capital cities of inland provinces and now it has reached an unprecedented stage of all-round opening demonstrated by China's accession to the World Trade Organization. During its opening-up, China paid special attention to give full play to its comparative advantages to actively conduct international cooperation and competition. For instance, China has fully exploited its advantages of low cost of labour to attract foreign investment and technology to push economic development and better efficiency and quality of economic growth. These measures have brought the Chinese economy increasingly integrated with the world economy.

China has learnt many lessons and accumulated rich experiences in dealing with globalisation from its practice of reform and opening-up. To adopt opening-up policy. It opens not only to developed countries, but also to developing countries, not only in economic field, but also in all areas of social development. At the same time, it is not a blind opening, but a self-conscious one, not a disorganized opening but a systematic one. China's opening proceeds and deepens in a gradual and step by step fashion. It started from the 4 special economic zones, to coastal cities, then to capital cities of inland provinces and now it has reached an unprecedented stage of all-round opening demonstrated by China's accession to the World Trade Organization. During its opening-up, China paid special attention to give full play to its comparative advantages to actively conduct international cooperation and competition.

China's participation in Globalization is by no means a one-way street. When the world economic growth remains weak, China's economy is one of the few bright spots. As World Bank Report on Global Development Finance 2003 published in early April pointed out that China's fast growth "helped to drive the

recovery in East Asia. Together with policy stimulus in other countries, China's performance lifted the region to growth of 6.7% in 2002, up from 5.5% in 2001. China has also provided the world with the largest rising market. When more than 1.25 billion people become well-off, the demand on everything will be enormous. Just to give you an example, in the coming 10 years alone, China will import US\$ 2 trillion of goods from the outside world. It goes without saying that we are also facing many challenges. For instance, with the accession to the WTO, China is faced with growing pressure from international competition. China's enterprises have to cope with fiercer competition not only at international market, but at home market as well. Nevertheless, opening the country to the outside world is China's basic and long-term state policy. China is committed to opening still wider to the outside world in an all-directional and multi-tiered way, with an even more active approach.

71. Why the "dividends" derived from globalization are not fairly distributed?
- Apprehension in embracing and seizing the opportunities presented by globalization
 - Failing to adopt reforms to keep up with the steps of the changing world.
 - Political disadvantage due to inactivity in the developing countries.
 - Due to the lack of a just and equitable international economic order
 - None of these.
72. What reason author has given for China's achievement in such a short span of time?
- Significant modifications in the basic system of socialism.
 - Framing their models on Chinese characteristics rather than relying on plagiarism.
 - As they gave much more impetus on advancement in technology, human resources and administrative expertise
 - Their responsible approach as they remained vigilant against various risks, especially financial risks.
 - None of these
73. Which of the following is the most suitable term for the nature of Chinese opening to the outside world?
- Progressive
 - Self conscious
 - Comprehensive
 - Discerning
 - Selective
74. How according to author China is contributing to World Economy?
- By giving the road development to other developing countries so that they can follow the same path.
 - By providing a huge market to the World to supply the needs of billion uplifted Chinese population.
 - By new advancements in technology and human resources.
 - Focusing their attention to conduct international cooperation and competition.
 - None of these.
75. Which of the following statement(s) is/ are true in context of the passage?
- Developing countries are raising their concern over China's commitment to even more active approach towards opening to World.
 - Developing countries are usually the most active propellers of globalization.
 - China's rise is a threat for the developing countries like America.
- Only (ii)
 - Both (i) and (iii)
 - Both (i) and (ii)
 - Only (i).
 - All of the above
76. What is the challenge that is faced by China?
- Need to fulfill the enormous demands of more than a billion Chinese people who have recently escaped from poverty.
 - Adapting to the model adopted by the other countries so as to not get isolated.
 - Growing pressure from the international market.
 - Opening the country to the outside world
 - None of these
77. Which of the following statement is false?
- Low cost of labour in China is key to attract foreign investment.
 - Achieving self-perfection of socialism is a reason for China's incredible growth
 - Developing country can suffer economically due to globalization.
 - China is facing a much fiercer competition at home compared to international markets.
 - None of these.

DIRECTIONS (Qs. 78-82): Rearrange the following Six sentences (A), (B), (C), (D), (E) and (F) in the proper sequence to form a meaningful paragraph and then answer the questions given below.

A-It is the only country in the world that is carbon negative, which means it produces more oxygen than it consumes.

B-Bhutan, sandwiched between the two most populous nations on Earth, suffers for their sins.

C-So far, so good. But then, two things happened.

D-Carbon sinks, 70% forest cover, powered almost entirely by mountain streams—Bhutan is a poster child for green living.

E-Glaciers are beginning to melt, flash floods and heavy rains—and even droughts—are common, and temperatures are climbing.

F-One, India and China got richer.

78. Which of the following should be the First sentence of the given paragraph?

- E
- D
- C
- B
- A

79. Which of the following should be the Third sentence of the given paragraph?

- A
- B
- C
- D
- E

80. Which of the following should be the LAST sentence of the given paragraph?

- A
- C
- B
- D
- E

81. Which of the following should be the Fourth sentence of the given paragraph?

- F
- C
- B
- E
- D

82. Which of the following should be the Second sentence of the given paragraph?
 (a) B (b) D
 (c) A (d) C
 (e) E

DIRECTIONS (Qs. 83-90): *In the following passage, you have a brief passage. In the following passage, some of the words have been left out. First read the passage over and try to understand what it is about. Then fill in the blanks with the help of the alternatives given.*

Big ideas come from tackling --83-- problems. When one is confronted with an overwhelming task, it's pieces. Business jargon is full of phrases about that, like "pilot projects" and "low-hanging fruit." They have their place, but in the repertory of management --84--, they should share their place with bold approaches to big challenges. Much of today's most valuable management knowledge came from wrestling with such issues. The most complicated workplace in the middle of the last century was the automobile assembly plant. Drawn to its complexity where Peter F. Drucker, W. Edwards Deming, and Taiichi Ohno, among others. The work they and their disciples did, applied in industry after industry, is the basis of the best that we know about operations, managing people, innovation, organizational design, and much more.

The most complex workplaces are tertiary care hospitals. These vast --85-- employ tens of thousands of people who, under one roof, do everything from neurosurgery to laundry. Each patient – that is to say, each "job" — calls on a different set of people with a different constellation of ---86---; even when the two patients have the same diagnosis, success may be --87-- differently. This is complexity of an order of magnitude greater than automobile assembly, and anyone who --88-- hospitalized knows that management has thus far been unequal to the scope of task. The workers, managers, consultants, and scholars --89-- crack this nut will reshape industries and institutions just as ---90--- as Drucker, Deming, and Ohno did.

83. (a) Small (b) big
 (c) Irrelevant (d) Buildings
 (e) minor
84. (a) Weakness (b) Strength
 (c) Power (d) practice
 (e) symptom
85. (a) houses (b) institute
 (c) demagogue (d) Forts
 (e) enterprises
86. (a) Barbarity (b) talent
 (c) skills (d) unskilled
 (e) barbaric
87. (a) managed (b) Officious
 (c) Delivered (d) measured
 (e) postponed
88. (a) are been (b) have being
 (c) have been (d) has been
 (e) is be
89. (a) who (b) whom
 (c) whose (d) which
 (e) whomsoever
90. (a) Profoundly (b) gradually
 (c) superficially (d) speciously
 (e) earnest

DIRECTIONS (Qs. 91-100): *Identify the error in the sentences given below, if there is no error, click option (e).*

91. (a) The need to set up
 (b) a good library in the locality
 (c) has been in the minds of people
 (d) for some time now
 (e) No error
92. (a) Most people would have
 (b) attended the union meeting
 (c) if they had
 (d) had longer notice of it.
 (e) No error
93. (a) He took to
 (b) reading Times
 (c) for better knowledge
 (d) of the facts.
 (e) No error
94. (a) When children have difficulty understanding
 (b) a certain mathematical process, it is often because
 (c) their teachers do not understand it conceptually
 (d) themselves and do not present it in a way that children can understand.
 (e) No error.
95. (a) Studies show that the lives of millions of mothers
 (b) and their children could be saved if countries would
 (c) invest in programs that ensures a healthy pregnancy,
 (d) and safe childbirth.
 (e) No error.
96. (a) Film viewers claim that
 (b) the number of scenes depicting alcohol consumption
 (c) have increased dramatically over
 (d) the last decade.
 (e) no error
97. (a) Forty percent of the people alive today have
 (b) never made a phone call, but
 (c) thirty percent still have no electricity connections
 (d) to their homes.
 (e) no error
98. (a) Workers with less
 (b) personal problems are
 (c) likely to be
 (d) more productive in their work.
 (e) no error.
99. (a) Everyone who visits Singapore
 (b) is impressed by its cleanliness,
 (c) which is mainly a result of rigorous implementation
 (d) of their strict laws.
 (e) No error
100. (a) The bridal dress was
 (b) most unique: the prince
 (c) designed it and his
 (d) mother provided the lace fabric.
 (e) No error

Answers & Explanations

1. (a) Let Principal = x_1, x_2 and x_3
 $x_1 \times 4 \times 10 = x_2 \times 8 \times 15 = x_3 \times 12 \times 20$
 $x_1 = 3 \times 2 = 6 \times 3$
 $x_1 : x_2 = 3 : 1; x_2 : x_3 = 2 : 1$
 $x_1 : x_2 : x_3 = 6 : 2 : 1$
2. (c) According to Question
 $P \times (1 + 4/100)^8 = (3903 - P) \times (1 + 4/100)^{10}$
 After solving we get $P = 2028$
3. (c) $\frac{1^{\text{rd}}}{3}$ at 12% loss = $\frac{900}{3} = 300 \times \frac{88}{100} = 264$
 $900 \times \frac{18}{100} = 108$
 $\Rightarrow 600 + 162 + 36 = 798$
 $\frac{198}{600} \times 100 = 33\%$
4. (a) Speed of the truck = $\frac{376}{8} = 47$ kmph
 Now, Speed of car = (Speed of truck + 18) kmph
 $= (47 + 18) = 65$ kmph
 Distance travelled by car = $376 + 14 = 390$ km
 Time taken by car = $\frac{390}{65} = 6$ hours.
5. (c) Relative speed = $(60 + 90)$
 Time = $\frac{(1.10 + 0.9)}{150} = \frac{1}{75}$ hr
 1 hour $\frac{3600}{75}$ sec
 $\frac{1}{75}$ hr $\frac{3600}{75}$?
 $? = 3600/75 = 48$ sec
6. (d) James' age = $F - 30$
 Sister's age = $F - 35$
 According to Question
 $M = 24 + \text{Sister's age}$
 $M = 24 + F - 35$
 $F - M = 11$
7. (b) Average monthly expenditure for 3 months = ₹ 2750
 Total expenditure for 3 months = ₹ 2750 \times 3 = ₹ 8250
 Average monthly expenditure for 3 months = ₹ 2940
 Total expenditure for 3 months = ₹ 2940 \times 3 = ₹ 8820
 Average monthly expenditure for 3 months = ₹ 3150
 Total expenditure for 3 months = ₹ 3150 \times 3 = ₹ 9450
 Total savings for 9 months = 4980
 Average monthly income for 9 months = $(8250 + 8820 + 9450 + 4980)/9 = 3500$
8. (b) $1/8 + 1/12 + 1/C = 1/4$, we get $C = 24$ days
 Now efficiency of A, B and C are in the ratio : $1/8 : 1/12 : 1/24$
 $3:2:1$, so share of C is $1/6 \times 1200 = 200$
9. (b) Pipe A's work in % = $100/10 = 10\%$
 Pipe B's work in % = $100/20 = 5\%$
 Pipe C's work in % = $100/40 = 2.5\%$
 All of them are opened for 2 hours + after 2 hours, tap C is closed + After the 4th hour, tap B is also closed = 100
 $\Rightarrow (10 + 5 + 2.5) \times 2 + (10 + 5) \times 2 + \text{work done by tap A alone} = 100$
 $\Rightarrow 35 + 30 + \text{work by tap A alone} = 100$
 $\Rightarrow \text{work by tap A alone} = 100 - 65 = 35\%$
10. (c) Boys = $4x$ and girls = $7x$
 Ratio = $4x \times 125/100 : 7x \times 115/100 = 100:161$
11. (e) Go on dividing by 6 to the next number.
12. (b) $139 + 3 = 142$
 $142 - 9 = 133$
 $133 + 27 = 160 \dots$
 $160 - 81 = 79$
 $79 + 243 = \boxed{322}$
13. (d) $164 - 4 = 160/4 = 40$
 $40 + 4 = 44 \times 4 = \boxed{176}$
 $176 - 4 = 172/4 = 43$
 $43 + 4 = 47 \times 4 = 188$
 $188 - 4 = 184/4 = 46$
14. (b) $96/0.3 = 320$
 $320/0.4 = 800$
 $800/0.5 = 1600$
 $1600/0.6 = \boxed{2666.7}$
15. (b) $6/2 + 1^2 = 4$
 $4/2 + 2^2 = 6$
 $6/2 + 3^2 = 12$
 $12/2 + 4^2 = 22$
 $22/2 + 5^2 = \boxed{36}$
16. (b) $(x + 13)(x + 17) = 0$
 $x = -13, -17$
 $y^2 - 53y + 196 = 0$
 $y = 49, 4$
 Hence, $x < y$
17. (b) $2x^2 - 9x + 10 = 0$
 $x = 2.5, 2$
 $y^2 - 18y + 72 = 0$
 $y = 12, 6$
 Hence, $x < y$
18. (e) $x(35 - x) = 124$
 $x = 31, 4$
 $y(2y + 3) = 90$
 $y = -7.5, 6$
19. (b) $1/(x - 3) + 1/(x + 5) = 1/3$
 $x^2 - 4x - 21 = 0$
 $x = 7, -3$
 $(y + 2)(27 - y) = 210$
 $y^2 - 25x + 156 = 0 \Rightarrow y = 12, 13$
 $x < y$
20. (a) $\sqrt{36x} + \sqrt{64} = 0$
 $6x + 8 = 0$
 $x = -1.33$
 $\sqrt{81y} + (4)^2 = 0$
 $9y + 16 = 0$
 $y = -1.77$
 Hence, $x > y$
21. (a) 22. (c)
23. (b) $(46/100)? = 46916$
 $? = (46916 \times 100)/46 = 101991.3$
24. (c) $27 + 0.04 = 27.04/8 = 3.38$
 $3.38 \times 134.567 = 454.8 = 455$
25. (a) $24.92 \times 13.95 = 347.634$
 $625 - 347.634 = 277.37$

72. (b) The third paragraph clearly states--The reason why China was so successful in such a short period of time and in a constantly changing international environment is because China has found its own road of development. This is implied in option (b) that China created its own model of development without following others. Other options are partially true and option (e) is ruled out.
73. (c) Comprehensive means including or dealing with all or nearly all elements or aspects of something most suitably describes the Chinese opening to the outside world. Therefore option (c) comprehensive is the most suitable choice. Options (a) and (b) are one of the aspects. Other options are ruled out.
74. (b) In the sixth paragraph it is mentioned that, China has also provided the world with the largest rising market. When more than 1.25 billion people become well-off, the demand on everything will be enormous. Just to give you an example, in the coming 10 years alone, China will import US\$ 2 trillion of goods from the outside world. Therefore option (b) is the correct answer while other options like (a) is not true at all. Option (c) is partially true. Option (d) is not relevant and option (e) is completely ruled out.
75. (a) It is given in the 2nd paragraph of the passage that developing countries are the one that are the biggest beneficiaries. Therefore statement (ii) is correct. Statements (i) and (iii) are incorrect. So option (a) is the correct choice for the given question.
76. (c) In the last paragraph of the passage it is clearly mentioned that, "China is faced with growing pressure from international competition." Therefore option (c) best expresses the desired answer. Option (a) is partially correct but not true in the given context. Option (b) is not mentioned and option (d) is not a challenge.
77. (d) It is not mentioned in the last paragraph of the passage that, China faces fiercer competition at home compared to international markets. Therefore option (d) is the correct choice. Other options are true while option (e) is ruled out.
78. (b) DACFBE will be the right order and it will be:
Carbon sinks, 70% forest cover, powered almost entirely by mountain streams-Bhutan is a poster child for green living.
It is the only country in the world that is carbon negative, which means it produces more oxygen than it consumes.
So far, so good. But then, two things happened.
One, India and China got richer.
Bhutan, sandwiched between the two most populous nations on Earth, suffers for their sins.
Glaciers are beginning to melt, flash floods and heavy rains-and even droughts-are common, and temperatures are climbing.
79. (c) As the correct order is DACFBE, option (c) so far, so good. But then, two things happened, will be the third sentence.
80. (e) As per the given sequence option (e), Glaciers are beginning to melt, flash floods and heavy rains-and even droughts-are common, and temperatures are climbing is the correct choice for the last sentence.
81. (a) The fourth sentence of the given paragraph is the option (a) i. e., 'It is the only country in the world that is carbon negative, which means it produces more oxygen than it consumes.'
82. (c) The second sentence will be, So far, so good. But then, two things happened. Therefore option (c) is correct.
83. (b) Big ideas come from tackling big problems. Therefore option (b), big only fits with -big ideas where the other options don't fit.
84. (d) The repertory of management practice is the correct expression. Others do not fit.
85. (e) These vast enterprises employ tens of thousands of people who, under one roof, do everything from neurosurgery to laundry, is the correct expression as enterprises means business or companies.
86. (c) Each patient - that is to say, each "job" - calls on a different set of people with a different constellation of skills, is the correct expression in the given context. Therefore option (c), skills is the right pick.
87. (d) Even when the two patients have the same diagnosis, success may be measured differently is correctly expressed. Option (d) is the only right choice.
88. (d) and anyone who has been hospitalized knows that management has thus far been unequal to the scope of task. Anyone will take singular verb.
89. (a) The workers, managers, consultants, and scholars who crack this nut--- is correctly expressed because the relative pronoun 'who' best fits in the context of the sentence.
90. (a) and institutions just as profoundly as Drucker, Deming, and Ohno did is the correct comparison.
91. (c) 'The need to set up a good library in the locality has been in the minds of the people' is correct. Therefore option (c) requires an article-the, otherwise the expression is not correct.
92. (d) Most people would have attended the union meeting if they had had a longer notice of it. Therefore option (d) is wrong and article 'a' should be used before longer.
93. (b) He took to reading the Times for better knowledge of the facts, is the correct sentence. Therefore in option (b) article 'the' will be used before the name of a newspaper, Time.
94. (a) When children have difficulty in understanding a certain mathematical process, it is often because their teachers do not understand it conceptually themselves and do not present it in a way that children can understand. Therefore option (a) difficulty will take the preposition 'in' to be correctly expressed.
95. (c) Invest in programs that ensure a healthy pregnancy, is the correct use.
96. (c) The number of scenes depicting alcohol consumption has increased dramatically over--- is the right use. Therefore the number as the subject will take a singular verb 'has', in option (c).
97. (b) The provided information is based on a single theme therefore the two parts of the sentence should be connected by conjunction 'and' not by 'but'. The conjunction 'But' is used when the flow of information is in opposite direction.
98. (a) Less is used when you're referring to something that can't be counted or doesn't have a plural, fewer is used for 'countable' and less for 'uncountable'. In the given sentence, since 'problems' are countable, 'fewer' should be used.
99. (d) Here the singular subject Singapore will take pronoun its in option (d).
100. (b) Most unique is the wrong comparative. In option (b) So, it should be 'the gown was unique'.

IBPS

PO Main Exam 2015

Held on : 31-10-2015

(Based On Memory)

Time : 2 Hrs.

REASONING ABILITY

DIRECTIONS (Qs. 1-5) : Each of the questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and _____

- Give answer (a)** If the data in statement **I alone** are sufficient to answer the questions, while the data in statement **II alone** are not sufficient to answer the question.
- Give answer (b)** If the data in statement **II alone** are sufficient to answer the question, while the data in statement **I alone** are not sufficient to answer the question.
- Given answer (c)** If the data **either** in statement **I alone** or in statement **II alone** are sufficient to answer the question.
- Give answer (d)** If the data even in both statement **I and II together** are **not** sufficient to answer the question.
- Give answer (e)** If the data in both statements **I and II together** are necessary to answer the question
- How is 'party' coded in the language ?
 - 'going to a party' is coded as 'la fa qu tu' and 'for a party' is coded as 'fa me tu'.
 - 'start the party' is coded as 'tu co ra' and 'going to start' is coded as 'qu co la'.
 - On which day of the week is Priya definitely travelling ?
 - Amita correctly remembers that Priya is travelling after Tuesday but before Saturday. Rohit correctly remembers that Priya is travelling before Friday but after Monday.
 - Priya does not travel on a Friday.
 - How is P related to A ?
 - A is the daughter of M and the sister of S.
 - K is the son of P and the husband of M.
 - Four movies are screened from Monday to Thursday, (one on each day starting on Monday and ending on Thursday) viz - Crash, Social Network, Ice Age and Notting Hill. On which day is the movie Crash screened ?
 - Social Network is screened on the last day.
 - Neither Ice Age nor Notting Hill are screened on Monday.
 - Who sits to the immediate right of Ayesha ?
 - Four friends Shradha, Tania, Vimla and Ayesha are sitting around a circular table facing the centre.

- Shardha sits second to the right of Tania. Vimla is an immediate neighbour of Shradha.

DIRECTIONS (Qs. 6-10) : Study the following information to answer the given questions

A word and number arrangement machine when given an input line of words and numbers rearranges them following a particular rule. The following is an illustration of input and rearrangement. (Single digit numbers are preceded by a zero. All other numbers are two digit numbers)

Input : Good 18 to raise 02 12 money 28 for 57 charity 09.

Step I : to good 18 raise 02 12 money 28 for charity 09 57.

Step II : to raise good 18 02 12 money for charity 09 28 57.

Step III : to raise money good 02 12 for charity 09 18 28 57.

Step IV : to raise money good 02 for charity 09 12 18 28 57.

Step V : to raise money good for charity 02 09 12 18 28 57.

Step V : is the last Step of the arrangement of the above input as the intended arrangement is obtained.

DIRECTIONS (Qs. 6-7) : These questions are based on the following input:

Input : always 19 give 21 84 for 62 14 worthy cause

- Which of the following would be step III for the above input ?
 - worthy give for always 19 14 cause 84 62 21.
 - worthy give for always 14 19 cause 21 62 84.
 - always give for worthy 19 14 cause 21 62 84.
 - worthy give for always 19 14 cause 21 62 84.
 - always give for cause 19 14 worthy 21 62 84.
- How many steps would be needed to complete the arrangement for the above input ?
 - VI
 - V
 - IV
 - VII
 - None of these

DIRECTIONS (Qs. 8-10) : These questions are based on the following input :

Input : 50 62 tips on 67 how can 42 stay young 17 89 forever 03.

8. The following stands for which step of the arrangement ?
young tips stay 50 on how can 42 17 forever 03 62 67 89.
(a) Step III (b) Step V
(c) Step VI (d) Step IV
(e) None of these
9. Which of the words/numbers below would be at the fifth position (from the right end) in Step V of the input ?
(a) forever (b) 42
(c) 50 (d) young
(e) None of these
10. Which of the following would be the last step for the input?
(a) young tips stay on how forever can 03 17 42 50 62 67 89.
(b) young tips stay on how forever can 89 67 62 50 42 17 03.
(c) can forever how on stay tips forever 89 67 62 50 42 17 03.
(d) young tips stay on how forever can 03 17 42 50 67 62 89.
(e) can forever how on stay tips young 03 17 42 50 62 67 89.

DIRECTIONS (Qs. 11-13) : Read the following information carefully and answer the questions that follow.

Ruling governments in the west are being punished by the voters for ever rising unemployment rates. Their parliament is abuzz with campaigns, marked by criticism of India as an outsourcing hub. India is seen by many in the west as a land of call centres and back offices with cheap labour that cost people in the west, their jobs.

11. Which of the following statements would **weaken** the argument given in the passage ?
(a) Outsourced jobs do not require highly skilled and qualified employees.
(b) Nearly 34% of the unemployed people would secure jobs in the west if outsourced jobs were in sourced by their organisations
(c) After suffering heavy losses in the elections the governments in the west are expected to change their decision on outsourcing to India.
(d) Outsourcing, a dynamic, two-way relationship has created jobs and growth in India as well as the west.
(e) Although outsourcing to India allowed many companies in west to focus on their core operations, they heavily compromised the quality and the standards of their back office jobs.
12. Which of the following can be a **possible repercussion** of the opposition to outsourcing in the west ?
(a) Jobs which are currently outsourced to India would be transferred to another country which in all probability would be China.
(b) Call centres and back offices employees in India would expect a salary at par with their western counterparts.
(c) In-sourcing of jobs by the west would render thousands of Indians unemployed.
(d) If in-sourced in the west itself, the companies would not be able to employ professionals and experts of same quality as available in India.
(e) The western companies which earlier outsourced to India would benefit financially as offices would not have to be set overseas.
13. Which of the following can be **inferred**? (An inference is something which is not directly stated but can be inferred from the given facts)
(a) Unemployment in India is not as severe a problem as that in the west
(b) Employees working in the back offices and call centres in the west earn much more than their counterparts in India
(c) Developing countries such as China and India do not outsource their back office jobs at all to other countries
(d) Countries which do not outsource jobs do not face the problem of unemployment
(5) One of the main reasons for high unemployment rate in India is its clean of call centres and back offices which undertake outsourced work from the west

DIRECTIONS (Qs. 14-19) : Read the following information carefully and answer the questions that follow.

(K, L, M, P, Q, R, S and T are sitting around a square table in such a way that four of them sit at four corners of the square while four sit in the middle of each of the four sides. The ones who sit at the four corners face outside while those who sit in the middle of the sides face the centre of the table.)

P sits third to the right of S. S faces the centre. Q sits third to the left of M. M does not sit in the middle of the sides. Only one person sits between Q and R. R is not an immediate neighbour of M. T faces the centre. K is not an immediate neighbour of R.

14. What is position of M with respect to L ?
(a) Third to the right
(b) M and L sit diagonally opposite to each other
(c) Second to the right.
(d) Second to the left
(e) Fifth to the right
15. Who sits exactly between Q and R ?
(a) T (b) P
(c) K (d) M
(e) S and K
16. Which of the following pairs represents the persons seated in the middle of the sides who face each other ?
(a) S, Q (b) K, L
(c) M, P (d) R, T
(e) T, Q
17. Who amongst the following sits between R and K when counted in anti-clockwise direction from K ?
(a) No one sits between R and K as R and K are immediate neighbours of each other
(b) S, P and
(c) P and Q
(d) L and R
(e) M, S and T
18. If K is made to face the opposite direction, who would sit to his immediate right ?
(a) R (b) Q
(c) P (d) T
(e) S

19. Four of the following five are alike in a certain way and so form a group. Which is the one that **does not** belong to that group ?
- (a) L (b) M
(c) K (d) P
(e) R

DIRECTIONS (Qs. 20-23) : Read the following information and five statements given below it carefully and answer the questions which follow.

- Exodus from rural areas to the urban hubs in search of job opportunities has now declined to nearly twenty-six percent of what it was at the turn of 21st century.
- (A) Since the last decade, the rural economy has transformed itself into a bankable, profit making and commercially viable venture.
- (B) Job opportunities differ in urban and rural areas
- (C) The load on infrastructure and resources in the urban areas which had remained unmanageable for a long time has been eased a little since the last decade.
- (D) This trend of reverse migration which was seen only in developed countries till now has entered the scenes of developing nations as well
- (E) According to a recent report more than eighty percent of the professionals having roots in rural areas prefer to work in urban cities rather than their home villages.
20. Which of the statements numbered (A), (B), (C), (D) and (E) mentioned above represents an **effect** of the given information most appropriately ?
- (a) B (b) C
(c) D (d) C
(e) Either D or E
21. Which of the statements numbered (A), (B), (C), (D) and (E) mentioned above represents a **cause** of the given information most appropriately ?
- (a) E (b) D
(c) C (d) B
(e) A
22. Which of the statements numbered (A), (B), (C), (D) and (E) mentioned above represents an **assumption** most appropriately ? (An assumption is something supposed or taken for granted)
- (a) A (b) B
(c) C (d) Both A and C
(e) D
23. Which of the statements numbered (A), (B), (C), (D) and (E) mentioned above would **weaken / contradict** the facts presented in the paragraph ?
- (a) A (b) B
(c) C (d) D
(e) E

DIRECTIONS (Qs. 24) : Question below is followed by three arguments numbered I, II and III. You have to decide which of the argument(s) is/are "strong" and indicate your answer accordingly.

24. Should the Government restrict use of electricity for each household depending upon the requirement?

Arguments :

- I. Yes, this will help government tide over the problem of inadequate generation of electricity.
- II. No, every citizen has right to consume electricity as per their requirement as they pay for using electricity.
- III. No, the Government does not have the machinery to put such a restriction on use of electricity.
- (a) Only I is strong
(b) Only II is strong
(c) Only I and II are strong
(d) Only II and III are strong
(e) All I, II and III are strong
25. **Statement :** Many patients suffering from malaria were administered anti-malarial drug for a week. Some of them did not respond to the traditional drug and their condition deteriorated after four days.
- Which of the following would **weaken** the findings mentioned in the above statement?
- (a) Those patients who responded to the traditional drugs and recovered were needed to be given additional doses as they reported relapse of symptoms.
(b) The mosquitoes carrying malaria are found to be resistant to traditional malarial drugs.
(c) Majority of the patients suffering from malaria responded well to the traditional malarial drugs and recovered from the illness.
(d) Many drug companies have stopped manufacturing traditional malarial drugs.
(e) None of these
26. **Statement :** The cost of manufacturing cars in state A is thirty per cent less than the cost of manufacturing cars in state B. Even after transportation fee for the differential distances of states A and B and the interstate taxes, it is cheaper to manufacture cars in state B than state A for selling these cars in State C.
- Which of the following **supports** the conclusion drawn in the above statement?
- (a) The cost of transportation from state A to state C is more than thirty per cent of the production cost.
(b) The production costs of cars in state B are lower in comparison to state A.
(c) Only Entry tax at state C is more for the products originated in state A
(d) Entry tax at state C is more for the products originated in state B
(e) The total of transportation cost of cars from state B to state C and entry tax of cars at state C is less than thirty per cent of the production cost of cars in state B.
27. **Statement :** Many people are of the opinion that use of cell phones in offices for personal use should totally be banned. It has been found in a research study that there was significant drop in output of employees in the organisation where use of cell phones was liberally allowed vis-a-vis those organizations where use of cell phones are banned for making personal calls.
- Which of the following **contradicts** the findings in the above statement?

- (a) People spend more time on talking while using cell phone for personal calls.
- (b) Use of cell phones has become common in all the organizations.
- (c) In the organization where employees were allowed to use cell phones for making personal calls the employees are found to be more motivated to carry out their duties than those working in other organizations.
- (d) Many organizations who provide cell phones to their employees for making official calls advise them to refrain from making personal calls during office hours
- (e) None of these
28. **Statement :** Some of the country's largest food beverage and pharma companies may be forced to import sugar directly as the government plans to improve stock limits on industrial consumers to ease the shortage in grocery shops and cool down prices that are at a 28 month high. Which of the following **substantiates** the views expressed in the above statement?
- (a) Food, beverage and pharma companies were not allowed in the past to import sugar.
- (b) Sugar prices have been fluctuating for the past seven months.
- (c) Government does not have authority to restrict purchase of sugar from the open market.
- (d) Import of sugar for commercial use will help lowering down the sugar price in the retail market.
- (e) None of these

DIRECTIONS (Qs. 29-33) : In each of the questions below are given three statements followed by four conclusions numbered I, II, III and IV. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

29. **Statement:**
Some boxes are trees.
Some trees are horses.
All horses are fruits.
- Conclusions:**
- I. Some fruits are boxes.
II. Some fruits are trees.
III. Some horses are boxes.
IV. No fruit is box
- (a) None follows
(b) Only either II or IV follows
(c) Only either I or IV and II follow
(d) Only either I or III and IV follow
(e) None of these
30. **Statement:**
All flowers are buses.
Some buses are cats.
All cats are tigers.
- Conclusions:**
- I. Some tigers are buses.
II. Some tigers are flowers.

- III. Some cats are flowers.
IV. Some buses are tigers.
- (a) None follows
(b) Only I and II follow
(c) Only III and IV follow
(d) Only I and IV follow
(e) Only II and III follow
31. **Statements :**
All fans are rooms.
No room is green.
Some windows are green.
- Conclusions :**
- I. Some windows are fans.
II. Some windows are rooms.
III. Some fans are green.
IV. No green is fan.
- (a) Only I follows
(b) Only III follows
(c) Only IV follows
(d) Only II and IV follow
(e) All follow
32. **Statement:**
Some tablets are rains.
All dogs are rains.
All rains are chairs.
- Conclusion:**
- I. Some chairs are tablets.
II. All dogs are chairs.
III. Some tablets are dogs.
IV. Some tablets are chairs.
- (a) All follow
(b) Only I, II and III follow
(c) Only II, III and IV follow
(d) Only III and IV follow
(e) None of these
33. **Statement:**
No man is sky.
No sky is road.
Some men are roads.
- Conclusions:**
- I. No road is man.
II. No road is sky.
III. Some skies are men.
IV. All roads are men.
- (a) None follows
(b) Only I follows
(c) Only I and III follow
(d) Only II and III follow
(e) None of these

DIRECTIONS (Qs. 34 -38) : Study the following information carefully to answer these questions.

Seven students Ashwin, Devika, Baljit, Chandrakant, Urmila, Nagesh and Pranjali have taken admissions for MBA with specialization in HR or Finance or Marketing. Each one has got admission in different institutes M, J, K, L, R, T, F not necessarily in the same order. At least two have opted for each of the specializations.

Devika has opted for Marketing but not in Institute J or T. Chandrakant has taken admission for HR in Institute K. The one who studies in Institute F does not study Finance. Nagesh studies the same specialization as that of Devika in Institute R. Ashwin does not study in Institute L or T. Baljit studies HR in Institute J. Pranjali studies in Institute F and does not study marketing.

34. Which of the following combinations of institute and specialization is true for Urmila ?
 (a) L - Finance (b) L - Marketing
 (c) T - Marketing (d) T - Finance
 (e) None of these
35. Devika studies in which institute ?
 (a) L (b) T
 (c) F (d) M
 (e) None of these
36. Which of the following groups represents the students studying HR ?
 (a) Baljit and Chandrakant
 (b) Baljit, Chandrakant and Pranjali
 (c) Ashwin, Baljit and Chandrakant
 (d) Urmila and Chandrakant
 (e) None of these
37. Which of the following combinations of institute, student and specialization is correct ?
 (a) R - N - HR
 (b) T - N - Marketing
 (c) L - B - HR
 (d) M - D - Marketing
 (e) None of these
38. What is the specialization of Ashwin ?
 (a) Marketing
 (b) HR
 (c) Finance
 (d) Marketing or HR
 (e) Finance or Marketing

DIRECTIONS (Qs. 39-43) : Study the following information carefully and answer the questions given below :

A, B, C, D, E, F and G are seven persons who travel to office everyday by a particular train which stops at five stations-I, II, III, IV and V respectively after it leaves base station. Three among them get in the train at the base station. D gets down at the next station at which F gets down. B does not get down either with A or E. G alone gets in at station III and gets down with C after one station. A travels between only two stations and gets down at station V. None of them gets in at station II. C gets in with F but does not get in with either B or D. E gets in with two others and gets down alone after D, B and D work in the same office and they get down together at station III. None of them gets down at station I.

39. At which station does E get down ?
 (a) II (b) III
 (c) IV (d) Data inadequate
 (e) None of these
40. At which station do C and F get in ?
 (a) I (b) II
 (c) III (d) Data inadequate
 (e) None of these
41. At which of the following stations do B and D get in ?

- (a) I (b) Base station
 (c) III (d) Data inadequate
 (e) None of these
42. After how many stations does E get down?
 (a) One (b) Two
 (c) Three (d) Four
 (e) Five
43. E gets down after how many stations at which F gets down?
 (a) Next station (b) Two
 (c) Three (d) Four
 (e) None of these

DIRECTIONS (Qs. 44-46) : Study the following arrangement and answer the questions given below :

- R 4 T M 7 W % J 9 5 I # 1 P B 2 T A 3 D \$ 6 E N F 8 U H @
44. Which of the following is sixth to the right of the fourteenth from the right end ?
 (a) 5 (b) 6
 (c) I (d) \$
 (e) None of these
45. How many such consonants are there in the above arrangement, each of which is immediately followed by a symbol but not immediately preceded by another consonant ?
 (a) None (b) One
 (c) Two (d) Three
 (e) None of these
46. Which of the following is the eighth to the left of the sixteenth from the left end ?
 (a) J (b) E
 (c) % (d) 6
 (e) None of these
47. Consider the following sentences :
 "Now-a-days the FMCG companies woo their customers or buyers by selling their goods or products in small sachets. This has increased the sale of the product".
 Which of the following may be the appropriate reason for the given facts ?
 (a) People generally want to buy any products in small quantity
 (b) FMCG companies save cost of packaging and so their profit is maximised
 (c) It is easy to store any products in sachets so buyer prefer them
 (d) It is possible to assess the quality of products without wasting much money when a sachets is bought
 (e) Generally people consume the whole quality of product contained in the sachets at once and so people buy a large number of sachets at one time.

DIRECTIONS (Qs. 48-50) : Study the following information carefully to answer the given questions

Seven persons – A, B, C, D, K, L and N – are seated in a straight line facing north in ascending order of their salaries. N earns more than L and D. N earns more than A but he does not earn the highest. A earns more than L. The person who earns the second highest receives a salary of ₹ 35,000 while the third lowest

earner receives ₹ 23,000. K earns less than L but more than D. C earns ₹ 18,000.

48. Who among the following earn(s) more than ₹ 23,000 but less than ₹ 35,000 ?
 (a) Only A (b) Only L
 (c) A and L (d) K and L
 (e) A and N
49. Who among the following may earn ₹ 21,000 ?
 (a) K (b) D
 (c) L (d) C
 (e) N
50. Who among the following earns more than K but less than A ?
 (a) C (b) N
 (c) D (d) L
 (e) B

QUANTITATIVE APTITUDE

DIRECTIONS (Qs. 51-55) : In these questions, a question is given followed by information in three statements. You have to consider the information in all the three statements and decide the information in which of the statement(s) is not necessarily required to answer the question and therefore can be dispensed with. Indicate your answer accordingly.

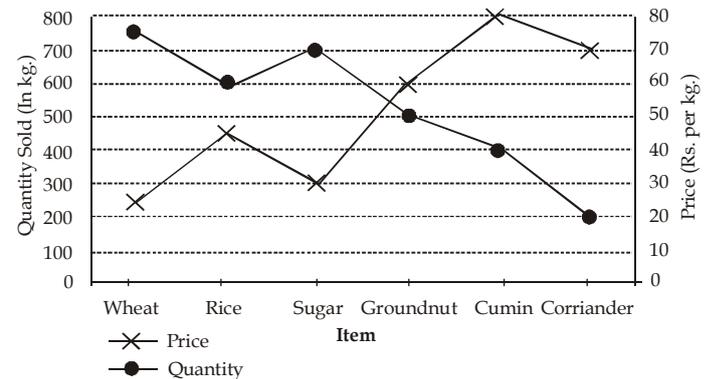
51. How many students from Institute 'A' got placement?
 I. Number of students studying in Institutes A & B are in the ratio of 3 : 4 respectively.
 II. Number of students who got placement from Institute B is 120% of the number of students who got placement from Institute A.
 III. 80% of the students studying in Institute B got placement.
 (a) None of the statements can be dispensed with
 (b) Only I
 (c) Only II
 (d) Anyone of the three
 (e) Question cannot be answered even with the information in all three statements
52. What is the monthly income of Mr. X?
 I. Mr. X spends 85% of his income on various items and remaining amount is saved.
 II. Monthly saving of Mr. X are ₹ 4,500/.
 III. Out of the total money spent by Mr. X in a month, one-fifth is spent on food and remaining amount of ₹ 20,400 on other items.
 (a) Only II
 (b) Only III
 (c) Only either II or III
 (d) Question cannot be answered even with the information in all three statements
 (e) None of these
53. What is Suchitra's present age?
 I. Suchitra's present age is double the age of her son.
 II. Ratio between present ages of Suchitra and her mother is 2 : 3 respectively.

III. Four years hence the ratio between Suchitra's age and her son's age will be 13 : 24 respectively.

- (a) Only II (b) Only III
 (c) Either I or II only (d) Either II or III only
 (e) None of these
54. What is Neeta's share in the profit earned at the end of 2 years in a joint business run by Neeta, Seeta and Geeta?
 I. Neeta invested ₹ 85,000/ to start the business.
 II. Seeta and Geeta joined Neeta's business after six months investing amounts in the ratio of 3 : 5 respectively.
 III. Total amount invested by Seeta and Geeta is ₹ 2.3 lakhs
 (a) Only II
 (b) Only III
 (c) Only either II or III
 (d) Information in all three statements is required for answering the question.
 (e) Question cannot be answered even with the information in all three statements.
55. What is the labelled price of the article?
 I. Cost price of the article is ₹ 500/.
 II. Selling price after offering 5% discount on the labelled price is ₹ 608/.
 III. Profit earned would have been 28% if no discount was offered.
 (a) Only I (b) Only III
 (c) Only II & III (d) Only I and III
 (e) Only I and II

DIRECTIONS (Qs. 56-60) : Study the following graph carefully to answer these questions.

Quantity of various Items Sold and Price Per Kg.



56. What is the average price per kg of wheat and rice sold? (rounded off to nearest integer)
 (a) 32 (b) 34
 (c) 36 (d) 35
 (e) 31
57. If cumin is sold at a 10% discount, the quantity sold doubles. What will be the cost of total quantity of cumin sold on discount?
 (a) ₹ 52,600/ (b) ₹ 28,800/
 (c) ₹ 32,000/ (d) ₹ 57,600/
 (e) None of these
58. Out of the total quantity of sugar sold, half the quantity is sold at the given rate while half the quantity is sold on a

price increased by 20%. What is the total cost of entire quantity of sugar sold?

- (a) ₹ 23,100/
- (b) ₹ 23,800/
- (c) ₹ 22,400/
- (d) ₹ 23,400/
- (e) None of these

59. If the quantities sold of Groundnut and Cumin are interchanged, what will be the total cost of quantities sold for these two items together?

- (a) ₹ 62,000/
- (b) ₹ 60000/
- (c) ₹ 65,000/
- (d) ₹ 63,000/
- (e) None of these

60. If the quantity of corriander sold is increased by 200% and the price per kg. is reduced by 8%, what will be the total cost of corriander sold?

- (a) ₹ 38,460/
- (b) ₹ 36,480/
- (c) ₹ 38,640/
- (d) ₹ 36,840/
- (e) None of these

DIRECTIONS (Qs. 61-65): Study the following information carefully to answer these questions :

For an examination consisting of three subjects-Maths, Physics and Chemistry, 280 students appeared. When the results were declared, 185 students had passed in Maths, 210 had passed in Physics and 222 had passed in Chemistry.

All those except 5 students who passed in Maths, passed in Physics.

All those except 10 students who passed in Maths, passed in Chemistry.

47 students failed in all the three subjects.

200 students who passed in Physics also passed in Chemistry.

61. How many students passed in Chemistry only ?

- (a) 18
- (b) 21
- (c) 25
- (d) 29
- (e) None of these

62. How many students passed in all the three subjects ?

- (a) 185
- (b) 175
- (c) 170
- (d) 171
- (e) Cannot be determined

63. How many students failed in Physics and Maths ?

- (a) 65
- (b) 18
- (c) 58
- (d) 47
- (e) Cannot be determined

64. How many students passed in Maths but failed in both Physics and Chemistry ?

- (a) 5
- (b) 10
- (c) 15
- (d) 1
- (e) Cannot be determined

65. A student has to pass in at least two subjects to get promoted. How many students get promoted ?

- (a) 180
- (b) 213
- (c) 200
- (d) 185
- (e) Cannot be determined

DIRECTIONS (Qs. 66-70): Study the following Table carefully

and answer the question given below :

MARKS OBTAINED BY DIFFERENT STUDENTS IN DIFFERENT SUBJECTS

Students	SUBJECTS (Maximum Marks)						
	Hindi (100)	English (100)	Maths (100)	S.St. (100)	Science (75)	Sanskrit (50)	Phy. Edu (75)
Anupama	85	95	87	87	65	35	71
Bhaskar	72	97	55	77	62	41	64
Charu	64	78	74	63	55	25	53
Deepak	65	62	69	81	70	40	50
Garima	92	82	81	79	49	30	61
Vishal	55	70	65	69	44	28	30

66. How many students have scored the lowest marks in two or more subjects ?

- (a) 2
- (b) 3
- (c) 1
- (d) 0
- (e) 4

67. Who has scored the highest marks in all the subjects together ?

- (a) Deepak
- (b) Charu
- (c) Anupama
- (d) Garima
- (e) Bhaskar

68. What is the percentage of Deepak's marks (upto two digits after decimal) in all the subjects together ?

- (a) 88.63
- (b) 77.38
- (c) 67.83
- (d) 62.83
- (e) 72.83

69. Marks obtained by Charu in Hindi are what percent of marks (upto two digits after decimal) obtained by Anupama in the same subject ?

- (a) 75.92
- (b) 78.38
- (c) 77.29
- (d) 75.29
- (e) 72.83

70. What are the average marks obtained by all the students together in Science ?

- (a) 55.75
- (b) 57.5
- (c) 60
- (d) 59.5
- (e) 58

DIRECTIONS (Qs. 71-75): What should come in place of the question mark (?) in the following number series ?

71. 104 109 99 114 94 ?

- (a) 69
- (b) 124
- (c) 120
- (d) 78
- (e) None of these

72. 980 392 156.8 ? 25.088 10.0352

- (a) 65.04
- (b) 60.28
- (c) 62.72
- (d) 63.85
- (e) None of these

73. 14 16 35 109 441 ?

- (a) 2651
- (b) 2205
- (c) 2315
- (d) 2211
- (e) None of these

74. 1331 2197 4913 6859 ? 24389

- (a) 12167 (b) 13824
 (c) 9261 (d) 15625
 (e) None of these
- 75.. 3600 725 150 35 12 ?
 (a) 8 (b) 7.4
 (c) 10.5 (d) 10
 (e) None of these
76. If the numerator of a fraction is increased by 350% and the denominator of the fraction is increased by 300% the resultant fraction is $\frac{9}{22}$. What is the original fraction ?

- (a) $\frac{3}{4}$ (b) $\frac{5}{12}$
 (c) $\frac{7}{9}$ (d) $\frac{4}{11}$
 (e) None of these

77. The length of rectangular plot is thrice its breadth. If the area of the rectangular plot is 6075 sq. metres, what is its length?

- (a) 145 metres (b) 130 metres
 (c) 75 metres (d) 45 metres
 (e) None of these

78. Ms. Sujata invests 7% i.e. ₹ 2170 of her monthly salary in mutual funds. Later she invests 18% of her monthly salary in recurring deposits also, she invests 6% of her salary on NSC's. What is the total annual amount invested by Ms. Sujata ?

- (a) ₹ 1,25,320 (b) ₹ 1,13,520
 (c) ₹ 1,35,120 (d) ₹ 1,15,320
 (e) None of these

79. In how many different ways can the letters of the word 'PRIDE' be arranged ?

- (a) 60 (b) 120
 (c) 15 (d) 360
 (e) None of these

80. The ages of Samir and Tanuj are in the ratio of 8 : 15 years respectively. After 9 years the ratio of their ages will be 11 : 18. What is the difference in years between their ages ?

- (a) 24 years (b) 20 years
 (c) 33 years (d) 21 years
 (e) None of these

DIRECTIONS (Qs. 81-85): For the two given equations I and II.

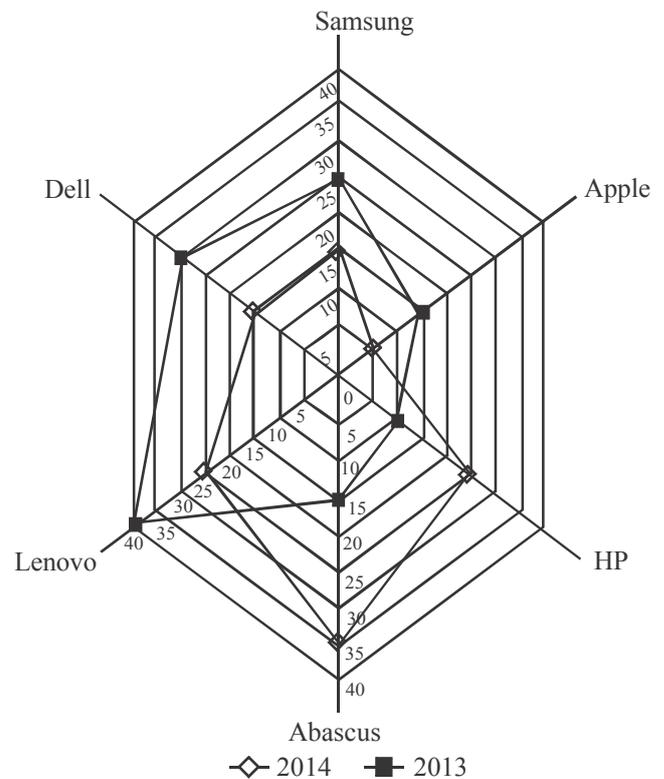
Give answer (1) if p is greater than q.
Give answer (2) if p is smaller than q.
Give answer (3) if p is equal q.
Give answer (4) if p is either equal to or greater than q.
Give answer (5) if p is either equal or smaller than q.

81. I. $p^2 + 5p + 6 = 0$
 II. $q^2 + 3q + 2 = 0$
 82. I. $p^2 = 4$
 II. $q^2 + 4q = -4$
 83. I. $p^2 + p = 56$
 II. $q^2 - 17q + 72 = 0$
 84. I. $3p + 2q - 58 = 0$

- II. $4q + 4p = 92$
 85. I. $3p^2 + 17p + 10 = 0$
 II. $10q^2 + 9q + 2 = 0$

DIRECTIONS (Qs.86-90): In the following graph the number of laptops manufactured by six different companies in the years 2013 and 2014 has been given. Read the graph carefully and answer the questions.

**Number of laptops (in thousands)
 manufactured by 6 different companies**



86. The respective ratio between the number of laptops manufactured by Lenovo in 2013 and that by Abascus in 2014 is
 (a) 8 : 7 (b) 7 : 8
 (c) 3 : 5 (d) 5 : 3
 (e) None of these
87. What is the average number of laptops (in thousands) manufactured by all companies taken together in 2013 ?
 (a) 22 (b) 22.5
 (c) 32.5 (d) 23.5
 (e) 27.5
88. What is the percentage increase in production of laptops by HP in 2014 in comparison to that in 2013 ?
 (a) 125 (b) 100
 (c) 150 (d) 250
 (e) None of these
89. The difference between the number of laptops manufactured by Apple, Lenovo and Samsung in 2013 and that by Dell, HP and Abascus in 2014 is

- (a) 5500 (b) 4550
(c) 3550 (d) 4500
(e) 5000
90. In 2014, which company manufactured the maximum number of laptops?
(a) Abascus (b) Lenovo
(c) Dell (d) Samsung
(e) HP

DIRECTIONS (Qs. 91-95): What value will come in place of the question mark (?) in the following questions.

91. $7072 \div (16\% \text{ of } 884) = 30 \times 1\frac{1}{12} \text{ of } (? \div 39)$
(a) 60 (b) 62
(c) 65 (d) 55
(e) 67
92. $(562.5 \times 6)^6 \div (135 \div 9)^{10} \div (37.5 \times 6)^7 = (3.75 \times 4)^{2-6}$
(a) 0 (b) 2
(c) 3 (d) 4
(e) 5
93. $1478.4 \div 56 + 66.8 \times 57 = (? \times 3) + (34 \times 34.5)$
(a) 785 (b) 887
(c) 889 (d) 989
(e) 885
94. $(13 + 2\sqrt{5})^2 = ?\sqrt{5} + 189$
(a) 26 (b) 25
(c) 52 (d) 130
(e) None of these
95. $0.2 \times 1.1 + 0.6 \times 0.009 = ? - 313.06$
(a) 353.2184 (b) 353.2854
(c) 331.54 (d) 313.2854
(e) 331.2854
96. Sujata scored 2240 marks in an examination that is 128 marks more than the minimum passing percentage of 64%. What is the percentage of marks obtained by Meena if she scores 907 marks less than Sujata?
(a) 35 (b) 40
(c) 45 (d) 36
(e) 48
97. There are 8 brown balls, 4 orange balls and 5 black balls in a bag. Five balls are chosen at random. What is the probability of their being 2 brown balls, 1 orange ball and 2 black balls?
(a) $\frac{191}{1547}$ (b) $\frac{180}{1547}$
(c) $\frac{280}{1547}$ (d) $\frac{189}{1547}$
(e) None of these
98. The ratio of the salaries of A and B is 8 : 9. If A's salary is increased by 50% and B's salary is reduced by 25%, their ratio becomes 16 : 9. What is the salary of A ?
(a) ₹ 22000 (b) ₹ 28500
(c) ₹ 37000 (d) Cannot be determined
(e) None of these

99. If tax on a commodity is reduced by 10%, total revenue remains unchanged. What is the percentage increase in its consumption?

- (a) $11\frac{1}{9}\%$ (b) 20%
(c) 10% (d) $9\frac{1}{11}\%$
(e) None of these

100. The denominators of two fractions are 5 and 7 respectively.

The sum of these fractions is $\frac{41}{35}$. On interchanging the

numerators, their sum becomes $\frac{43}{35}$. The fractions are

- (a) $\frac{2}{5}$ and $\frac{4}{7}$ (b) $\frac{3}{5}$ and $\frac{4}{7}$
(c) $\frac{4}{5}$ and $\frac{2}{7}$ (d) $\frac{3}{5}$ and $\frac{5}{7}$
(e) None of these

ENGLISH LANGUAGE

DIRECTIONS (Qs. 101-115): Read the following passage based on an Interview to answer the given questions based on it. Certain words are printed in **bold** to help you locate them while answering some of the questions.

A spate of farmer suicides linked to harassment by recovery agents employed by Micro Finance Institutions (MFIs) in Andhra Pradesh **spurred** the state government to bring in regulation to protect consumer interests. But, while the Bill has brought into sharp focus the need for consumer protection, it tries to micro-manage MFI operations and in the process it could **scuttle** some of the crucial benefits that MFIs bring to farmers, says the author of Microfinance India, State of the Sector Report 2010. In an interview he points out that prudent regulation can ensure the original goal of the MFIs—social uplift of the poor.

Do you feel the AP Bill to regulate MFIs is well thought out? Does it ensure fairness to the borrowers and the long-term health of the sector?

The AP bill has brought into sharp focus the need for customer protection in four critical areas First is pricing. Second is tender's liability — whether the Lender can give too much loan without assessing the customer's ability to pay. Third is the structure of loan repayment — whether you can ask money on a weekly basis from people who don't produce weekly incomes. Fourth is the practices that attend to how you deal with defaults.

But the Act should have looked at the positive benefits that institutions could bring in, and where they need to be regulated in the interests of the customers. It should have brought only those features in.

Say, you want the recovery practices to be consistent with what the customer can really **manage**. If the customer is aggrieved and complains that somebody is harassing him, then those complaints should be investigated by the District Rural Development Authority.

Instead what the Bill says is that MFIs cannot go to the customer's premises to ask for recovery and that all transactions will be done in the Panchayat office. With great difficulty, MFIs brought services to the door of people. It is such a relief for the customers not to be spending time out going to banks or Panchayat offices, which could be 10 km away in some cases. A facility which has brought some relief to people is being shut. Moreover, you are practically telling the MFI where it should do business and how it should do it.

Social responsibilities were in-built when the MFIs were first conceived. If MFIs go for profit with loose regulations, how are they different from moneylenders?

Even among moneylenders there are very good people who take care of the customer's circumstance, and there are really bad ones. A large number of the MFIs are good and there are some who are **coercive** because of the kind of prices and processes they have adopted. But Moneylenders never got this organised. They did not have such a large footprint. An MFI brought in organisations, it mobilized the equity, it brought in commercial funding. It invested in systems. It appointed a large number of people. But some of them **exact**ed a much higher price than they should have. They wanted to break even very fast and greed did take over in some cases.

Are the for-profit MFIs the only ones harassing people for recoveries ?

Some not-for-profit outfits have also adopted the same kind of recovery methods. That may be because you have to show that you are very efficient in your recovery methods and that your portfolio is of a very high quality if you want to get commercial funding from a bank.

In fact, among for-profits there are many who have sensible recovery practices. Some have fortnightly recovery, some have monthly recovery. So we have differing practices. We just describe a few dominant ones and assume every for-profit MFI operates like that.

How can you introduce regulations to ensure social upliftment in a sector that is moving towards for-profit models ?

I am not really concerned whether someone wants to make a profit or not. The bottom-line for me is customer protection. The first area is fair practices. Are you telling your customers how the loan is structured ? Are you being transparent about your performance ? There should also be a lender's liability attached to what you do. Suppose you lend excessively to a customer without assessing their ability to service the loan, you have to take the hit.

Then there's the question of limiting returns. You can say that an MFI cannot have a return on assets more than X, a return on equity of more than Y. Then suppose there is a privately promoted MFI, there should be a regulation to ensure the MFI cannot access equity markets till a

certain amount of time. MFIs went to markets perhaps because of the need to grow too big too fast. The government thought they were making profit off the poor, and that's an indirect reasons why they decided to clamp down on MFIs. If you say an MFI won't go to capital market, then it will keep political compulsions **under rein**.

101. Which of the following best explains 'Structure of loan repayment' in the context of the first question asked to the author ?
 - (a) Higher interest rate
 - (b) Payment on weekly basis
 - (c) Giving loan without assessing ability to pay
 - (d) Method of dealing with defaults
 - (e) Total amount of loan
102. The author is of the view that _____.
 - (a) the bill to regulate MFIs is not needed
 - (b) the bill neglects the interests of the customers
 - (c) the positive aspects of MFIs should also be considered.
 - (d) most of the MFIs are not good.
 - (e) MFIs must be told what and where they should do business
103. One of the distinct positive feature of MFIs is that _____.
 - (a) they brought services to the door of people
 - (b) they dealt with defaulters very firmly
 - (c) they provided adequate customer protection
 - (d) they are governed by the local people
 - (e) they have highly flexible repayment plan
104. What is the difference between MFIs and moneylenders ?
 - (a) There is no difference.
 - (b) A large number of money lenders are good whereas only a few MFIs are good
 - (c) Money lenders gave credit at lower rate of interest than that of MFIs
 - (d) MFIs adopted a structure and put a process in place, which was not the case with moneylenders
 - (e) Moneylender appointed large number of local people as against more outside people in MFIs
105. Which of the following is positive outcome of the AP Bill to regulate MFIs ?
 - (a) The banks have started this service in remote areas
 - (b) It highlighted some areas of customer protection
 - (c) It highlighted the bad practices being followed by moneylenders
 - (d) MFIs is invested in systems and broguth in commercial funding.
 - (e) It will help convert MFIs into small banks
106. The author is recommending _____.
 - (a) Not-for profit MFIs
 - (b) For-profit MFIs
 - (c) Stoppage of commercial funding to MFIs
 - (d) Customer satisfaction irrespective of 'Not-for profit' or 'for profit' MFIs
 - (e) Public sector promoted MFIs
107. Why did MFIs go to the equity markers ?
 - (a) To repay the loan
 - (b) To lower interest rate
 - (c) There were political compulsions
 - (d) To become a public sector institution
 - (e) To grow very fast

108. Which of the following has **not** been indicated as one of the features of air practices for customer protection ?
- Providing information about loan structuring.
 - MFIs should also be held liable for some of their actions
 - Not to raise money from capital market
 - MFIs should also inform public about their own performance also
 - To provide credit as per the rational assessment of their ability to service the loan
109. Which of the following could possibly be most plausible reason for banning recovery by going to customer's premises ?
- To protect the family members
 - To protect the customer from harassment and coercion
 - To reduce the undue expenses of MFIs is resulting in lower interest rates.
 - To account systematically the money recovered in the books of accounts
 - To keep Panchayat office out of these transactions

DIRECTIONS (Qs. 110-113) : Choose the word which is **most nearly the same in meaning as the word/group of words printed in bold.**

110. **manage**
- | | |
|------------|----------------|
| (a) afford | (b) assess |
| (c) thrust | (d) administer |
| (e) use | |
111. **exacted**
- | | |
|---------------|---------------|
| (a) perfected | (b) demanded |
| (c) estimated | (d) corrected |
| (e) accurate | |
112. **scuttle**
- | | |
|--------------|-------------|
| (a) delay | (b) mix |
| (c) shuffle | (d) destroy |
| (e) smoothen | |
113. **spurred**
- | | |
|---------------|-----------------|
| (a) agitated | (b) instigated |
| (c) reflected | (d) disapproved |
| (e) prompted | |

DIRECTIONS (Qs. 114-115) : Choose the word or group of words which is most **opposite** in meaning of the word printed in **bold.**

114. **under rein**
- under wrap
 - without target
 - let loose
 - no cloud
 - under cloud
115. **coercive**
- | | |
|-----------------|---------------|
| (a) gentle | (b) promoting |
| (c) progressive | (d) natural |
| (e) opinionated | |

DIRECTIONS (Qs. 116-120) : Rearrange the following six sentences (A), (B), (C), (D), (E) and (F) in the proper sequence

to form a meaningful paragraph; then answer the questions given below them.

- There are a number of item in the atomic energy programme which are being made indigenously.
 - Given the overall energy situation in India, the use of nuclear power in some measure is inescapable even while thermal and hydro power continue to be the dominant elements.
 - However, commercial aspects of exploiting nuclear capabilities, especially for power-generation programmes, have been recently given high priority.
 - Atomic energy programmes have been subject to severe restrictions for every obvious reason as the Department of Atomic energy is becoming self-reliant in areas in which only a few countrices have such capability.
 - Even to meet these nuclear power requirements, India critically requires a commercia level power-generation capability, with its commensurate safety and nuclear waste management arrangements.
 - Thus, in Indian context energy security is also crucial, perhaps much more than it is for the U.S.A.. because India imports a good part of its crude oil requirements, paying for it with precious foreign exchange.
116. Which of the following will be the FIFTH sentence after rearrangement ?
- | | |
|---------|---------|
| (a) (A) | (b) (B) |
| (c) (C) | (d) (D) |
| (e) (E) | |
117. Which of the following will be the THIRD sentence after rearrangement ?
- | | |
|---------|---------|
| (a) (A) | (b) (B) |
| (c) (C) | (d) (D) |
| (e) (E) | |
118. Which of the following will be the SECOND sentence after rearrangement ?
- | | |
|---------|---------|
| (a) (A) | (b) (B) |
| (c) (C) | (d) (D) |
| (e) (E) | |
119. Which of the following will be the FIRST sentence after rearrangement ?
- | | |
|---------|---------|
| (a) (A) | (b) (B) |
| (c) (C) | (d) (D) |
| (e) (E) | |
120. Which of the following will be the FOURTH sentence after rearrangement ?
- | | |
|---------|---------|
| (a) (A) | (b) (B) |
| (c) (C) | (d) (D) |
| (e) (E) | |

DIRECTIONS (Qs. 121-125) : In each question below, two sentences or parts of sentences are given with two blank spaces (____) (____) between them. From among the three parts / sentences denoted by (A), (B) and (C) given below each, find out which two can fill up the blanks in proper sequence

(i.e. the order in which these are given in the answer options) to make the sentence/ group of sentences meaningfully complete.

121. Four years ago, I had a major surgery. (____) . (____) .
I was too ill.
(A) It left me disabled.
(B) My attempts to go back to work could not succeed.
(C) I had fully recovered except for some minor weakness.
(a) (B) and (A) only (b) (C) and (A) only
(c) (B) and (C) only (d) (A) and (B) only
(e) (A) and (C) only
122. Based on scientific research, scientists conclude that (____) (____), they will live even more than a hundred years.
(A) keep themselves active all through
(B) exercise more, ensure proper vitamin intake,
(C) human species, if regulate their diet,
(a) Only (A) and (B) (b) Only (A) and (C)
(c) Only (C) and (A) (d) Only (C) and (B)
(e) Either C and (A) or (C) and (B)
123. The Central Government's plans to (____) (____) despite the fact that the opposition parties' united front had mobilized support of general public at the outskirts of Mumbai.
(A) defy the curfew imposed to prevent the proposed rally from protesting against the hike in petrol prices
(B) curb the rally called for by the opposition succeeded due to ruling party's announcement to
(C) cancel all the trains entering Mumbai,
(a) (A) and (B) only (b) (B) and (A) only
(c) (B) and (C) only (d) (A) and (C) only
(e) Either (B) and (C) or (A) and (C)
124. The economic gloom was exacerbated yesterday by Greek Prime Minister's surprise announcement (____)(____), and vote might put the torturously conceived package in jeopardy.
(A) that was struck last week
(B) that he would recommend the Parliament to strike down the obnoxious deal
(C) that his country would hold a referendum on the European debt deal
(a) (C) and (A) only
(b) (B) and (A) only
(c) (A) and (C) only
(d) Either (C) and (A) or (B) and (A)
(e) None of these
125. The world's most powerful nations were warned (____) (____) and trigger mass social unrest.
(A) that could cost millions of jobs around the globe
(B) that international economy was on the brink of a deep new economic crisis
(C) that the only solution was pumping a huge amount of money in the economy
(a) (C) and (A) only (b) (B) and (A) only
(c) (B) and (C) only (d) (C) and (B) only
(e) None of these

DIRECTIONS (Qs. 126-130): Read each sentence given below and find out whether there is an error in it. The error if any will be one of the sentence which are marked as A, B, C and D. If there is no error, the answer will be (E) i.e. No error. (Ignore the errors of punctuation, if any)

126. The low learnings levels is due to the fact (a)/ that the state spends 87% of its budget (b)/ on salaries of its teachers (c)/ and not on infrastructure development for students (e)/ No error (e).
127. Recent incidents of tigers straying have brought to focus (a)/ the lack of proper regulatory mechanism and powers with the forest department (b)/ to take action against the resorts (c)/ mushroom in forest fringes (d)/ No error (e).
128. The beauty of the palace comes alive (a)/ When over a lakh bulbs (b)/ is switched on between 7pm and 7.45pm (c)/ on specific days (d)/ No error (e)
129. In view of the rising complaints (a)/ of unscrupulous financial institutes duping people with luring them (b)/ with handsome returns on their investment, the police have appealed (c)/ to the citizens to stay away from such companies (d)/ No error (e)
130. More and more cab drivers are approaching the regional transport office (RTO) (a)/ to obtain identity cards (b)/ after the transport office intensified action against errant drivers (c)/ in the last couple of months (d)/ No error (e).

DIRECTIONS (Qs. 131-135): Fill in the blank with most appropriate words from the given options.

Tibet _____ up images of a mystic land. Snow-capped mountain peaks pierce the blue sky and fierce chilly winds sweep the rolling grasslands. Maroon-robed Buddhist monks pray in remote monasteries and _____ horsemen pound the rugged earth. People in this high plateau perform punishing rituals like prostrating hundreds of miles in tattered clothes on pilgrimage. Spirits, spells and flying apparitions are part of the Tibetan world. In short, Tibet remains an exotica. Such images are largely the result of books by Western travellers and explorers in the last century, which helped in keeping the mystique alive. And when the Communist rulers took over Tibet in the 1950s and began _____ Chinese language and culture on the people, Tibet's own history started to _____ in the background. Thus, the only books available in English to Tsering Wangmo Dhompa as a young girl growing up in India and Nepal as a refugee _____ those written by Westerners, and so she came to view the country as a forbidden land, a place where fantasy and fable collaborated against a dramatic backdrop of mountains, black magic and people with strange customs and appearances.

131. (a) makes (b) conjures
(c) puts (d) toil
(e) appoints
132. (a) sturdy (b) wobbly
(c) handsome (d) herculean
(e) beautiful
133. (a) implementing (b) evading
(c) imposing (d) experimenting
(e) all of these

134. (a) amplify (b) Stretch
(c) die (d) recede
(e) increase
135. (a) are (b) have been
(c) was (d) were
(e) are

DIRECTIONS (Qs. 136-140): Read the passage carefully and answer the questions given below it. Certain words/ phrases have been given in bold to help you locate them while answering some of the questions.

Mobile technology is transforming the global banking and payment industry by providing added convenience to existing bank customers in developed markets, and by offering new services to the unbanked customers in emerging markets. While consumers and governments are keen to adopt mobile technology for government-to-person (G2P) payments, intermediaries are creating barriers as they end up losing a good source of income.

Any new product for the G2P market needs to consider the incentives and motivations of all parties involved in the current value chain. As banks, mobile network operators (MNOs), NGOs and for-profit firms build new services to seize the opportunity to reach the large unbanked population, they must take time to understand the needs of customers. Even within a country, there are distinct differences in customer needs in urban and rural areas, and across segments. This has the potential to unlock a large **untapped** market. This opportunity has attracted several new players ranging from MNOs and start-ups to companies from adjacent industries such as retail, each trying its own business model to succeed in this new world. The **influx** of so many players and services has created confusion for customers, lack of coordination among players and limited scale for a single company. History tells us that after the initial stage of confusion, the dust eventually settles down as a few winners emerge.

136. What does the author mean by 'unbanked customer'?
- (a) Not having access to the services of a bank.
(b) A person who buys goods or services from a financial institution.
(c) A customer of a specified kind with whom one has to deal.
(d) Both 2 and 3
(e) Other than given options.
137. Which of the following is possibly the most appropriate title for the passage?
- (a) Progress on banking
(b) Banking in the future
(c) Mobile banking
(d) Integration between e-commerce firms and banks
(e) Instant banking
138. Which of the following is most SIMILAR in meaning of the word given in bold as used in the passage?
UNTAPPED
- (a) Final (b) Fresh
(c) Concluding (d) Latest
(e) Last

139. Which of the following is most OPPOSITE in meaning of the word given in bold as used in the passage? **INFLUX**
- (a) Invasion (b) Enlargement
(c) Advance (d) Incline
(e) Ebb
140. Which of the following is/are true according to the passage?
- (a) With each passing day, banking is becoming narrower.
(b) Smart users today have round-the-clock access to their bank accounts and carry their back in their pockets.
(c) Only limited customers can avail all services of bank.
(d) All of the above
(e) None of these

COMPUTER KNOWLEDGE

141. When sending an e-mail, the ... line describe the contents of the message
- (a) Subject (b) To
(c) Contents (d) CC
(e) None of these
142. All the deleted files go to
- (a) Recycle bin (b) Task bar
(c) Tool bar (d) My computer
(e) None of these
143. You organise files by storing them in
- (a) Archives (b) Folders
(c) Indexes (d) Lists
(e) None of these
144. A website address is a unique name that identifies a specific ___ on the web
- (a) Web browser (b) Website
(c) PDA d) Link (e) None of these
145. _____ are specially designed computer chips that reside inside o ther devices, such as your car or your electronic thermostat
- (a) Servers (b) Embedded computers
(c) Robotic computers (d) Mainframes
(e) None of these
146. Which of the following places the common data elements in order from smallest to largest?
- (a) Byte, Bit, Character, file, record, field, database
(b) Character, record, field, file, database
(c) Character, field, record, file, database \
(d) Bit, byte, character, record, field, file, database
(e) None of these
147. A disk's content that is recorded at the time of manufacture and that cannot be changed or erased by the user is
- (a) Memory only (b) Write only
(c) Read only (d) Run only
(e) None of these
148. An error in a computer program
- (a) Crash (b) Power Failure
(c) Bug (d) Virus
(e) None of these

149. Distributed processing involves
- solving computer component problems from a different computer
 - solving computing problems by breaking them into smaller parts that are separately processed by different computers
 - allowing users to share files on a network
 - allowing users to access network resources away from the office
 - None of these
150. The operating system determines the manner in which all of the following occurs except
- user creation of a document
 - user interaction with the processor
 - printer output
 - data displayed on the monitor
 - None of these
151. Office LANs that are spread geographically apart on a large scale can be connected using a corporate
- CAN
 - LAN
 - DAN
 - WAN
 - None of these
152. You can keep your personal files/folders in
- My folder
 - My documents
 - My files
 - My text
 - None of these
153. A directory within a directory is called
- Mini Directory
 - Junior Directory
 - Part Directory
 - Sub Directory
 - None of these
154. A compiler translates a program written in a high-level language into
- Machine language
 - An algorithm
 - A debugged program
 - Java
 - None of these
155. A _____ is a unique name that you give to a file of information
- Device letter
 - Folders
 - File name
 - File name extension
 - None of these
156. Hardware includes
- all devices used to input data into a computer
 - sets of instructions that a computer runs or executes
 - the computer and all the devices connected to it that are used to input and output data
 - all devices involved in processing information including the central processing unit, memory and storage
 - None of these
157. A _____ contains specific rules and words that express the logical steps of an algorithm
- Programming language
 - Syntax error
 - Programming structure
 - Logic chart
 - None of these
158. The simultaneous processing of two or more programs by multiple processors is
- multiprogramming
 - multitasking
 - time-sharing
 - multiprocessing
 - None of these
159. The secret code that restricts entry to some programs
- Password
 - Passport
 - Entry code
 - Access code
 - None of these
160. Computers use the _____ number system to store data and perform calculations.
- Binary
 - Octal
 - Decimal
 - Hexadecimal
 - None of these

GENERAL AWARENESS

(With to special reference to Banking)

161. Which is the highest populated state of India?
- Madhya Pradesh
 - Uttar Pradesh
 - Bihar
 - Maharashtra
 - Haryana
162. Who is the head of the panel formed RBI to look into parameters for urban co-operative banks recently?
- Bimal Jalan
 - R Gandhi
 - Urijit Patel
 - YV Reddy
 - None of these
163. Which banks have been designated as Domestic Systemically Important Banks (D-SIBs)?
- ICICI & SBI
 - PNB & SBI
 - HDFC & SBI
 - ICICI & PNB
 - None of these
164. Bhakti Sharma, who is in news recently associated with which sports?
- Swimming
 - Tennis
 - Badminton
 - Volley Ball
 - None of these
165. Consider the following statements:
- Yog Guru Baba Ramdev was appointed as state brand ambassador of Haryana Government
 - It was announced by Minister of Sports and Health of Haryana, Anil Vij
 - Haryana Govt took this decision as it want to promote yoga and ayurveda in Haryana State
- Which of the above statement is/are True
- Only C
 - Both A and C
 - Both A and B
 - All A, B, C
 - None of these

166. Frank Tyson was a cricketer from which country?
 (a) New Zeland (b) England
 (c) West Indies (d) South Africa
 (e) None of these
167. What is the full form of NBFC as used in the financial sector?
 (a) New Banking Finance Company
 (b) National Banking & Finance Corporation
 (c) Non Business Fund Company
 (d) New Business Finance & Credit
 (e) None of these
168. Which of the following fund transfer mechanisms, can be moved from one bank to another and where transaction is settled instantly without being bunched with any other transaction?
 (a) RTGS (b) NEFT
 (c) TT (d) EFT
 (e) MT
169. Lima is the capital of
 (a) Brazil (b) Peru
 (c) Ecuador (d) Colombia
 (e) None of these
170. Where is Buxa National Park located?
 (a) Odisha (b) West Bengal
 (c) Madhya Pradesh (d) Bihar
 (e) Rajasthan
171. English Stephen Constantine has been appointed as the head coach of Indian men's _____ team.
 (a) Hockey (b) Cricket
 (c) Football (d) Badminton
 (e) None of these
172. Banking ombudsmen is appointed by
 (a) SBI (b) Indian Government
 (c) RBI (d) President
 (e) Prime minister
173. Which committee framed the RRB Act?
 (a) Narsimham Committee
 (b) Ashok Mehta Committee
 (c) Sachar Committee
 (d) Shah Nawaz Committee
 (e) None of these
174. Ravindra Jain who passed recently was a
 (a) Politician (b) Singer
 (c) Author (d) Music Composer
 (e) None of these
175. Base rate is the rate below which no bank can allow their lending to anyone. Who set up this base rate for banks?
 (a) Individual Banks Boards (Correct Answer)
 (b) Ministry of Commerce
 (c) Ministry of Finance
 (d) RBI
 (e) Interest Rate Commission of India
176. Where is the Head-quarter of Indian Bank?
 (a) Chennai (b) Mumbai
 (c) Delhi (d) Bengaluru
 (e) Hyderabad
177. Many a times, we read in newspaper that the RBI has revised certain rates/ratios under LAF. What is full form of LAF?
 (a) Legal Adjustment Facility
 (b) Liquidity Adjustment Facility
 (c) Longterm Achievement Facility
 (d) Legal Adjustment Formality
 (e) None of these
178. What is KVP lock period?
 (a) 36 Months (b) 48 Months
 (c) 24Months (d) 30 Months
 (e) 40 Months
179. Which of the following statement is true about the Competition Commission?
 1. The Competition has been established to prevent practices which do not support healthy business competition.
 2. The Commission will have five members including the chairman
 3. The Commission has to ensure that the financial operation of any business entity does not get concentrated in the hands of few people.
 (a) Only 1 (b) Only 2
 (c) Only 3 (d) All of them
 (e) None of them
180. What is the cost of Delhi National Memorial Cost?
 (a) 100 crore (b) 1000 crore
 (c) 500 crore (d) 250 crore
 (e) None of these
181. RuPay is launched by
 (a) RBI (b) Finance Ministry
 (c) SBI (d) NPCI
 (e) None of these
182. The _____ committee on minimum alternate tax (MAT) has recommended to the finance ministry that the levy shouldn't be imposed for the period preceding Apr 1, 2015.
 (a) Altamas Kabir (b) HL Dattu
 (c) AP Shah (d) Rajendra Mal Lodha
 (e) Mukul Mudgal
183. India got its first private bank in 11 years as the Bandhan Bank commenced operations on 23 Aug with 501 branches. What is the punch line of the bank?
 (a) Apna Bhala, Aapki Bhalai
 (b) Aapka Bhala, Sabki Bhalai
 (c) Banking the Unbanked
 (d) Khayal Aapka
 (e) None of these

184. Where is BIS (Bank for International Settlements) located?
 (a) Switzerland (b) USA
 (c) UK (d) India
 (e) None of these
185. Who won the 100m gold at World Championships 2015 held in Beijing on 23 Aug?
 (a) Su Bingtian (b) Usain Bolt
 (c) Andre de Grasse (d) Trayvon Bromell
 (e) Justin Gatlin
186. Where is the headquarters of Central bank of India located?
 (a) New Delhi (b) Mumbai
 (c) Pune (d) Bangalore
 (e) None of these
187. Which IT firm in India has unveiled three new service lines called Aikido, a combination of three words - Ai, Ki and Do, which in Japanese mean combining, spirit and path/way?
 (a) Wipro (b) TCS
 (c) Infosys (d) Tech Mahindra
 (e) HCL
188. The _____ committee on minimum alternate tax (MAT) has recommended to the finance ministry that the levy shouldn't be imposed for the period preceding Apr 1, 2015.
 (a) Altamas Kabir (b) HL Dattu
 (c) AP Shah (d) Rajendra Mal Lodha
 (e) Mukul Mudgal
189. Bad advances of a bank are called
 (a) standard accounts
 (b) book debt
 (c) non performing assets
 (d) out of order account
 (e) overdrawn accounts
190. 'FLASHremit' service to offer an instant bank transfer service to the Indians residing in the Gulf nation has been launched by which bank in association with UAE exchange?
 (a) HDFC bank (b) SBI
 (c) Axis bank (d) ICICI bank
 (e) None of these
191. Betla national park is located at?
 (a) Jharkhand (b) West Bengal
 (c) Madhya Pradesh (d) Kerala
 (e) None of these
192. Federal Reserve is the Central Bank of which country?
 (a) France (b) China
 (c) Germany (d) United States of America
 (e) None of these
193. Who is the author of the book "India Shastra: Reflection of the Nation in Our Time"?
 (a) Arvind Kejriwal (b) Manmohan Singh
 (c) Shashi Tharoor (d) LK Advani
 (e) none of these
194. Which film got most of the awards in BAFTA Awards 2015?
 (a) Birdman
 (b) The Grand Budapest Hotel
 (c) The Imitation Game
 (d) The Theory of Every Thing
 (e) Boyhood
195. What is India's ranking in World Press Freedom Index (WPI) 2015?
 (a) 96th (b) 121st
 (c) 136th (d) 145th
 (e) 130th
196. Which committee was constituted for recommendations on bringing reforms in central public sector enterprises (CPSEs)?
 (a) Roongta committee
 (b) Mathur Committee
 (c) Vishwanathan committee
 (d) Madhava Menon committee
 (e) None of these
197. Who has been conferred with Khushwant Singh Memorial Prize for Poetry?
 (a) Keki N. Daruwalla
 (b) Joy Goswami
 (c) Ranjit Hoskote
 (d) Arundhati Subramaniam
 (e) None of these
198. _____ signed 50:50 Joint Venture for TV Commerce with DEN Network
 (a) Flipkart (b) Snapdeal
 (c) Myntra (d) Ebay
 (e) Olx
199. Many a times, we read about Special Drawing Right (SDR) in newspapers. As per its definition, SDR is a monetary unit of the reserve assets of which of the following organizations/agencies?
 (a) World Bank
 (b) International Monetary Funds (IMF)
 (c) Asian Development Bank
 (d) Reserve Bank of India
 (e) None of these
200. Nationalizations of banks aimed at all of the following except
 (a) Provision of adequate credit for agriculture, SME & Exports
 (b) Removal of control by a few capitalists
 (c) provision of credit to big industries only (Correct Answer)
 (d) Access of banking to masses
 (e) Encouragement of a new class of entrepreneurs

Answers & Explanations

1. (e)

From statement I

going to a party → la fa qu tu

(For) a party → fa me tu

from statement II

start the party → tu Co ra
going to start → qu Co la

From both the statements

The code for party is tu

2. (d)

From statement I

According to Amita, Priya is travelling on Wednesday, Thursday or Friday.

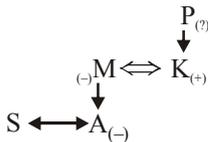
According to Rohit, Priya is travelling on Tuesday, Wednesday or Thursday.

From both the statements

Priya is travelling on Wednesday or Thursday.

3. (d)

From both the statements



The sex of P is not known

The data in both statements are not sufficient to answer the question.

4. (e)

From both the statements

Monday ⇒ Crash

Tuesday ⇒ Ice Age/Notting Hill

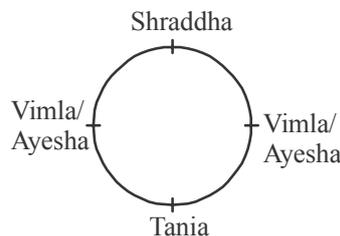
Wednesday ⇒ Ice Age/Notting Hill

Thursday ⇒ Social Network

So data in both statements are sufficient to answer the question.

5. (d)

From both the statements



So data in both statements are not sufficient to answer the question.

(6-10):

After careful analysis of the given input and various steps of arrangement it is evident that in each step one word and one number are rearranged. The words are rearranged from the left in alphabetical

order but in reverse order while the numbers are rearranged in descending order from the right.

(6-7) :

Input : always 19 give 21 84 for 62 14 worthy cause

Step I : worthy always 19 give 21 for 62 14 cause 84

Step II : worthy give always 19 21 for 14 cause 62 84

Step III : worthy give for always 19 14 cause 21 62 84

Step IV : worthy give for cause always 14 19 21 62 84

6. (d) Option (d) is the Step III.

7. (c) Four steps are needed to complete the arrangement.

(8-10) :

Input : 50 62 tips on 67 how can 42 stay young 17 89 forever 03

Step I : young 50 62 tips on 67 how can 42 stay 17 forever 03 89

Step II : young tips 50 62 on how can 42 stay 17 forever 03 67 89

Step III : young tips stay 50 on how can 42 17 forever 03 62 67 89

Step IV : young tips stay on how can 42 17 forever 50 62 67 89

Step V : young tips stay on how forever can 17 03 42 50 62 67 89

Step VI : young tips stay on how for ever can 03 17 42 50 62 67 89

8. (a) It is Step III.

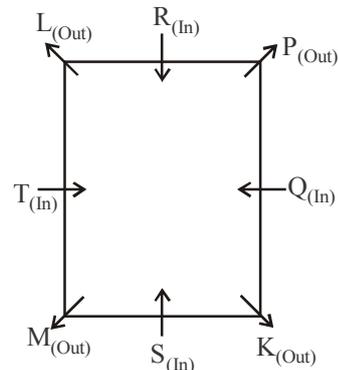
9. (b) 42 is at the fifth position from the right end in Step V.

10. (a) Option (a) is the last step.

11. (e) Statement (e) weakens the argument in the passage because heavy compromise on quality and standards of their back office jobs. contradicts the argument.

12. (c) Outsourcing from the West would sender thousands of Indians unemployed.

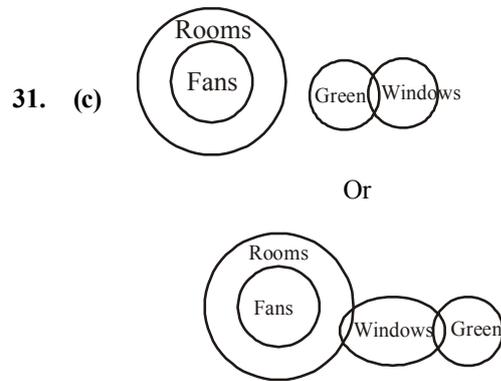
13. (c) Statement (c) can be easily inferred from the facts given is passage.



14. (d) M is second to the left of L.

15. (b) P sits exactly between Q and R.

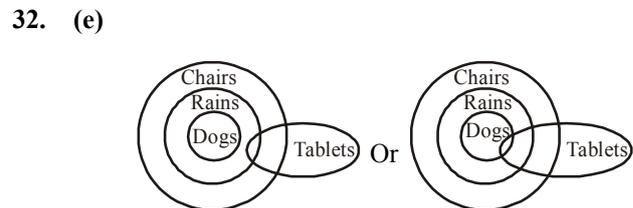
- 16. (e) Q faces T and both are sitting in the middle of the sides.
- 17. (c) P and Q.
- 18. (b) Q would sit to the immediate right of K.
- 19. (e) Except R, all others are seated at the corners.
- 20. (b) Statement (C) is the effect.
- 21. (e) Statement (A) is the cause.
- 22. (e) Statement (D) is an assumption.
- 23. (e) Statement (E) contradicts the facts stated in the paragraph.
- 24. (c) Shortage of electricity can only be faced with saving in electricity. So argument I seems to be strong. Argument II is also strong because every citizen is paying every single unit of electricity so he/she has right to consume it. Argument III seems to be weak because government can easily manage restricted use of electricity.
- 25. (c) Statement (c) would weaken the findings that some of the patients did not respond to the traditional drug meant for malaria.
- 26. (e) Data given is conclusion (e) is in favour of findings given in the statement.
- 27. (c) Statement (c) is just opposite of findings given in statement because the organisations where employees are allowed to use cell phones their work-efficiency is reduced considerably.
- 28. (d) If sugar is not supplied to largest food beverage and pharma companies the stock of sugar will improve and prices will come down.



Conclusions:

- I. (False)
- II. (False)
- III. (False)
- IV. (True)

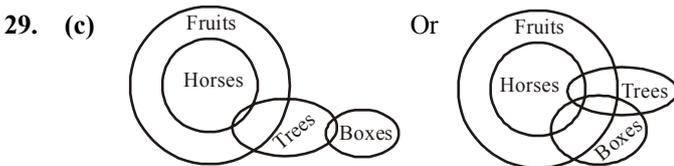
So only conclusion IV follows.



Conclusions:

- I. (True)
- II. (True)
- III. (False)
- IV. (True)

So only conclusion I, II and IV follows.



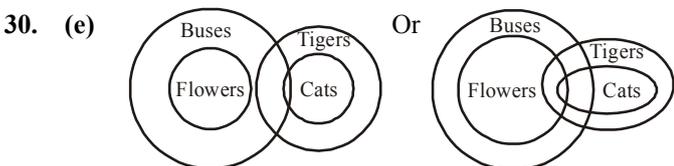
Conclusions:

- I. (False)
 - II. (True)
 - III. (False)
 - IV. (False)
- } Either



Conclusions:

- I. (False)
- II. (True) Conversion of the second premise
- III. (False)
- IV. (False)



Conclusions:

- I. (True)
- II. (False)
- III. (False)
- IV. (True)

So only conclusion I & IV follows.

(34-38) :

Students	Institute	Specialization
Ashwin	M	Finance
Devika	L	Marketing
Baljit	J	HR
Chandrakant	K	HR
Urmila	T	Finance
Nagesh	R	Marketing
Pranjali	F	HR

- 34. (d) 35. (a) 36. (b)
- 37. (e) 38. (c)

(39-43):

Person	Boarding station	Leaving station
A	IV	V
B	Base or I	III
C	Base or I	V
D	Base or I	III
E	Base	IV
F	Base or I	II
G	Base or I	V

39. (c) 40. (d) 41. (d)
 42. (c) 43. (b)
 44. (b) Sixth to the right of 14th from the right end means 8th from right.



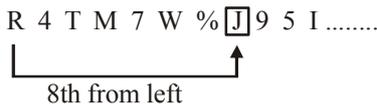
45. (d)

No Consonant	Consonant	Symbol
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Such combinations are :

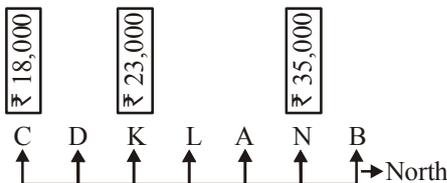


46. (a) 8th to the left of 16th from left means 8th from the left.



47. (e) Obviously, option (e) justifies the given fact. People generally prefer small quantity of product at a time so the product in form of sachet is more popular in consumers. Consumers think it is better to consume the ingredients at once. So sale of product also increases.

(48 – 50):



48. (c) A and L earn more than ₹ 23,000 but less than ₹ 35,000.

49. (a) D earns more than ₹ 18,000 but less than ₹ 23,000. So, D may earn ₹ 21,000.

50. (d) L earns more than K but less than A.

51. (e) From statement I,
 Let the number of students in the institutes A and B be $3x$ and $4x$ respectively. However we get no conclusive answer by using data given in all the statements.

52. (c) From statements I and II, Let Mr. X's monthly income = ₹ x . Then

$$\frac{15 \times x}{100} = 4500$$

$$\Rightarrow x = \frac{4500 \times 100}{15} = ₹ 30000$$

From statements I and III,

$$x \times \frac{4}{5} \times \frac{85}{100} = 20400$$

$$\Rightarrow x = \frac{20400 \times 5 \times 100}{4 \times 85}$$

$$= ₹ 30000$$

53. (a) From Statements I and III, Let Suchitra's son's present age be x years.

∴ Suchitra's present age

$$= 2x \text{ years}$$

After 4 years,

$$\frac{2x + 4}{x + 4} = \frac{13}{24}$$

We can get the required answer by this relation. So statement II is not required.

54. (d) From all three statements, Seeta's investment

$$= ₹ \left(\frac{3}{8} \times 2.5 \right) \text{ lakh}$$

$$= ₹ 93750$$

Geeta's investment

$$= ₹ 156250$$

Ratio of Neeta's, Seeta's and Geeta's profit

$$= 85000 \times 24 : 93750 \times 18 : 156250 \times 18$$

We can get the share of Neeta if total profit is given.

So data given in all three statements is required to answer the question.

55. (d) Let the marked price of the article be ₹ x .

From statement II.

$$\frac{95 \times x}{100} = 608$$

$$\Rightarrow x = \frac{608 \times 100}{95} = ₹ 640$$

From statements I and III,

$$\text{Marked price} = \frac{128 \times 500}{100}$$

$$= ₹ 640$$

So statement II is sufficient to give the answer.

56. (b) Required average price

$$= \frac{750 \times 25 + 600 \times 45}{1350}$$

$$= ₹ \left(\frac{18750 + 27000}{1350} \right) \text{ per kg}$$

$$\approx ₹ 34 \text{ per kg}$$

57. (d) Required cost price

$$= ₹ \left(800 \times \frac{90}{100} \times 80 \right)$$

$$= ₹ 57600$$

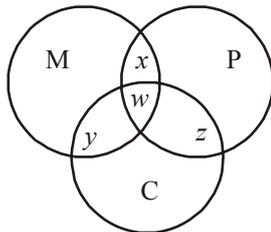
58. (a) Total cost of entire quantity of sugar = $(350 \times 30 + 350 \times 30 \frac{120}{100})$
 $= ₹ (10500 + 12600) = ₹ 23100$

59. (e) Required cost
 $= ₹ (500 \times 80 + 400 \times 60)$
 $= ₹ 64000$

60. (c) Total cost of coriander sold
 $= ₹ \left(600 \times \frac{92}{100} \times 70 \right)$
 $= ₹ 38640$

(61-65):

Total Number of students = 280
 Number of students who passed Maths = 185
 Number of students who passed Physics = 210
 Number of students who passed Chemistry = 222
 Students who passed in Maths and physics = 180
 Students who passed in Maths and Chemistry = 175
 Students who passed in Physics and Chemistry = 200
 Number of students who passed in atleast one subject = $280 - 47 = 233$



$x + w = 180$ (i)
 $w + z = 200$ (ii)
 $w + y = 175$ (iii)
 $M + x + w + y = 185$ (iv)
 $P + x + w + z = 210$ (v)
 $C + y + w + z = 222$ (vi)
 $M + P + C + y + x + z + w = 233$ (vii)
 By (iv) + (v) + (vi) - (vii),
 $x + y + z + 2w = 384$ (viii)
 by (i) + (ii) + (iii),
 $x + y + z + 3w = 555$ (ix)
 By (ix) - (viii),
 $w = 171$
 From equation (i),
 $x = 9$
 From equation (ii),
 $z = 200 - 171 = 29$
 From equation (iii),
 $y = 175 - 171 = 4$
 $M = 185 - 4 - 9 - 171 = 1$
 $P = 210 - 9 - 171 - 29 = 1$
 $C = 222 - 4 - 29 - 171 = 18$

61. (a) Number of students passed in Chemistry only = 18
 62. (d) Number of students who have passed in all three subjects = 171

63. (a) Number of students who failed in Physics and Maths = $47 + 18 = 65$
 64. (d) Number of students who passed in Maths but failed in both Physics and Chemistry = 1
 65. (b) Required answer
 $= x + y + z + w$
 $9 + 29 + 4 + 171 = 213$
 66. (a) Charu has scored minimum marks both in Sanskrit and Social Studies.
 Vishal has scored minimum marks in Science, Physical Education and Hindi.
 67. (c) Total marks obtained by :
 Deepak $\rightarrow 65 + 62 + 69 + 81 + 70 + 40 + 50 = 437$
 Charu $\rightarrow 64 + 78 + 74 + 63 + 55 + 25 + 53 = 412$
 Anupama $\rightarrow 85 + 95 + 87 + 87 + 65 + 35 + 71 = 525$
 Garima $\rightarrow 92 + 82 + 81 + 79 + 49 + 30 + 61 = 474$
 Bhaskar $\rightarrow 72 + 97 + 55 + 77 + 62 + 41 + 64 = 468$

68. (e) Required percentage
 $= \frac{437}{600} \times 100 = 72.83$

69. (d) Marks obtained by Charu in Hindi = 64
 Marks obtained by Anupama in Hindi = 85
 Required percentage

$$= \frac{64}{85} \times 100 = 75.29$$

70. (b) Average marks obtained in Science
 $= \frac{65 + 62 + 55 + 70 + 49 + 44}{6}$
 $= \frac{345}{6} = 57.5$

71. (e) The given series is based on the following pattern :

$$\begin{array}{cccccc} 104 & 109 & 99 & 114 & 94 & \boxed{119} \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ +5 & -10 & +15 & -20 & +25 & \end{array}$$

Hence, 119 will come in place of the question mark.

72. (c) The given series is based on the following pattern :

$$\begin{array}{cccccc} 980 & 392 & 156.8 & \boxed{62.72} & 25.088 & 10.0352 \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \div 2.5 & \div 2.5 \end{array}$$

Hence, 62.72 will come in place of the question mark.

73. (d) The given series is based on the following pattern :

$$\begin{array}{cccccc} 14 & 16 & 35 & 109 & 441 & \boxed{2211} \\ \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \times 1+2 & \times 2+3 & \times 3+4 & \times 4+5 & \times 5+6 & \end{array}$$

Hence, 2211 will come in place of the question mark.

74. (a) The given series is based on the following pattern :
 Numbers are cubes of consecutive prime numbers.
 i.e.

$$11^3 = 1331$$

$$13^3 = 2197$$

$$17^3 = 4913$$

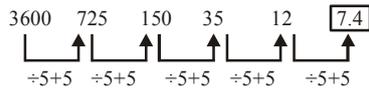
$$19^3 = 6859$$

$$23^3 = \boxed{12167}$$

$$29^3 = 24389$$

Hence, 12167 will come in place of the question mark.

75. (b) The given series is based on the following pattern :



Hence, 7.4 will come in place of the question mark.

76. (d) Let the original fraction is $\frac{a}{b}$.

According to question,

$$\frac{a + \frac{350}{100} \times a}{b + \frac{300}{100} \times b} = \frac{9}{22}$$

$$\Rightarrow \frac{4.5a}{4b} = \frac{9}{22}$$

$$\Rightarrow \frac{a}{b} = \frac{9}{22} \times \frac{4}{4.5} = \frac{4}{11}$$

77. (e) Let breadth of rectangular plot is b cm length of rectangular plot, $l = 3b$

$$l \times b = 6075$$

$$\Rightarrow 3b^2 = 6075$$

$$\Rightarrow b^2 = 2025$$

$$\Rightarrow b = 45$$

Length of plot = 3×45 cm = 135 cm

78. (d) Let her monthly salary be ₹ x .

According to the question,

$$\frac{7}{100} \times x = 2170$$

$$\Rightarrow x = \frac{2170 \times 100}{7} = ₹31000$$

Total monthly investment = $(18 + 6 + 7)\%$ of 31000

$$= \frac{31}{100} \times 31000 = 9610$$

Total annual investment = $12 \times 9610 = ₹ 115320$

79. (b) 'PRIDE' has five different letters.

So, it can be arranged in $5! = 120$ ways

80. (d) Let present ages of Samir and Tanuj are $8x$ and $15x$ years respectively.

Difference between their ages = $15x - 8x = 7x$

Ratio of ages after 9 years,

$$\frac{8x+9}{15x+9} = \frac{11}{18}$$

$$\Rightarrow 144x + 162 = 165x + 99$$

$$\Rightarrow 21x = 63 \Rightarrow x = 3$$

Difference between their ages = $7x = 21$ years

81. (e) I. $\Rightarrow p^2 + 3p + 2p + 6 = 0$

$$\Rightarrow p(p+3) + 2(p+3) = 0$$

$$\Rightarrow (p+3)(p+2) = 0$$

$$\Rightarrow p = 2 \text{ or } -3$$

II. $\Rightarrow q^2 + q + 2q + 2 = 0$

$$\Rightarrow q(q+1) + 2(q+1) = 0$$

$$\Rightarrow (q+1) + (q+2) = 0$$

$$\Rightarrow q = -1 \text{ or } -2$$

Obviously $p \leq q$

82. (d) I. $\Rightarrow p = \pm 2$

II. $\Rightarrow q^2 + 2q + 2q + 4 = 0$

$$\Rightarrow q(q+2) + 2(q+2) = 0$$

$$\Rightarrow (q+2) + (q+2) = 0$$

$$\Rightarrow q = -2$$

Obviously $p \geq q$

83. (b) I. $p^2 + p - 56 = 0$

$$\Rightarrow p^2 + 8p - 7p - 56 = 0$$

$$\Rightarrow p(p+8) - 7(p+8) = 0$$

$$\Rightarrow (p+8)(p-7) = 0$$

$$\Rightarrow p = 7 \text{ or } -8$$

II. $q^2 - 8q - 9q + 72 = 0$

$$\Rightarrow q(q-8) - 9(q-8) = 0$$

$$\Rightarrow (q-8)(q-9) = 0$$

$$\Rightarrow q = 8 \text{ or } 9$$

Obviously $p < q$

84. (a) We have,

$$3p + 2q = 58 \quad \dots (i)$$

$$4p + 4q = 92$$

$$\Rightarrow 2p + 2q = 46 \quad \dots (ii)$$

By (i), (ii) we get $p = 12$

From (i), $3 \times 12 + 2q = 58$

$$\Rightarrow 2q = 58 - 36 = 22$$

$$\Rightarrow q = 11$$

Hence, $p > q$

85. (b) I. $\Rightarrow 3p^2 + 15p + 2p + 10 = 0$

$$\Rightarrow 3p(p+5) + 2(p+5) = 0$$

$$\Rightarrow (p+5)(3p+2) = 0$$

$$p = -5 \text{ or } -\frac{2}{3}$$

II. $\Rightarrow 10q^2 + 5q + 4q + 2 = 0$

$$\Rightarrow 5q(2q+1) + 2(2q+1) = 0$$

$$\Rightarrow (2q+1)(5q+2) = 0$$

$$\Rightarrow q = -\frac{1}{2} \text{ or } -\frac{2}{5}$$

Hence, $p < q$

86. (a) Required ratio = $40 : 35 = 8 : 7$

87. (b) Required average

$$= \left(\frac{15+25+30+40+15+10}{6} \right) \text{thousand}$$

$$= \frac{135}{6} = 22.5 \text{ thousand}$$

88. (c) Required percentage increase

$$= \frac{25-10}{10} \times 100 = 150$$

89. (e) Laptops manufactured by Apple, Lenovo and Samsung in 2013 = $15 + 40 + 25 = 80$ thousand

Laptops manufactured by Dell, HP and Abascus in 2014 Required = $15 + 25 + 35 = 75$ thousand

Difference = 5000

90. (a) Abascus $\Rightarrow 35000$

91. (a) $7072 \div \left(\frac{884 \times 16}{100} \right) = 30 \times \frac{13}{12} \times \frac{?}{39}$

$$\Rightarrow 7072 \div 141.44 = \frac{5 \times ?}{6}$$

$$\Rightarrow 50 \times 6 = 5 \times ?$$

$$\Rightarrow ? = \frac{50 \times 6}{5} = 60$$

92. (a) $(3375)^6 \div (15)^{10} \div (225)^7 = (15)^{? - 6}$
 $\Rightarrow ((15^3)^6 \div (15)^{10} \div (15^2)^7) = (15)^{? - 6}$
 $\Rightarrow 15^{18-10-14} = (15)^{? - 6}$
 $\Rightarrow -6 = ? - 6$
 $\Rightarrow ? = 0$

93. (b) $\frac{1478.4}{56} + 66.8 \times 57 = ? \times 3 + 34 \times 34.5$
 $\Rightarrow 26.4 + 3807.6 = ? \times 3 + 1173$
 $\Rightarrow 3834 - 1173 = ? \times 3$
 $\Rightarrow ? \times 3 = 2661$
 $\Rightarrow ? = 887$

94. (c) $(13 + 2\sqrt{5})^2 = ? \times \sqrt{5} + 189$
 $\Rightarrow 169 + 20 + 2 \times 13 \times 2\sqrt{5} = ? \times \sqrt{5} + 189$
 $\Rightarrow 189 + 52 \times \sqrt{5} = ? \times \sqrt{5} + 189$
 $\Rightarrow ? = 52$

95. (d) $0.22 + 0.0054 = ? - 313.06$
 $\Rightarrow 0.2254 + 313.06 = ?$
 $\Rightarrow ? = 313.2854$

96. (b) If total maximum marks be x , then,
 $\frac{x \times 64}{100} = 2240 - 128 = 2112$
 $\Rightarrow ? = \frac{2112 \times 100}{64} = 3300$
Marks obtained by Meena = $2240 - 907 = 1333$
Required percentage = $\frac{1333}{3300} \times 100 \approx 40$

97. (c) Total possible outcomes = ${}^{17}C_5$
 $= \frac{17 \times 16 \times 15 \times 14 \times 13}{1 \times 2 \times 3 \times 4 \times 5} = 6188$
Total favourable outcomes = ${}^8C_2 \times {}^4C_1 \times {}^5C_2$
 $= \frac{8 \times 7}{1 \times 2} \times 4 \times \frac{5 \times 4}{1 \times 2} = 28 \times 4 \times 10 = 1120$
Required probability = $\frac{1120}{6188} = \frac{280}{1547}$

98. (d) A's salary = ₹ $8x$ and B's salary = ₹ $9x$
 $\frac{8x \times 150\%}{9x \times 75\%} = \frac{16}{9}$
 $\Rightarrow \frac{8x \times 150}{9x \times 75} = \frac{16}{9}$
 $\Rightarrow \frac{12x}{27x} = \frac{16}{9} \Rightarrow \frac{48}{27} = \frac{16}{9}$
 $\frac{4}{4}$

Hence, A's salary cannot be determined.

99. (a) Percentage increase in the consumption

$$= \frac{10}{100 - 10} \times 100 = \frac{100}{9} = 11\frac{1}{9}\%$$

100. (b) $\frac{3}{5} + \frac{4}{7} = \frac{21 + 20}{35} = \frac{41}{35}$ and $\frac{4}{5} + \frac{3}{7} = \frac{28 + 15}{35} = \frac{43}{35}$

101. (b) 102. (c) 103. (a) 104. (d) 105. (b)
106. (d) 107. (e) 108. (d) 109. (b) 110. (a)
111. (b) 112. (d) 113. (e) 114. (c) 115. (a)
116. (a) 117. (b) 118. (c) 119. (d) 120. (e)
121. (d) 122. (e) 123. (c) 124. (a) 125. (b)

127. (d) 'Mushrooming' should be used-which would serve as an adjective.

128. (c) 'Are' should replace 'is'- verb should agree with 'bulbs'

129. (b) 'By' should replace 'with' - which means 'by the way of'

130. (e)

131. (b) 'Make up' would mean create by altering or modifying such as 'making up a story.' 'Puts up' is also an incorrect expression here as it means 'stays' 'Toil up' is again incorrect option as it means to put hard work into. Option (b) 'conjures' is the right answer which means 'to recall.'

132. (a) 'Sturdy' means 'with strong built up', 'wobbly' means 'unsteady', 'herculean' means 'having great strength.', 'handsome' means 'good looking.' Option (a) is the most appropriate here as a horseman is generally visualized as the one having strong built up.

133. (c) Since the sentence talks about communist rulers 'taking over', option (c) 'imposing' which means 'to thrust.'

134. (d) 'Amplify' and 'stretch' both mean an increase. 'Die' would be a little extreme word here. 'Recede' which means 'to move back' matches up with the word background used in the sentence.

135. (d) The correct tense form here would be option (d) i.e.; 'were.'

136. (a) 137. (c) 138. (b) 139. (e) 140. (e)
141. (b) 142. (a) 143. (b) 144. (d) 145. (b)
146. (c) 147. (c) 148. (d) 149. (b) 150. (b)
151. (d) 152. (b) 153. (d) 154. (a) 155. (d)
156. (d) 157. (a) 158. (a) 159. (a) 160. (a)
161. (b) 162. (b) 163. (a) 164. (a) 165. (d)
166. (b) 167. (b) 168. (a) 169. (b) 170. (b)
171. (c) 172. (c) 173. (a) 174. (d) 175. (a)
176. (a) 177. (a) 178. (d) 179. (d) 180. (c)
181. (d) 182. (c) 183. (b) 184. (a) 185. (b)
186. (b) 187. (c) 188. (c) 189. (c) 190. (d)
191. (a) 192. (d) 193. (c) 194. (e) 195. (c)
196. (a) 197. (d) 198. (b) 199. (b) 200. (c)

IBPS

PO Prelim Exam 2015

Held on : 12-10-2015

(Based On Memory)

Time : 2 Hrs.

REASONING ABILITY

DIRECTIONS (Qs. 1-5) : Study the following information carefully and answer the questions given below.

P, Q, R, S, T, V and W are seven students of a school. Each of them studies in different standard from Standard IV to Standard X not necessarily in the same order. Each of them has favourite subject from English, Science, History, Geography, Mathematics, Hindi and Sanskrit not necessarily in the same order.

Q studies in VII Standard and does not like either Mathematics or Geography. R likes English and does not study either in V or in IX. T studies in VIII Standard and likes Hindi. The one who likes Science studies in X Standard. S studies in IV Standard. W likes Sanskrit. P does not study in X Standard. The one who likes Geography studies in V Standard.

- In which standard does W study?
(a) VII (b) IX
(c) X (d) Data inadequate
(e) None of these
- Which subject does P like?
(a) Geography (b) Mathematics
(c) English (d) History
(e) None of these
- Which subject does S like?
(a) History (b) Geography
(c) Mathematics (d) Data inadequate
(e) None of these
- In which standard does P study?
(a) IV (b) VII
(c) IX (d) X
(e) None of these
- Which of the following combinations of student-standard-subject is correct?
(a) T -VIII -Mathematics (b) W -VII -Sanskrit
(c) Q -VII -Geography (d) V -X -Science
(e) None of these

DIRECTIONS (Qs. 6-10) : Study the following information carefully and answer the questions given below:

- A, B, C, D, E, F, G and H are eight students each having a different height.
 - D is shorter than A but taller than G.
 - E is taller than H but shorter than C.
 - B is shorter than D but taller than F.
 - C is shorter than G.
 - G is not as tall as F.
- Which of the following is definitely false?
(a) G is shorter than F (b) C is shorter than F
(c) F is taller than C (d) B is taller than E
(e) All are true

- If another student J who is taller than E but shorter than G is added to the group, which of the following will be definitely true?
(a) C and J are of same height
(b) J is shorter than D
(c) J is shorter than H
(d) J is taller than A
(e) None of these
- Which of the following will definitely be the third from top when the eight students are arranged in descending order of height?
(a) B (b) F
(c) G (d) B or G
(e) Cannot be determined
- How many of them are definitely shorter than F ?
(a) Three (b) Four
(c) Five (d) Data inadequate
(e) None of these
- Which of the following is redundant to answer all the above questions?
(a) (ii) only (b) (ii) and (iii) only
(c) (iii) and (iv) only (d) (i) and (v) only
(e) All are necessary to answer the above questions

DIRECTIONS (Qs. 11-15) : Study the following information carefully and answer the given questions :

In a certain code language :

"demand and supply market" is written as "pa ni de re"
"market needs more demand" is written as "de ja ni fe"
"supply demand is related" is written as "le de re ab"
"more related to economics" is written as "ka ha ab ja"

- What is the code for 'economics' ?
(a) ab (b) ka
(c) ha (d) ja
(e) Either 'ka' or 'ha'
- Which of the following represents 'supply related market' ?
(a) ab ni de (b) ni re ab
(c) pa ni re (d) de ab ni
(e) None of these
- What is the code for 'more' ?
(a) fe (b) ni
(c) de (d) ja
(e) Cannot be determined
- Which of the following may represent "market needs more customers" ?
(a) fe ja ni sa (b) ja ni de ab
(c) ni ja ka pa (d) pa ni fe re
(e) le re ni ja

15. What is the code for 'needs' ?
 (a) ni (b) fe
 (c) pa (d) le
 (e) None of these

DIRECTIONS (Qs. 16-20) : In these questions relationship between different elements is shown in the statements. The statements are followed by two conclusions.

Give answer (a) if only conclusion I is true.

Give answer (b) if only conclusion II is true.

Give answer (c) if only conclusion I or II is true.

Give answer (d) if neither conclusion I nor II is true.

Give answer (e) if both conclusion I and II are true.

16. **Statements :**

$$E \geq F = G; I = T; T \leq G$$

Conclusions :

I. $I < E$ II. $I = E$

17. **Statements :**

$$G > H < T; I > F; H > J$$

Conclusions :

I. $J < G$ II. $F < H$

18. **Statements :**

$$V > W < X; X < Y; Z > X$$

Conclusions :

I. $Z > V$ II. $Y > W$

19. **Statements :**

$$M > N > P; O > P; S < P$$

Conclusions :

I. $S < M$ II. $O < M$

20. **Statements :**

$$A > E > F; G > F; M > A$$

Conclusions :

I. $M > E$ II. $G < A$

21. Four of the following five are alike in a certain way and so form a group. Which is the one that does not belong to the group ?

- (a) Paper (b) Pencil
 (c) Pen (d) Marker
 (e) Highlighter

22. In a row of children facing North, Shweta is fifteenth from the left and Jyoti is third to the left of Shweta. Ram who is seventh to the right of Jyoti is fifth from the right end of the row. What is Shweta's position from the right end ?

- (a) 12th (b) 10th
 (c) 8th (d) 9th
 (e) None of these

23. If it is possible to make only one meaningful word from the first, the fifth, the seventh, the eighth and the eleventh letters of the word DEPARTMENTAL, first letter of the word is your answer. If more than one such word can be formed, your answer is 'X' and if no such word can be formed, your answer is 'Y'

- (a) A (b) D
 (c) R (d) X
 (e) Y

24. Boys and girls are sitting in a row in audience in front of a stage which faces North. Rani is fifth to the left of Sunita who is eighth to the right of Nishant. How many children are there between Rani and Nishant ?

- (a) One (b) Two
 (c) Four (d) Cannot be determined
 (e) None of these

25. Pointing to a photograph Shubha said, "he is the only grandson of my mother's father". How is the man in photograph related to Shuhha?

- (a) Cousin (b) Brother
 (c) Uncle (d) Cannot be determined
 (e) None of these

26. Four of the following five are alike in a certain way and so form a group which is the one that **does not** belong to that group ?

- (a) 29 (b) 85
 (c) 147 (d) 125
 (e) 53

27. Which of the following has the same relationship as that of Money : Wealth ?

- (a) Pity : Kindness (b) Cruel : Anger
 (c) Wise : Education (d) Pride : Humility
 (e) None of these

DIRECTIONS (Qs. 28-32) : Study the following information carefully and answer the given questions.

Eight family members A, B, C, D, E, F, G and H are sitting around a circular table, facing the centre but not necessarily in the same order.

- F, the wife of D is sitting third to right of C.
- A is the son of H. A is sitting second to left of D. D is not an immediate neighbour of either F or C. No male is an immediate neighbour of D.
- G sits second to left of D's son. Only two persons sit between H and A's brother. Neither C nor D is the brother of A.
- D's son and the wife of D's son are immediate neighbours of each other.
- F is the mother of H. F is not an immediate neighbour of B and G.
- G is the sister of E.

28. Who amongst the following is D's son ?

- (a) E (b) G
 (c) A (d) B
 (e) Cannot be determined

29. Who sits second to the left of G ?

- (a) A's brother (b) G's mother
 (c) D (d) B's father
 (e) A's aunt

30. How many people sit between A and his brother ?

- (a) None (b) One
 (c) Two (d) Three
 (e) Four

31. Who amongst the following sits exactly between H and F ?

- (a) D's wife (b) D's son
 (c) C (d) B
 (e) A

32. Who amongst the following is the brother of A ?
 (a) E (b) G
 (c) A (d) B
 (e) Cannot be determined

DIRECTIONS (Qs. 33-35) : In each question below are two/three statements followed by two conclusions numbered I and II. You have to take the two/three given statements to be true even if they seem to be at variance from commonly known facts and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

- Give answer (a)** if only conclusion I follows.
Give answer (b) if only conclusion II follows.
Give answer (c) if either conclusion I or conclusion II follows.
Give answer (d) if neither conclusion I nor conclusion II follows.
Give answer (e) if both conclusion I and conclusion II follow.

(33-34):

Statements :

- Some colours are paints.
 All colours are varnishes.
 No varnish is dye.

33. Conclusions :

- I. No paint is dye.
 II. All paints being varnishes is a possibility.

34. Conclusions:

- I. Some varnishes are paints.
 II. No dye is colour.

35. Statements :

- All squares are triangles.
 No triangle is circle.
 All circles are rectangles.

35. Conclusions :

- I. No rectangle is square.
 II. All rectangles being square is a possibility.

QUANTITATIVE APTITUDE

DIRECTIONS (Qs. 36-40): Find the missing term.

36. 0.5, 1.5, 5, 8, 76, ?
 (a) 380 (b) 385
 (c) 390 (d) 395
 (e) None of these
37. 65, 72, 86, 114 ?
 (a) 160 (b) 165
 (c) 170 (d) 175
 (e) None of these
38. 63, 31, 15, 7, 3 ?
 (a) 0 (b) 1
 (c) 2 (d) 3
 (e) None of these
39. 13, 70, 71, 76, ?, 81, 86, 70, 91
 (a) 70 (b) 71
 (c) 80 (d) 96
 (e) None of these
40. 8, 43, 11, 41, ?, 39, 17
 (a) 8 (b) 14
 (c) 43 (d) 44
 (e) None of these

DIRECTIONS (Qs. 41-45): In each of these questions, two equations (I) and (II) are given. You have to solve both the equations and give answer

- (a) if $x > y$ (b) if $x < y$
 (c) if $x \geq y$ (d) if $x \leq y$
 (e) if $x = y$ or relation cannot be established between 'x' and 'y'.
41. I. $8x + y = 10$
 II. $4x + 2y = 13$
42. I. $(x + 3)(y + 2) = 12$
 II. $2xy + 4x + 5y = 11$
43. I. $(3x - 2)/y = (3x + 6)/(y + 16)$
 II. $(x + 2)/(y + 4) = (x + 5)/(Y + 10)$
44. I. $x^2 + 20x + 4 = 50 - 25x$
 II. $y^2 - 10y - 24 = 0$
45. I. $(x^2 - 10x + 16)/(x^2 - 12x + 24) = 2/3$
 II. $y^2 - y - 20 = 0$

DIRECTIONS (Qs. 46-50) : Study the given table carefully to answer the following questions.

Field Name	Shape	Side (in m)	Base (in m)	Height (in m)	Radius (in m)	Cost of flooring (in Rs. per sq. metre)	Cost of fencing (in Rs. per m)
A	Triangle		16	12		50	20
B	Rectangle	10×20				30	15
C	Square	15				40	18
D	Parallelogram		20	12		60	25
E	Circle				10	45	22

46. What is the cost of flooring of A?
 (a) ₹4000 (b) ₹4600
 (c) ₹4800 (d) ₹5000
 (e) ₹4400
47. What is the difference between the cost of fencing of C and that of B?
48. What is the ratio of the cost of flooring to that of fencing of field D?
 (a) 4 : 1 (b) 6 : 1
 (c) 8 : 1 (d) 9 : 1
 (e) 5 : 1

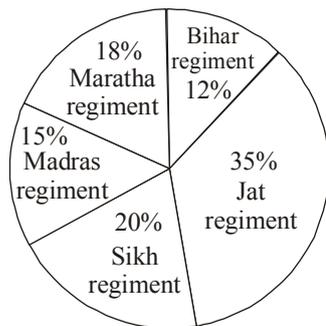
49. The cost of fencing of field E is approximately what percent of the cost of flooring of field C?
 (a) 10.5% (b) 19.46%
 (c) 18.71% (d) 15.36%
 (e) 13.82%
50. The cost of fencing of field C is what percent of the cost of fencing of field D?
 (a) 87.54% (b) 67.5%
 (c) 72.13% (d) 54.36%
 (e) 46.5%

DIRECTIONS (Qs. 51-58) : Study the following table and pie chart carefully to answer the given questions.

The table shows the ratio of Hindu religion soldiers to soldiers of other religions

Name of regiment	Hindu	Other religions
Jat regiment	4	1
Sikh regiment	3	5
Madras regiment	2	1
Maratha regiment	3	2
Bihar regiment	5	3

Percentage of various regiments in the Army



Total number of soldiers in the army = 10000

51. What is the number of Hindu soldiers in Jat regiment?
 (a) 2600 (b) 2700
 (c) 3200 (d) 2800
 (e) 2350
52. What is the difference between Hindu soldiers in Madras regiment and soldiers of other religions in Bihar regiment?
 (a) 485 (b) 550
 (c) 520 (d) 510
 (e) 490
53. The number of Hindu soldiers in Sikh regiment is what percent of the number of other soldiers in Maratha regiment?
 (a) 97.12% (b) 99.56%
 (c) 102% (d) 104.16%
 (e) 25%
54. In which regiment is the number of non-Hindu soldiers the maximum?
 (a) Maratha regiment (b) Sikh regiment
 (c) Madras regiment (d) Jat regiment
 (e) Bihar regiment
55. What is the ratio of the number of Hindu soldiers in Bihar regiment to the number of non-Hindu soldiers in Jat regiment?
 (a) 11 : 10 (b) 12 : 11
 (c) 13 : 12 (d) 14 : 13
 (e) 15 : 14
56. If the compound interest on an amount of ₹ 29000 in two years is ₹ 9352.5, what is the rate of interest?
 (a) 11 (b) 9
 (c) 15 (d) 18
 (e) None of these
57. Three friends A, B and C start running around a circular stadium and complete a single round in 8, 18 and 15 seconds respectively. After how many minutes will they meet again at the starting point for the first time?
 (a) 12 (b) 6
 (c) 8 (d) 15
 (e) 18
58. The perimeter of a square is equal to the radius of a circle having area 39424 sq cm, what is the area of square?
 (a) 1225 sq cm (b) 441 sq cm
 (c) 784 sq cm (d) Can't say
 (e) None of these

DIRECTIONS (Qs. 59-61) : Study the following information carefully to answer the questions that follow-

A committee of five members is to be formed out of 5 Males, 6 Females and 3 Children. In how many different ways can it be done if-?

59. The committee should consist of 2 Males, 2 Females and 1 Child?
 (a) 450 (b) 225
 (c) 55 (d) 90
 (e) None of these
60. The committee should include all the 3 Children?
 (a) 90 (b) 180
 (c) 21 (d) 55
 (e) None of these
61. Thirty men can complete a work in 36 days. In how many days can 18 men complete the same piece of work?
 (a) 48 (b) 36
 (c) 60 (d) 72
 (e) None of these
62. Ram spends 50% of his monthly income on household items, 20% of his monthly income on buying clothes, 5% of his monthly income on medicines and saves remaining ₹ 11,250. What is Ram's monthly income?
 (a) ₹ 38,200 (b) ₹ 34,000
 (c) ₹ 41,600 (d) ₹ 45,000
 (e) None of these
63. The number obtained by interchanging the two digits of a two digit number is lesser than the original number by 54. If the sum of the two digits of the number is 12, then what is the original number?
 (a) 28 (b) 39
 (c) 82 (d) Can't say
 (e) None of these

64. At present Geeta is eight times her daughter's age. Eight years from now, the ratio of the ages of Geeta and her daughter will be 10 : 3 respectively. What is Geeta's present age ?
 (a) 32 years (b) 40 years
 (c) 36 years (d) Can't say
 (e) None of these
65. In how many different ways can 4 boys and 3 girls be arranged in a row such that all the boys stand together and all the girls stand together ?
 (a) 75 (b) 576
 (c) 288 (d) 24
 (e) None of these

DIRECTIONS (Qs. 66-70) : What approximate value will come in place of question mark (?) in the following questions (You are not expected to calculate the exact value).

66. $9228.789 - 5021.832 + 1496.989 = ?$
 (a) 6500 (b) 6000
 (c) 6300 (d) 5700
 (e) 5100
67. $1002 \div 49 \times 99 - 1299 = ?$
 (a) 700 (b) 600
 (c) 900 (d) 250
 (e) 400
68. 29.8% of 260 + 60.01% of 510 - 103.57 = ?
 (a) 450 (b) 320
 (c) 210 (d) 280
 (e) 350
69. $(21.98)^2 - (25.02)^2 + (13.03)^2 = ?$
 (a) 25 (b) 120
 (c) 10 (d) 65
 (e) 140
70. $\sqrt{24.98} \times \sqrt{625} \times \sqrt{99} = ?$
 (a) 110 (b) 90
 (c) 200 (d) 160
 (e) 125

ENGLISH LANGUAGE

DIRECTIONS (Qs. 71-75) : Rearrange the following six sentences (A), (B), (C), (D), (E) and (F) in the proper sequence to form a meaningful paragraph; then answer the questions given below them.

- (A) Two of the best-performing major economies in 2014 were China and Brazil, with growth estimated at 7.5% and 10.5% respectively.
- (B) Despite that limp growth, major US stock market indexes are up between 11% and 20% for the year.
- (C) Even knowing where economies are headed sometimes it is of no help to an investor.
- (D) It is hard to anticipate the direction of financial markets.
- (E) But as of December, stock markets of both nations were in the red for the year.
- (F) By contrast, the US economy is likely to have expanded at only about 2.6% for the year.

71. Which of the following would be the **SECOND** sentence?
 (a) A (b) C
 (c) D (d) E
 (e) F
72. Which of the following would be the **FOURTH** sentence?
 (a) A (b) B
 (c) C (d) E
 (e) F
73. Which of the following would be the **FIFTH** sentence ?
 (a) A (b) B
 (c) C (d) D
 (e) F
74. Which of the following would be the **FIRST** sentence ?
 (a) B (b) C
 (c) D (d) E
 (e) F
75. Which of the following would be the **SIXTH (LAST)** sentence ?
 (a) A (b) B
 (c) C (d) D
 (e) E

DIRECTIONS (Qs. 76-80) : Read each sentence to find out whether there is any grammatical error in it or a wrong word has been used. The error, if any, will be in one part of the sentence which has been printed in **bold** and has been numbered (a), (b), (c) or (d). The number of that part is the answer. If there is no error, the answer is (e) i.e. 'No error'. (Ignore the errors of punctuation, if any.)

76. The **convergence of** (a)/ Indian accounting standards with International Financial Reporting Standards (IFRS) **beginning** (b)/ in April is **expecting to** (c)/ see power companies **struggling with** (d)/ significant first-time adoption impact. No error (e)
77. **Researchers at** (a)/ the Indian Institute of Science (IISc), Bangalore, are **mapping** (b)/ India's solar hot spots-where **round-the-year** (c)/ sunlight makes it **viable of** (d)/ companies to set up solar power plants. No error (e).
78. Though their qualifications span a **diverse** (a)/ range, there is **an equal** (b)/ number of graduates and those who have just completed School, **each set** (c)/ **making up** (d)/ close to 30% of these households. No error (e)
79. **As if** (a)/ the most dangerous moment for any dictatorship **is when** (b)/ **it starts to** (c)/ reform, North Korea looks ready to turn that truism **on its head**. (d)/ No error (e)
80. **It so happens** (a)/ that this happy campy ritual is their **way of life** (b)/ and **one into which** (c)/ they don't **particularly welcome** (d)/ voyeuristic intrusions. No error (e)

DIRECTIONS (Qs. 81-90) : Read the following passage carefully and answer the questions given below it. Certain words/phrases are printed in **bold** to help you to locate them while answering some of the questions.

The outside world has pat answers concerning extremely impoverished countries, especially those in Africa. Everything comes back, again and again, to corruption and mis-rule. Western officials argue that Africa simply needs to behave itself better, to allow market forces to operate without interference by corrupt rulers. Yet the critics of African governance have it wrong. Politics

simply can't explain Africa's **prolonged** economic crisis. The claim that Africa's corruption is the basic source of the problem does not withstand serious scrutiny. During the past decade I witnessed how relatively well-governed countries in Africa, such as Ghana, Malawi, Mali and Senegal, failed to prosper, whereas societies in Asia perceived to have **extensive** corruption, such as Bangladesh, Indonesia and Pakistan, enjoyed rapid economic growth.

What is the explanation? Every situation of extreme poverty around the world contains some of its own unique causes, which need to be diagnosed as a doctor would a patient. For example, Africa is burdened with malaria like no other part of the world, simply because it is unlucky in providing the perfect conditions for that disease; high temperatures, plenty of breeding sites and particular species of malaria-transmitting mosquitoes that prefer to bite humans rather than cattle.

Another **myth** is that the developed world already gives plenty of aid to the world's poor. Former U.S. Secretary of the Treasury, Paul O'Neil expressed a common frustration when he remarked about aid for Africa : "We've spent trillions of dollars on these problems and we have damn near nothing to show for it". O'Neil was no foe of foreign aid. Indeed, he wanted to fix the system so that more U.S. aid could be justified. But he was wrong to believe that vast flows of aid to Africa had been **squandered**. President Bush said in a press conference in April 2004 that as "the greatest power on the face of the earth, we have an **obligation** to help the spread of freedom. We have an obligation to feed the hungry". Yet how does the U.S. fulfill its obligation? U.S. aid to farmers in poor countries to help them grow more food runs at around \$200 million per year, far less than \$1 per person per year for the hundreds of millions of people living in subsistence farm households.

From the world as a whole, the amount of aid per African per year is really very small, just \$30 per sub-Saharan African in 2002. Of that **modest** amount, almost \$5 was actually for consultants from the donor countries, more than \$3 was for emergency aid, about \$4 went for servicing Africa's debts and \$5 was for debt-relief operations. The rest, about \$12, went to Africa. Since the "money down the drain" argument is heard most frequently in the U.S., it's worth looking at the same calculations for U.S. aid alone. In 2002, the U.S. gave \$3 per sub-Saharan African. Taking out the parts for U.S. consultants and technical cooperation, food and other emergency aid, administrative costs and debt relief, the aid per African came to grand total of 6 cents.

The U.S. has promised repeatedly over the decades, as a signatory to global agreements like the Monterrey Consensus of 2002, to give a much larger proportion of its annual output, specifically upto 0.7% of GNP, to official development assistance. The U.S. failure to follow through has no political fallout domestically, of course, because not one in a million U.S. citizens even knows of statements like the Monterrey Consensus. But no one should underestimate the salience that it has around the world. Spin as American might about their nation's generosity, the poor countries are fully aware of what the U.S. is not doing.

81. The passage seems to emphasize that the outside world has
- correct understanding about the reasonable aid provided by the USA to the poor countries
 - definite information about what is happening in under developed countries

- stopped extending any financial aid to under developed countries
 - misconceptions about the aid given to the poor nations by developed countries
 - None of these
82. According to the Westerners the solution to eradicate poverty of African nations lies in
- corruption
 - improving their own national behaviour
 - mis-rule
 - prolonged economic crisis
 - None of these
83. The author has given the example of Bangladesh, Indonesia and Pakistan in support of his argument that
- corruption is the major culprit in the way of prosperity
 - mis-governance hampers the prosperity of nations
 - despite rampant corruption, nations may prosper
 - developed nations arrogantly neglect under developed countries.
 - None of these
84. The author has mentioned Ghana as a country with
- reasonably good-governance
 - corrupt leadership
 - plenty of natural resources
 - rapid economic growth
 - None of these
85. The cases of malaria in Africa are mainly due to
- high temperature.
 - climatic conditions conducive for breeding.
 - malaria carries liking for human blood in preference to that of cattle.
- None of these
 - Only B and C
 - Only A and C
 - Only A and B
 - All the three

DIRECTIONS (Qs. 86-88) : Choose the word/group of words which is **most nearly the same** in meaning to the word/group of words printed in **bold** as used in the passage.

86. **OBLIGATION**

- lip sympathy
- true sympathy
- self pity
- conditional responsibility
- moral binding

87. **SQUANDER**

- use economically
- spend wastefully
- siphon judiciously
- donate generously
- None of these

88. **MODEST**

- humble
- sufficient
- meagre
- sober
- unpretentious

DIRECTIONS (Qs. 89-90) : Choose the word/group of words

which is most **opposite** in meaning of the word given in **bold** as used in the passage.

89. **MYTH**

- (a) reality (b) mystery
(c) misery (d) misconception
(e) exaggeration

90. **EXTENSIVE**

- (a) intensive (b) abominable
(c) inherent (d) rampant
(e) negligible

DIRECTIONS (Qs. 91-100) : *In the following passage there are blanks, each of which has been numbered. These numbers are printed below the passage and against each five words are suggested, one of which fit the blank appropriately. Find out the appropriate word in each case.*

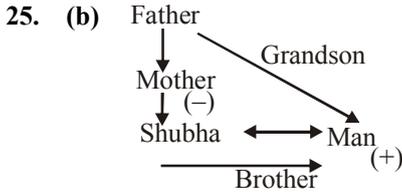
Economic backwardness of a region is **(91)** by the coexistence of unutilized **(92)** on the one hand and **(93)** natural resources on the other. Economic development essentially means a process of **(94)** change whereby the real per capita income of an economy **(95)** over a period of time. Then a simple but meaningful question arises; what causes economic development? Or what makes a country developed? This question has absorbed the **(96)** of scholars of socio-economic changes for decades. Going through the **(97)** history of developed countries like America, Russia and Japan, man is essentially found as **(98)** in the process of economic development. Japan, whose economy was **(99)** damaged from the ravages of the 2nd world War, is the example of our time to **(100)** kingdom role in economic development.

91. (a) Developed (b) Cured

- (c) Improved (d) Enhanced
(e) Characterized
92. (a) Source (b) Finance
(c) Funds (d) Manpower
(e) Industries
93. (a) Exhaustive (b) Unexploited
(c) Abundant (d) Indefinite
(e) Unreliable
94. (a) Upward (b) Drastic
(c) Negligible (d) Incredible
(e) Sudden
95. (a) Diminishes (b) Degenerates
(c) Increases (d) Succumbs
(e) Stabilizes
96. (a) Plans (b) Attempts
(c) Attention (d) Resources
(e) Strategy
97. (a) Existing (b) Glorious
(c) Ancient (d) Economic
(e) Discouraging
98. (a) Pivotal (b) Neutral
(c) Insignificant (d) Enchanted
(e) Vicious
99. (a) Increasingly (b) Always
(c) Gradually (d) Deliberately
(e) Badly
100. (a) Enlighten (b) Validate
(c) Negate (d) Underestimate
(e) Belittle

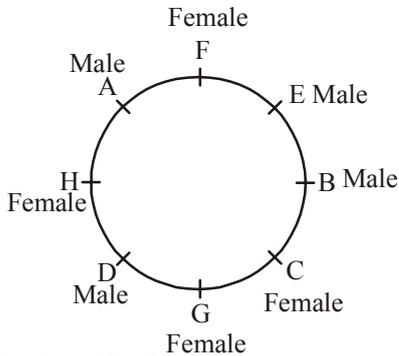
7 8 9 10 11 12
 M E N T A L
 Specified letters ⇒ D, R, M, E, A
 Meaningful word ⇒ DREAM

24. (b) ...N | | R | | | S|.....
 So there are two persons between Rani and Nishant.



26. (d) 125 is perfect cube of 5.
 27. (a) A person can get wealth from money in the same way a person can get kindness from pity.

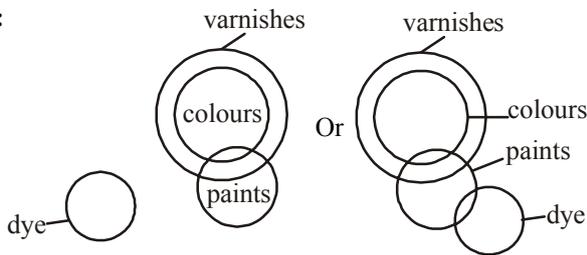
(28 – 32) :



F is the wife of D.
 B is the son of D and F.
 H is the daughter D and F.
 C is the wife B.
 A's brother is E.

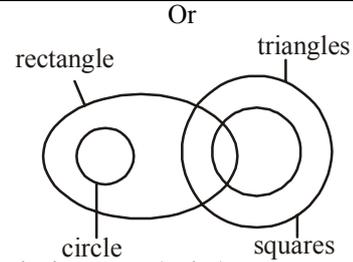
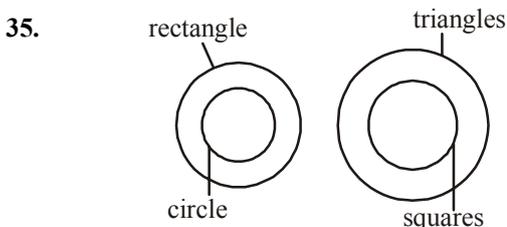
28. (d) B is the son of D
 29. (b) H is mother of A, E And E and G.
 H sits second to left of G.
 30. (b) One person sits between A and his brother E.
 31. (e) A sits exactly between H and F.
 32. (a) E is the brother of A.

(33-34) :



33. (a) Conclusion : I (True)
 II (False)
 So only conclusion I follows.

34. (e) Conclusion : I (True)
 II (True)
 So both the conclusions follow.



35. (d) Conclusion: I. (False)
 II. (False)
36. (b) $0.5 \times 1 + 1 = 1.5$
 $1.5 \times 2 + 2 = 5$
 $5 \times 3 + 3 = 18$
 $18 \times 4 + 4 = 76$
 $76 \times 5 + 5 = 385$
37. (c) $65 + 7$; $72 + 14$; $86 + 28$; $114 + 56 = 170$
38. (b) $(63-1) / 2$; $(31-1)/2$; $(15-1)/2$; $(7-1)/2$; $(3-1)/2 = 1$
39. (a) In this series, 5 is added to the previous number; the number 70 is inserted as every third number.
40. (b) This is a simple alternating addition and subtraction series. The first series begins with 8 and adds 3; the second begins with 43 and subtracts 2.
41. (b) From both equation
 $x = 7/12, y = 16/3$
 $y > x$
42. (e) $xy + 3y + 2x + 6 = 12$
 $2xy + 6y + 4x = 12$... (i)
 $2xy + 5y + 4x = 11$... (ii)
 From equation (i) and (ii)
 $y = 1$
 From equation (i)
 $x = 1$
 $x = y$
43. (b) $(3x - 2)/y = (3x + 6)/(y + 16)$
 $48x - 8y = 32$... (i)
 $(x + 2)/(y + 4) = (x + 5)/(y + 10)$
 $y = 2x$... (ii)
 From equation (i) & (ii)
 $x = 1, y = 2$
 $y > x$
44. (b) From the given equation
 $x = 1, -46$
 & $y = -4, 6$
 $y > x$
45. (a) From 1st equation
 $x^2 - 6x = 0$
 $x = 0, 6$
 From 2nd equation
 $(y + 4)(y - 5)$
 $y = -4, 5$
 $x > y$
46. (c) A is a triangle
 So, area of A = $1/2 \times 16 \times 12 = 96$ sqm
 So, cost of flooring of A = $96 \times 50 = ₹ 4800$
47. (a) Perimeter of B = $2(10 + 20) = 60$ m
 So, cost of fencing of B = $60 \times 15 = 900$
 Perimeter of C = $4 \times 15 = 60$ m
 So, cost of fencing of C = $60 \times 18 = ₹ 1080$
 So, required difference = $1080 - 900 = ₹ 180$
48. (d) Area of D = Base \times Height = $20 \times 12 = 240$ mtr sq
 So, cost of flooring of D = $240 \times 60 = ₹ 14400$

- Perimeter of D = $2(20 + 12) = 64$ m
 So, cost of fencing of D = $64 \times 25 = ₹ 1600$
 So, required ratio = $14400 : 1600 = 9 : 1$
49. (d) Perimeter of E = $2\pi r = 2 \times 22/7 \times 10 = 440/7$ m
 Cost of fencing of E = $440/7 \times 22 = ₹ 1382.85$
 Area of C = $15 \times 15 = 225$ mtr square
 So, cost of flooring of C = $225 \times 40 = ₹ 9000$
 So, required % = $1382.85 \times 100 / 9000$
 = 15.36% of flooring cost of C.
50. (b) Fencing cost of C = ₹ 1080
 Fencing cost of D = ₹ 1600
 Required % = $1080/1600 \times 100 = 67.5\%$
51. (d) Number of soldiers in Jat regiment = $10000 \times 35\% = 3500$
 Number of Hindu soldiers in Jat regiment = $3500 \times \frac{4}{5} = 2800$
52. (b) Number of Hindu soldiers in Madras regiment = $10000 \times 15\% \times \frac{2}{3} = 1000$
 Number of soldiers of other religions in Bihar regiment = $10000 \times 12\% \times \frac{3}{8} = 450$
 So, difference = $1000 - \frac{3}{8} = 450 = 550$
53. (d) Number of Hindu soldiers in Sikh regiment = 10000
 $\times 20\% \times \frac{3}{8} = 750$
 Number of soldiers of other religions in Maratha regiment = $10000 \times 18\% \times \frac{2}{5} = 720$
 So, required % = 104.16%
54. (a) Number of non-Hindu soldiers in Jat regiment = $3500 - 2800 = 700$
 Similarly in Sikh regiment = $10000 \times 20\% \times \frac{5}{8} = 125$
 In Madras regiment = $10000 \times 15\% \times \frac{1}{3} = 500$
 In Maratha regiment = $10000 \times 18\% \times \frac{2}{5} = 720$
 In Bihar regiment = $10000 \times 12\% \times \frac{3}{8} = 450$
 In Maratha regiment the number of non-Hindu soldiers is the maximum.
55. (e) Number of Hindu soldiers in Bihar regiment = 10000
 $\times 12\% \times \frac{5}{8} = 750$
 Number of non-Hindu soldiers in Jat regiment = 700
 So, required ratio = $750 : 700 = 15 : 14$
56. (c) P = 29000 CI = 9352.5 N = 2 years A = P + I = 38,352.50
 Substituting the values in

$$A = P \left(1 + \frac{R}{100} \right)^n$$
 Solving we get R = 15%.
57. (b) The required time will be the LCM of 8, 18 and 15 which is 360 sec or 6 minutes.
58. (c) $R^2 = 39424$
 $R = 112$
 Perimeter of square = $4a = 112$
 Side of square = $112/4 = 28$
 Area of square = $28^2 = 784$ cm².
59. (a) Number of ways = ${}^5C_2 \times {}^6C_2 \times {}^3C_1 = 450$
60. (d) Number of ways = ${}^{11}C_2 \times {}^3C_3 = 55$.
61. (c) Required number of days = $(30 \times 36)/18 = 60$
62. (d) Let total income of Ram be x. Then
 $(100 - 50 - 20 - 5)\%$ of x = 11250
 $x = 45000$.
63. (e) Let the number be xy
 $(10x + y) - (10y + x) = 54$
 $x - y = 6$ And $x + y = 12$
 Solving the equations we get x = 9 and y = 3
 So the number is 93.
64. (a) Let the age of Geeta's daughter be x. Then Geeta's age is 8x.
 $(8x + 8)/(x + 8) = 10/3$
 $x = 4$
 Geeta's present age = $8x = 32$ years.
65. (c) Required number of ways = $4! \times 3! \times 2! = 288$.
66. (d) 9228.789 ~ 9230; 5021.832 ~ 5020 and 1496.989 ~ 1500
 Now the equation will become
 $9230 - 5020 + 1500 = ?$
 $? = 5710$
 But the nearest value is 5700.
 [Note: Even rounding of the numbers to nearest hundred places gives the same]
67. (a) 1002 ~ 1000; 49 ~ 50; 99 ~ 100 and 1299 ~ 1300
 Now the equation will become
 $1000 \div 50 \times 100 - 1300 = ?$
 $20 \times 100 - 1300 = ?$
 $2000 - 1300 = ?$
 $? = 700$
68. (d) The difference between two nearest values is 70 (210 and 280). So round off the numbers to the nearest integers.
 29.8% of 260 ~ 30% of 260; 60.01% of 510 ~ 60% of 510 and 103.57 ~ 104
 Now the equation will become
 30% of 260 + 60% of 510 - 104 = ?
 $30/100 \times 260 + 60/100 \times 510 - 104 = ?$
 $78 + 306 - 104 = ?$
 $? = 384 - 104 = 280$
69. (a) $(21.98)^2 = (22)^2$
 $(25.02)^2 = (25)^2$
 and $(13.03)^2 = (13)^2$
 The equation will become
 $22^2 - 25^2 + 13^2 = ?$
 $484 - 625 + 169 = ?$
 $653 - 625 = ?$
 $? = 28$ so the nearest value is 25
70. (e) $\sqrt{24.98} \times \sqrt{6.25} \times \sqrt{99} = ?$
 $5 \times 2.5 \times 10 = 125$
71. (b) 72. (d) 73. (e) 74. (c) 75. (b)
 76. (a) 77. (d) 78. (d) 79. (d) 80. (c)
 81. (d) 82. (b) 83. (c) 84. (a) 85. (e)
 86. (e) 87. (b) 88. (a) 89. (a) 90. (e)
 91. (e) 92. (d) 93. (b) 94. (b) 95. (c)
 96. (c) 97. (d) 98. (a) 99. (e) 100. (b)

IBPS

Common Written Exam (PO/MT)

Held on : 01-11-2014

(Based On Memory)

Time : 2 Hrs.

REASONING ABILITY

DIRECTIONS (Qs. 1-5): Every question below has a three statement, followed by four conclusions numbered I, II, III and IV. You have to consider every given statement as true, even if it does not conform to the well known facts. Read the conclusions and then decide which of the conclusions can be logically derived.

1. **Statements**

- I. Some toys are pens.
- II. Some pens are papers.
- III. Some papers are black.

Conclusions

- I. Some toys are black.
- II. No pen is black.
- III. No toy is black.
- IV. Some pens are black.
- (a) None follows
- (b) Either II or IV
- (c) Either I or III and either II or IV
- (d) Either I or IV
- (e) All of the above

2. **Statements**

- I. Some books are copies.
- II. All copies are green.
- III. Some green are yellow.

Conclusions

- I. All copies are yellow.
- II. Some yellow are green.
- III. Some copies are yellow.
- IV. All green are copies.
- (a) Only II
- (b) Either III or IV only
- (c) Either II or IV only
- (d) All of these
- (e) None of these

3. **Statements**

- I. All jugs are glasses.
- II. All glasses are cups.
- III. All jugs are pens.

Conclusions

- I. All pens are jugs.
- II. Some glasses are pens.
- III. Some cups are pens.
- IV. All pens are cups.
- (a) All follow
- (b) Only II
- (c) Only II and III
- (d) Only III and IV
- (e) None of these

4. **Statements**

- I. All ACs are DCs.
- II. Some DCs are ECs.
- III. All ECs are YYs.

Conclusions

- I. Some ACs are ECs.
- II. Some YYs are DCs.
- III. No ACs is ECs.
- IV. All DCs are ACs.
- (a) I and III
- (b) Only II
- (c) I and II
- (d) II and either I or III
- (e) None of these

5. **Statements**

- I. Some newspapers are radios.
- II. Some radios are televisions.
- III. No television is a magazine.

Conclusions

- I. No newspaper is a magazine.
- II. No radio is a magazine.
- III. Some radios are not magazine.
- IV. Some newspapers are televisions.
- (a) Only I follows
- (b) Only III follows
- (c) Either I or II follows
- (d) Both I and II follow
- (e) None of these

DIRECTIONS (Qs. 6-10): Study the following information carefully and answer the questions based on it.

Ten students A, B, C, D, E, F, G, H, I and J are sitting in a row facing west.

- (i) B and F are not sitting on either of the edges.
- (ii) G is sitting to the left of D and H is sitting to the right of J.
- (iii) There are four persons between E and A.
- (iv) I is to the right of B and F is to the left of D.
- (v) J is in between A and D and G is in between E and F.
- (vi) There are two persons between H and C.

6. Who is sitting at the seventh place counting from left?

- (a) H
- (b) C
- (c) J
- (d) Either H or C
- (e) None of these

7. Who among the following is definitely sitting at one of the ends?

- (a) C
- (b) H
- (c) E
- (d) Cannot be determined
- (e) None of these

8. Who are immediate neighbours of I?
 (a) BC (b) BH
 (c) AH (d) Cannot be determined
 (e) None of these
9. Who is sitting second left of D?
 (a) G (b) F
 (c) E (d) J
 (e) None of these
10. If G and A interchange their positions, then who become the immediate neighbours of E?
 (a) G and F (b) Only F
 (c) Only A (d) J and H
 (e) None of these

DIRECTIONS (Qs. 11 - 15): Study the following information and answer the questions that follow:-

Twelve people Abhishek, Binit, Chand, Dhiraj, Eshita, Fatima, Garima, Hena, Ishan, Jatin, Kamal and Lalit are sitting around a rectangular table. The following information is known- The table has 12 chairs numbered from 1 to 12. 6 seats on one side of the table and 6 on the opposite side. The chairs are arranged in such a way that chair number 1 is just opposite to 12, 6 is opposite to 7 and so on- Abhishek is sitting opposite to Kamal who is the only person sitting between Chand and Jatin. Eshita is sitting opposite to Ishan who is the only person sitting between Binit and Lalit. Fatima, sitting at chair number 1, is diagonally opposite to Chand who is sitting opposite to Dhiraj.

11. If Garima is sitting opposite to Fatima then who is sitting opposite to Hena?
 (a) Lalit
 (b) Binit
 (c) Ishan
 (d) Uniquely not determined.
 (e) None of these
12. If Lalit is sitting opposite to Hena, then who is sitting opposite to Garima?
 (a) Eshita or Fatima (b) Jatin or Fatima
 (c) Jatin or Eshita (d) None of these
 (e) All of the above
13. How many persons are sitting between Binit and Dhiraj, if they are on the same side of the table?
 (a) 2 or 3 (b) 1 or 2
 (c) 1 or 3 (d) None of these
 (e) All of the above
14. Which one of the following is correct?
 (a) Lalit is sitting at seat number 12
 (b) Lalit is sitting at seat number 10
 (c) Kamal is sitting at seat number 8
 (d) Kamal is sitting at seat number 9
 (e) None of these
15. Which one of the following is not correct?
 (a) Lalit can be opposite to Jatin.
 (b) Jatin can be opposite to Hena.
 (c) Lalit is adjacent to Chand.
 (d) There are three person sitting between A and F.
 (e) None of these

DIRECTIONS (Qs. 16 - 20): This group of questions is based on a set of conditions. In answering some of the questions, it may be useful to draw a rough diagram. Choose the response that most accurately and completely answers each question. A circular field, with inner radius of 10 meters and outer radius of 20 meters, was divided into five successive stages for ploughing. The ploughing of each stage was handed over to a different farmer.

- (i) Farmers are referred to by the following symbols: F1, F2, F3, F4 and F5.
 (ii) The points between different stages of project are referred to by the following symbols: P1, P2, P3, P4, and P5, not necessarily in the order.
 (iii) Farmer F5 was given the work of ploughing stage starting at point P4.
 (iv) The stage from point P5 to point P3 was not the first stage.
 (v) Farmer F4 was given the work of the fourth stage.
 (vi) Stage 3 finished at point P1, and the work of which was not given to farmer F1.
 (vii) Farmer F3 was given work of stage ending at point P5.
16. Which was the finish point for farmer F2?
 (a) P1 (b) P2
 (c) P3 (d) P4
 (e) P5
17. Which stage was ploughed by farmer F5?
 (a) First (b) Second
 (c) Third (d) Fourth
 (e) Fifth
18. Which were the starting and finish points of stage 2?
 (a) P2 and P5 (b) P5 and P3
 (c) P3 and P1 (d) P5 and P4
 (e) P3 and P2
19. For which farmer was P2 a finishing point?
 (a) F1 (b) F2
 (c) F3 (d) F4
 (e) F5
20. Which was the starting point for farmer F3?
 (a) P2 (b) P3
 (c) P4 (d) P1
 (e) None of these

DIRECTIONS (Qs. 21-25) : In the following question *, ⊕, \$, £ and @ are used according to following meaning.

'P*Q' means, 'P is neither equal nor smaller than Q'
 'P⊕Q' means, 'P is not smaller than Q'
 'P\$Q' means, 'P is neither greater nor smaller than Q'
 'P£Q' means, 'P is neither greater nor equal to Q'
 'P@Q' means, 'P is not greater than Q'

Now according to the following statement if they are true, judge their Conclusions I, II and III follow definitely true.

21. **Statements**

E @ F , O ⊕ F , P @ E , P \$ R

Conclusions

I O \$ P II. E ⊕ R III. P £ O

- (a) Only I is true (b) Only II is true
 (c) Either I or II is true (d) Only III is true
 (e) None of these

22. **Statements**

$A * B$, $B @ C$, $A \$ D$, $D \text{ \textasciitilde } E$

Conclusions

- I. $E * B$ II. $C \$ A$ III. $D @ E$
 (a) Only I is true (b) I and II are true
 (c) Only III is true (d) No one is true
 (e) None of these

23. **Statements**

$I \oplus H$, $H \$ T$, $S \text{ \textasciitilde } T$, $S @ R$

Conclusions

- I. $I * T$ II. $I \$ T$ III. $S * H$
 (a) All are true (b) Either I or II is true
 (c) Only I is true (d) Only II is true
 (e) None of these

24. **Statements**

$S @ T$, $Q \$ N$, $T \text{ \textasciitilde } N$, $Q * O$

Conclusions

- I. $S \$ N$ II. $N \oplus O$ III. $N * O$
 (a) None is true (b) Either I or III is true
 (c) Only I is true (d) Only II is true
 (e) None of these

25. **Statements**

$H \oplus J$, $J * K$, $L \$ K$, $K @ M$

Conclusions

- I. $K \text{ \textasciitilde } M$ II. $L \$ J$ III. $H \oplus L$
 (a) I and III are true (b) Only II is true
 (c) Only III is true (d) None is true
 (e) None of these

DIRECTIONS (Qs. 26-30) : Each of the questions below consists of a questions and two statements numbered I and II given below it. Use the data given to decide whether the data provided in the statements are sufficient to answer the question.

Read both the statements and Give answer

- (a) if the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.
 (b) if the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.
 (c) if the data either in statement I alone or in statement II alone are sufficient to answer the question.
 (d) if the data in both the statements I and II together are not sufficient to answer the question.
 (e) if the data in both the statements I and II together are necessary to answer the question.
26. Among M, K, B, D and W, who is the youngest?
I. B is younger than D.
II. W is younger than K but older than M.
27. What does 'Ne' stands for in the code language?
I. 'Na Ni Nok Ne' means 'I will tell you' and 'Ni Nok Ne Nam' means 'he will tell you' in that code language.
II. 'Ni Ne Mo Nam' means 'will he call you' and 'Ne Mok Sac Ni' means 'how will you go' in that code language.
28. Who amongst P, Q, R, S, T and U is the tallest?
I. P is taller than R and T but not as tall as U, who is taller than Q and S.

- II.** R is the third in height in the ascending order and not as tall as U, P and Q, Q being taller than P but not the tallest.

29. Who is paternal uncle of P?

- I.** P is brother of L, who is daughter of Q, who is sister of N, who is brother of S.
II. M is brother of K, who is husband of L, who is mother of G, who is sister of P.

30. What is Sudin's rank in the class of 44 students?

- I.** Ramesh, whose rank is 17th in the class, is ahead of Shyam by 6 ranks, Shyam being 7 ranks ahead of Sudin.
II. Suketu is 26 ranks ahead of Sudin and Shyamala is 6 ranks behind Sudin while Savita stands exactly in the middle of Shyamala and Suketu in ranks, her rank being 17.

DIRECTIONS (Qs.31-34) : Study the following information carefully and answer questions that follow :

The convenience of online shopping is what I like best about it. Where else can you shop even at midnight wearing your night suit? You do not have to wait in a line till the shop assistant is ready to help you with your purchases. It is much better experience as compared to going to a retail store. – A consumer's view.

31. Which of the following can be a **strong argument** in favour of retail store owners?
 (a) Online shopping portals offer a great deal of discounts which retail stores offer only during the sale season.
 (b) One can compare a variety of products online which cannot be done at retail stores.
 (c) Many online shopping portals offer the 'cash on delivery' feature which is for those who are sceptical about online payments.
 (d) Many consumers prefer shopping at retail stores which are nearer to their houses.
 (e) In online shopping the customer may be deceived as he cannot touch the product he is paying for.
32. Which of the following can be **inferred** from the given information? (*An inference is something that is not directly stated but can be inferred from the given information*)
 (a) One can shop online only at night.
 (b) Those who are not comfortable using computers can never enjoy the experience of online shopping.
 (c) All retail stores provide shopping assistants to each and every customer.
 (d) The consumer whose view is presented has shopped at retail stores as well as online.
 (e) The consumer whose view is presented does not have any retail stores in her vicinity.
33. Read the following information carefully and answer the given question:
 Many manufacturing companies are now shifting base to the rural areas of the country as there is a scarcity of space in urban areas. Analysts say that this shift will not have a huge impact on the prices of the products manufactured by these companies as only about 30% consumers live in urban areas.

Which of the following may be **consequence** of the given information?

- The prices of such products will decrease drastically in the urban areas.
 - People living in urban areas will not be allowed to work in such manufacturing companies.
 - These manufacturing companies has set-ups in the urban areas before shifting base.
 - Those who had already migrated to the urban areas will not shift back to rural areas.
 - The number of people migrated from rural to urban areas in search of jobs may reduce.
34. Read the following information carefully and answer the given question:
'Pets are not allowed in the park premises' - A notice put up at the park entrance by the authority that is responsible for maintenance of the park.
Which of the following can be **an assumption** according to the given information? (*An assumption is something that is supposed or taken for granted*)
- At least some people who visit the park have pets.
 - This is the only park which does not allow pets
 - People who ignored this notice were fined
 - There are more than one entrances to the park
 - Many people have now stopped visiting the park
35. In a code language 'PROVIDE' is written as 'MULYFGB', then what will be code for 'BECAUSE' in same languages
- YZHDRVB
 - ZHYDRVB
 - YHZDRVB
 - ZYDHVBR
 - None of these

DIRECTIONS (Qs. 36-38) : Study the following information carefully and answer the questions that follow :

In a building there are thirteen flats on three floors— II, III and IV. Five flats are unoccupied. Three managers, two teachers, two lawyers and one doctor occupy the remaining flats. There are at least three flats on any floor and not more than six flats on any floor. No two persons of the same profession stay on any floor. On the second floor, out of four flats, one occupant is the lawyer and has only one neighbour. One teacher lives one floor below the other teacher. The doctor is not the neighbour of any of the lawyers. No flat is unoccupied on the third floor.

36. How many flats are there on the third floor?
- Three or Four
 - Four
 - Five
 - Three
 - None of these
37. What is the combination of occupants on the second floor?
- Lawyer, Manager
 - Teacher, Doctor
 - Manager, Doctor
 - Manager, Teacher
 - None of these
38. Who among the following is the neighbour of the other lawyer?
- Manager
 - Teacher
 - Both the Manager and the Teacher
 - Data inadequate
 - None of these

DIRECTIONS (Qs. 39 - 44) : Study the following information carefully and answer the given questions :

A word and number arrangement machine when given an input line of words and numbers rearranges them following a particular rule in each step. The following is an illustration of input and rearrangement:

Input : exam 81 56 over down up 16 64

Step I : down exam 81 56 over up 16 64

Step II : down 81 exam 56 over up 16 64

Step III : down 81 exam 64 56 over up 16

Step IV : down 81 exam 64 over 56 up 16

Step IV is the last step of the rearrangement of the above input.

As per the rule followed in the above steps, answer the following questions.

39. **Input** : 98 11 64 22 but will an it
which of the following will be step VI?
- step VI can't be possible because step V will be the last step
 - an 98 but 64 it 22 11 will
 - an 98 but 64 it 22 will 11
 - an 11 but 22 it 64 will 98
 - None of these
40. **Input**: 32 now 20 gift 53 box 62 at
Which of the following will be step IV?
- at 62 box 53 32 now 20 gift
 - at 62 box 53 gift 32 now 20
 - at 62 box 53 gift 20 now 32
 - at 62 53 box 32 now 20 gift
 - None of these
41. **Input**: pay by 18 36 nose ear 72 54
Which of the following steps will be the last step?
- Can't say
 - Five
 - Seven
 - Six
 - None of these
42. Step III of an input is:
damn 96 flag 87 78 14 saint put
which of the following steps will be the last but one?
- Can't say
 - Four
 - Five
 - Six
 - None of these
43. Step II of an input is :
jug 99 wax sun top 15 31 47
which of the following is definitely the input?
- wax sun top 15 31 47 jug 99
 - wax sun jug 99 top 15 31 47
 - wax sun top jug 99 15 31 47
 - Cannot be determined
 - None of these
44. Step IV of an input is: *Come 95 forward 40 sky 17 over 23*.
Then which of the following can certainly not be step III?
- come 95 forward sky 17 over 23 40
 - come 95 forward 17 sky over 23 40
 - come 95 forward sky 40 17 over 23
 - Cannot be determined
 - None of these

DIRECTIONS (Qs. 45 to 48): Study the following information carefully and answer the questions that follow:

Mr Ghosh recently redecorated his house by coordinating orange and three other colours for the walls, carpets and curtains of four different rooms. From the information below, determine the colours of the carpet, walls and curtains for each of the room and answer the following questions:

- (a) Yellow was the only colour used in all the four rooms. It was used at least once for walls, carpets and curtains.
- (b) Three different colours were used in each room but only the dining room and the bedroom were decorated in the same three colours.
- (c) The same colour was chosen for the curtains in the bedroom, the carpet in the living room and the walls in the dining room. That colour was not used at all in the study room.
- (d) The only room with both green and grey in its colour scheme had carpet of the same colour as in the dining room.
- (e) Grey was the only colour used exactly twice—both times for curtains
- (f) The study room walls were painted the same colour as the living room walls.
45. Which of the following rooms had orange curtains and green walls?
- (a) Dining room (b) Living room
(c) Bedroom (d) Study
(e) None of these
46. Which of the two rooms had green carpets?
- (a) Dining room and bedroom
(b) Study and living room
(c) Living room and dining room
(d) Study and dining room
(e) None of these
47. Which room did not use grey colour at all?
- (a) Dining room (b) Cannot say
(c) Study (d) Living room
(e) None of these
48. The dining room had ___ curtains.
- (a) Green (b) yellow
(c) Orange (d) grey
(e) None of these
49. In a certain code language 'how many goals scored' is written as '5 3 9 7'; 'many more matches' is written as '9 8 2'; and 'he scored five' is written as '1 6 3'. How is 'goals' written in that code language?
- (a) 5 (b) 7
(c) 5 or 7 (d) Data inadequate
(e) None of these
50. In a certain code TEMPORAL is written as OLDSMBSP. How is CONSIDER written in that code?

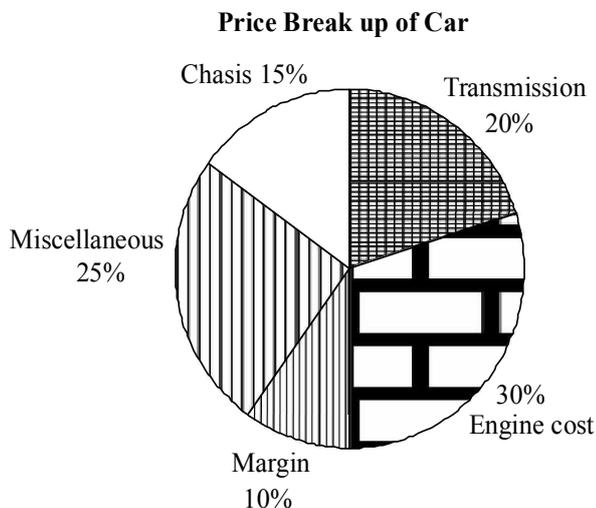
- (a) RMNBSFEJ (b) BNMRSFEJ
(c) RMNBJEFS (d) TOPDQDCH
(e) None of these

QUANTITATIVE APTITUDE

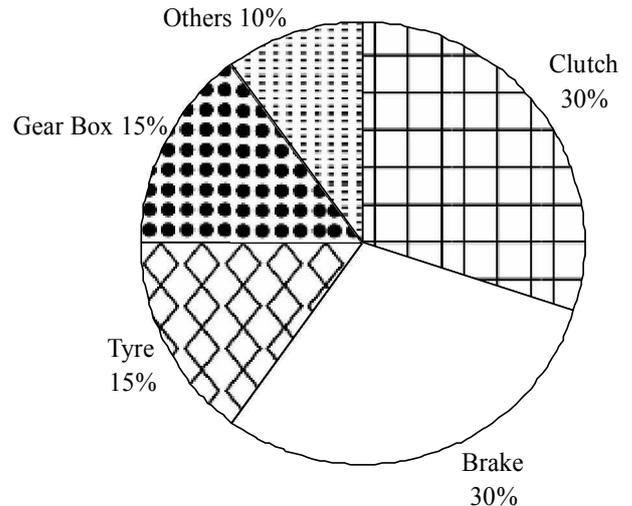
51. Three containers A, B and C are having mixtures of milk and water in the ratio 1 : 5, 3 : 5 and 5 : 7, respectively. If the capacities of the containers are in the ratio 5 : 4 : 5, then find the ratio of the milk to the water if the mixtures of all the three containers are mixed together.
- (a) 51 : 115 (b) 52 : 115
(c) 53 : 115 (d) 54 : 115
(e) None of these
52. Groundnut oil is now being sold at ₹ 27 per kg. During last month its cost was ₹ 24 per kg. Find by how much % a family should reduce its consumption, so as to keep the expenditure same.
- (a) $11\frac{1}{9}\%$ (b) $11\frac{1}{11}\%$
(c) $11\frac{9}{10}\%$ (d) $9\frac{1}{10}\%$
(e) None of these
53. An ice-cream company makes a popular brand of ice-cream in rectangular shaped bar 6 cm long, 5 cm wide and 2 cm thick. To cut the cost, the company has decided to reduce the volume of the bar by 20%, the thickness remaining the same, but the length and width will be decreased by the same percentage amount. The new length L will satisfy :
- (a) $5.5 < L < 6$ (b) $5 < L < 5.5$
(c) $4.5 < L < 5$ (d) $4 < L < 4.5$
(e) None of these
54. A sum of ₹ 725 is lent in the beginning of a year at a certain rate of interest. After 8 months, a sum of ₹ 362.50 more is lent but at the rate twice the former. At the end of the year, ₹ 33.50 is earned as interest from both the loans. What was the original rate of interest?
- (a) 3.6% (b) 4.5%
(c) 5% (d) 3.46%
(e) None of these
55. The difference between compound interest and simple interest on a sum for 2 years at 10% per annum, when the interest is compounded annually is ₹ 16. If the interest were compounded half-yearly, the difference in two interests would be:
- (a) ₹ 24.81 (b) ₹ 26.90
(c) ₹ 31.61 (d) ₹ 32.40
(e) None of these
56. A person lent out a certain sum on simple interest and the same sum on compound interest at certain rate of interest per annum. He noticed that the ratio between the difference of compound interest and simple interest of 3 years and that of 2 years is 25 : 8. The rate of interest per annum is:
- (a) 10% (b) 11%
(c) 12% (d) $12\frac{1}{2}\%$
(e) None of these

57. A contract is to be completed in 46 days and 117 men were set to work, each working 8 hours a day. After 33 days, $\frac{4}{7}$ of the work is completed. How many additional men may be employed so that the work may be completed in time, each man now working 9 hours a day ?
- (a) 80 (b) 81
(c) 82 (d) 83
(e) None of these
58. Two pipes A and B can fill a cistern in 30 minutes and 40 minutes respectively. Both the pipes are opened. Find when the second pipe B must be turned off so the cistern may just be full in 10 minutes.
- (a) $26\frac{2}{3}$ min (b) 25 min
(c) $40\frac{2}{3}$ min (d) $42\frac{2}{3}$ min
(e) None of these
59. A train leaves station X at 5 a.m. and reaches station Y at 9 a.m. Another train leaves station Y at 7 a.m. and reaches station X at 10:30 a.m. At what time do the two trains cross each other ?
- (a) 7:36 am (b) 7:56 am
(c) 8:36 am (d) 8:56 am
(e) None of these
60. A boat running upstream takes 8 hours 48 minutes to cover a certain distance, while it takes 4 hours to cover the same distance running downstream. What is the ratio between the speed of the boat and speed of water current respectively?
- (a) 2:1 (b) 3:2
(c) 8:3 (d) Cannot be determined
(e) None of these

DIRECTIONS (Qs. 61-65) : Study the pie charts given below and answer the following questions.



Cost break up of Transmission



Price of Car = ₹1,00,000

61. What is the cost of Gear Box?
- (a) ₹9000 (b) ₹6000
(c) ₹3000 (d) ₹15,000
(e) None of these
62. What percentage of total cost is contributed by the brake?
- (a) 5.5% (b) 6.6%
(c) 6% (d) 5.4%
(e) None of these
63. If the price of tyres goes up by 25%, by what amount should be the sale price be increased to maintain the amount of profit?
- (a) ₹750 (b) ₹2250
(c) ₹3750 (d) ₹375
(e) None of these
64. If transmission cost increases by 20%, by what amount is the profit reduced (total price of car remains same)?
- (a) ₹3000 (b) ₹4000
(c) ₹6000 (d) Cannot be determined
(e) None of these
65. What % of sale price is contributed by clutch?
- (a) 6% (b) 2%
(c) 3% (d) Cannot be determined
(e) None of these

DIRECTIONS (Qs. 66 - 70) : Read the following information and answer the questions that follow.

In a huge Jewellery shop, the electric gadgets being used are 17 tubelights of 40 W each, 14 fans of 80 W each, 16 bulbs of 60 W each, 11 bulbs of 100 W each, 11 AC's of 2100 W each, 9 laptops of 200 W each and 10 TV's of 120 W each. In a day, tube lights

and TV's are used for 8 h but 60 W bulbs are used for 7 h and 100 W bulbs are used for 9 h whereas laptops and AC's are used for 5 h and 9 h respectively. However, fans are used for 11 h. (Note: 1000 W = 1 unit, 1 month = 30 days).

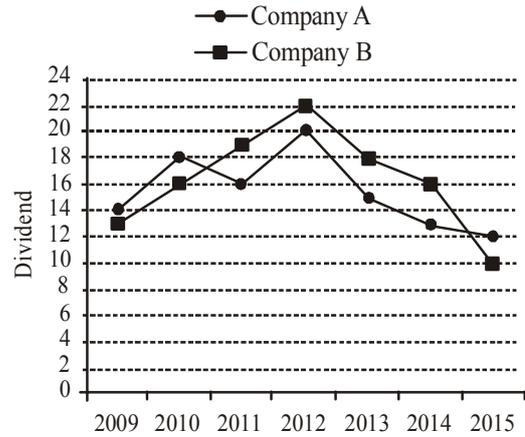
66. What is the total electric energy consumed (in units) by 60 W bulbs in the whole month?
- (a) 432 (b) 576
(c) 67.2 (d) 201.6
(e) None of these
67. Electricity consumed by all fans is what per cent of energy consumed by all the laptops?
- (a) 132.2% (b) 136.88%
(c) 122.68 (d) 169.62%
(e) None of these
68. Out of the following, which type of gadgets consume more electricity in the shop?
- (a) Fans (b) Tubelights
(c) Laptops (d) TV's
(e) None of these
69. If one electric unit costs ₹ 2.70 and power (used by AC's) unit costs ₹ 3.70, then what money is paid to the electricity department for one month?
- (a) ₹ 27368 (b) ₹ 28683
(c) ₹ 78600 (d) ₹ 2900
(e) None of these
70. What is the ratio of consumption of electricity in units by 60W and 100 W bulbs in a month?
- (a) 5 : 6 (b) 4 : 5
(c) 3 : 4 (d) 2 : 3
(e) None of these

DIRECTIONS (Qs.71–75): In each of the following questions two equations are given. You have to solve them and give answer accordingly.

- (a) If $x > y$ (b) If $x < y$
(c) If $x = y$ (d) If $x \geq y$
(e) If $x \leq y$
71. I. $2x^2 + 5x + 1 = x^2 + 2x - 1$
II. $2y^2 - 8y + 1 = -1$
72. I. $\frac{x^2}{2} + x - \frac{1}{2} = 1$
II. $3y^2 - 10y + 8 = y^2 + 2y - 10$
73. I. $4x^2 - 20x + 19 = 4x - 1$
II. $2y^2 = 26y + 84$
74. I. $y^2 + y - 1 = 4 - 2y - y^2$
II. $\frac{x^2}{2} - \frac{3}{2}x = x - 3$
75. I. $6x^2 + 13x = 12 - x$
II. $1 + 2y^2 = 2y + \frac{5y}{6}$

DIRECTIONS (Qs. 76-80): Study the following graph carefully to answer these questions.

Annual dividend offered by two companies over the years



76. Shri Giridhar invested total amount of ₹ 25000 in 2009 for one year in the two companies together and got a total dividend of ₹ 3340. What was the amount invested in Company A?
- (a) ₹ 12000 (b) ₹ 9000
(c) ₹ 16000 (d) Cannot be determined
(e) None of these
77. Anuja invested ₹ 35000 in Company B in 2011. After one year she transferred the entire amount with dividend to Company A in 2012 for one year. What amount will be received back by Anuja including dividend?
- (a) ₹ 49980 (b) ₹ 49000
(c) ₹ 48300 (d) ₹ 49563.50
(e) None of these
78. An amount of ₹ 18000 was invested in Company A in 2012. After one year the same amount was re-invested for one more year. What was the total dividend received at the end of two years?
- (a) ₹ 5805 (b) ₹ 6300
(c) ₹ 6480 (d) ₹ 6840
(e) None of these
79. Bhushan invested different amounts in Companies A and B in 2015 in the ratio of 5 : 8. What will be the ratio between the amounts of dividends received from Companies A and B respectively?
- (a) 2 : 3 (b) 5 : 6
(c) 3 : 4 (d) Cannot be determined
(e) None of these
80. In the year 2014, Suraj invested ₹ 56000 in Company B. How much more or less dividend would he have received had the amount been invested in Company A?
- (a) ₹ 1640 more (b) ₹ 1640 less
(c) ₹ 1860 less (d) ₹ 1680
(e) None of these

DIRECTIONS (Qs. 81 - 85) : Study the following table to answer the given questions.

Production (in crore units) of six companies over the years

Company	Years						Total
	2009	2010	2011	2012	2013	2014	
TP	103	150	105	107	110	132	707
ZIR	75	80	83	86	90	91	505
AVC	300	300	300	360	370	340	1970
CTU	275	280	281	280	285	287	1688
PEN	25	30	35	40	42	45	217
SIO	85	87	89	91	92	96	540
Total	863	927	893	964	989	991	5627

81. The production of Company AVC in 2000 is approximately what per cent of its average production over the given years?
 (a) 300 (b) 110
 (c) 136 (d) 118.25
 (e) None of these
82. For SIO, which year was the per cent increase or decrease in production from the previous year the highest?
 (a) 2013 (b) 2010
 (c) 2014 (d) 2012
 (e) None of these
83. Which company has less average production in the last three years compared to that of first three years?
 (a) No company (b) CTU
 (c) ZIR (d) TP
 (e) None of these
84. The total production of the six companies in the first two given years is what per cent of that of last two given years? (round off up to two decimal places)
 (a) 87.08 (b) 104.55
 (c) 90.40 (d) 10.62
 (e) None of these
85. For ZIR, which of the following is the difference between production in 2013 and that in 2014?
 (a) 10,00,00,000 (b) 1,00,00,000
 (c) 10,00,000 (d) 40,00,000
 (e) None of these
86. When the price of a radio was reduced by 20%, its sale increased by 80%. What was the net effect on the sale?
 (a) 44% increase (b) 44% decrease
 (c) 66% increase (d) 75% increase
 (e) None of these
87. Two sides of a plot measure 32 metres and 24 metres and the angle between them is a perfect right angle. The other two sides measure 25 metres each and the other three angles.
 What is the area of the plot?
 (a) 768 (b) 534
 (c) 696.5 (d) 684
 (e) None of these
88. In how many different ways can the letters of the word 'LEADING' be arranged in such a way that the vowels always come together?
 (a) 360 (b) 480
 (c) 720 (d) 5040
 (e) None of these
89. In a class, there are 15 boys and 10 girls. Three students are selected at random. The probability that 1 girl and 2 boys are selected, is:
 (a) $\frac{21}{46}$ (b) $\frac{25}{117}$
 (c) $\frac{1}{50}$ (d) $\frac{3}{25}$
 (e) None of these
90. Gauri went to the stationery and bought things worth ₹25, out of which 30 paise went on sales tax on taxable purchases. If the tax rate was 6%, then what was the cost of the tax free items?
 (a) ₹15 (b) ₹15.70
 (c) ₹19.70 (d) ₹20
 (e) None of these

DIRECTIONS(Qs 91-95): In this type of questions, one term in the number series is wrong. Find out the wrong term.

91. 93, 309, 434, 498, 521, 533
 (a) 309 (b) 434
 (c) 498 (d) 521
 (e) None of these
92. 46080, 3840, 384, 48, 24, 2, 1
 (a) 384 (b) 48
 (c) 24 (d) 2
 (e) None of these
93. 5, 27, 61, 122, 213, 340, 509
 (a) 27 (b) 61
 (c) 122 (d) 509
 (e) None of these
94. 11, 5, 20, 12, 40, 26, 74, 54
 (a) 5 (b) 20
 (c) 40 (d) 26
 (e) None of these

95. 1, 3, 10, 21, 64, 129, 356, 777
 (a) 21 (b) 129
 (b) 10 (d) 356
 (e) None of these

DIRECTIONS (96-100): *What approximate value will come in place of question mark (?) in the following questions (You are not expected to calculate the exact value).*

96. $9228.789 - 5021.832 + 1496.989 = ?$
 (a) 6500 (b) 6000
 (c) 6300 (d) 5700
 (e) 5100
97. $1002 \div 49 \times 99 - 1299 = ?$
 (a) 700 (b) 600
 (c) 900 (d) 250
 (e) 400
98. $29.8\% \text{ of } 260 + 60.01\% \text{ of } 510 - 103.57 = ?$
 (a) 450 (b) 320
 (c) 210 (d) 280
 (e) 350
99. $(21.98)^2 - (25.02)^2 + (13.03)^2 = ?$
 (a) 25 (b) 120
 (c) 10 (d) 65
 (e) 140
100. $\frac{\sqrt{2498} \times \sqrt{625}}{\sqrt{99}} = ?$
 (a) 110 (b) 90
 (c) 200 (d) 160
 (e) 125

ENGLISH LANGUAGE

DIRECTION (Qs. 101-115): *Read the following passage carefully and answer the questions given below it. Certain words/phrases have been printed in bold to help you locate them while answering some of the questions.*

Governments have traditionally equated economic progress with steel mills and cement factories. While urban centers thrive and city dwellers get rich, hundreds of millions of farmers remain mired in poverty. However, fears of food shortages, a rethinking of antipoverty priorities and the crushing recession in 2008 are causing a dramatic shift in world economic policy in favour of greater support for agriculture.

The last time when the world's farmers felt such love was in the 1970s. At that time, as food prices spiked, there was real concern that the world was facing a crisis in which the planet was simply unable to produce enough grain and meat for an expanding population. Governments across the developing world and international aid organisations **plowed** investment into agriculture in the early 1970s, while technological breakthroughs, like high-yield strains of important food crops, boosted production. The result was the Green Revolution and food production exploded.

But the Green Revolution became a victim of its own success. Food prices plunged by some 60% by the late 1980s from their peak in the mid-1970s. Policymakers and aid workers turned their attention to the poor's other **pressing** needs, such as health care and education. Farming got **starved** of resources and investment. By 2004, aid directed at agriculture sank to 3.5% and "Agriculture lost its glitter." Also, as consumers in high-growth giants such as China and India became wealthier, they began eating more meat, so grain once used for human consumption got diverted to beef up livestock.

By early 2008, panicked buying by importing countries and restrictions **slapped** on grain exports by some big producers helped drive prices up to heights not seen for three decades. Making matters worse, land and resources got reallocated to produce cash crops such as biofuels and the result was that voluminous reserves of grain **evaporated**. Protests broke out across the emerging world and fierce food riots toppled governments.

This spurred global leaders into action. This made them aware that food security is one of the fundamental issues in the world that has to be dealt with in order to maintain administrative and political stability. This also spurred the U.S. which traditionally provisioned food aid from American grain surpluses to help needy nations, to move towards investing in farm sectors around the globe to boost productivity. This move helped countries become more productive for themselves and be in a better position to feed their own people.

Africa, which missed out on the first Green Revolution due to poor policy and limited resources, also witnessed a 'change'. Swayed by the success of East Asia, the primary poverty-fighting method favoured by many policymakers in Africa was to get farmers off their farms and into modern jobs in factories and urban centers. But that strategy proved to be highly insufficient. Income levels in the countryside badly trailed those in cities while the FAO estimated that the number of poor going hungry in 2009 reached an all time high at more than one billion.

In India on the other hand, with only 40% of its farmland irrigated, entire economic boom currently underway is held hostage by the unpredictable monsoon. With much of India's farming areas suffering from drought this year, the government will have a tough time meeting its economic growth targets. In a report, Goldman Sachs predicted that if this year too receives weak rains, it could cause agriculture to contract by 2% this fiscal year, making the government's 7% GDP-growth target look "a bit rich". Another green revolution is the need of the hour and to make it a reality, the global community still has much backbreaking farm work to do.

101. What is the author's main objective in writing the passage
- Criticising developed countries for not bolstering economic growth in poor nations
 - Analysing the disadvantages of the Green Revolution
 - Persuading experts that a strong economy depends on industrialization and not agriculture
 - Making a case for the international society to engineer a second Green Revolution
 - Rationalising the faulty agriculture policies of emerging countries

102. Which of the following is an adverse impact of the Green Revolution ?
- Unchecked crop yields resulted in large tracts of land becoming barren
 - Withdrawal of fiscal impetus from agriculture to other sectors
 - Farmers began soliciting government subsidies for their produce
 - Farmers rioted as food prices fell so low that they could not make ends meet
 - None of these
103. What is the author trying to convey through the phrase "making the government's 7% GDP growth target look "a bit rich"?"
- India is unlikely to achieve the targeted growth rate
 - Allocation of funds to agriculture has raised India's chances of having a high GDP
 - Agricultural growth has artificially inflated India's GDP and such growth is not real
 - India is likely to have one of the highest GDP growth rates
 - A large portion of India's GDP is contributed by agriculture
104. Which of the following factors was/were responsible for the neglect of the farming sector after the green revolution?
- Steel and cement sectors generated more revenue for the government as compared to agriculture.
 - Large scale protests against favouring agriculture at the cost of other important sectors such as education and healthcare.
 - Attention of policy makers and aid organizations was diverted from agriculture to other sectors.
- None
 - Only (C)
 - Only (B) & (C)
 - Only (A) & (B)
 - All (A), (B) & (C)
105. What prompted leaders throughout the world to take action to boost the agriculture sector in 2008?
- Coercive tactics by the U.S. which restricted food aid to poor nations
 - The realization of the link between food security and political stability
 - Awareness that performance in agriculture is necessary in order to achieve the targeted GDP
 - Reports that high-growth countries like China and India were boosting their agriculture sectors to capture the international markets
 - Their desire to influence developing nations to slow down their industrial development.
106. What motivated the U.S. to focus on investing in agriculture across the globe ?
- To make developing countries become more reliant on U.S. aid
 - To ensure grain surpluses so that the U.S. had no need to import food
 - To make those countries more self sufficient to whom it previously provided food
 - To establish itself in the market before the high-growth giants such as India and China could establish themselves
 - None of these
107. What impact did the economic recession of 2008 have on agriculture ?
- Governments equated economic stability with industrial development and shifted away from agriculture
 - Lack of implementation of several innovative agriculture programmes owing to shortage of funds
 - It prompted increased investment and interest in agriculture
 - The GDP as targeted by India was never achieved because of losses in agriculture
 - None of these
108. What encouraged African policymakers to focus on urban jobs ?
- Misapprehension that it would alleviate poverty as it did in other countries
 - Rural development outstripped urban development in many parts of Africa
 - Breaking out of protests in the country and the fear that the government would topple
 - Blind imitation of western models of development
 - None of these
109. Which of the following had contributed to exorbitant food prices in 2008 ?
- Hoarding of food stocks by local wholesalers which inadvertently created a food shortage.
 - Export of foodgrains was reduced by large producers.
 - Diverting resources from cultivation of foodgrains to that of more profitable crops.
- None
 - Only (C)
 - Only (B)
 - All (A), (B) & (C)
 - Only (B) & (C)
110. Which of the following is true about the state of agriculture in India at present ?
- Of all the sectors, agriculture needs the highest allocation of funds.
 - Contribution of agriculture to India's GDP this year would depend greatly upon the monsoon rains.
 - As India is one of the high-growth countries, it has surplus food reserves to export to other nations.
- Only (A) and (C)
 - Only (C)
 - Only (B)
 - Only (B) and (C)
 - None of these

DIRECTION (Qs. 111- 113): Choose the word/group of words which is most similar in meaning to the word printed in bold as used in the passage.

111. STARVED
- Deprived
 - Disadvantaged
 - Hungry
 - Fasting
 - Emaciated
112. SLAPPED
- Beaten
 - Imposed
 - Withdrawn
 - Avoided
 - Persuaded

113. **PLOWED**
 (a) Cultivated (b) Bulldozed
 (c) Recovered (d) Instilled
 (e) Withdrew

DIRECTION (Qs. 114 and 115): Choose the word/phrase which is most opposite in meaning to the word printed in bold as used in the passage.

114. **PRESSING**
 (a) Unpopular (b) Undemanding
 (c) Unobtrusive (d) Unsuitable
 (e) Unimportant
115. **EVAPORATED**
 (a) Absorbed (b) Accelerated
 (c) Grew (d) Plunged
 (e) Mismanaged

DIRECTIONS (Qs. 116-120) : The sentences given in each question, when properly sequenced, form a coherent paragraph. Each sentence is labelled with a letter. Choose the most logical order of the sentences from amongst the given choices so as to form a coherent paragraph.

116. P : In the past, the customised tailoring units were localised to the township or city and catered exclusively to domestic demand.
 Q : Traditionally, Indians preferred custom-made clothing and the concept of ready-to-wear is a relatively recent one.
 R : Consumer awareness of styling issues and the convenience afforded by ready-to-wear helped RMG industry make small inroads into the domestic market in the 1980s.
 S : The customised tailoring outfits have always been a major source of clothing for domestic market.
 (a) Q R S P (b) Q S P R
 (c) R S Q P (d) S Q P R
 (e) None of these
117. P : Such a system will help to identify and groom executives for positions of strategists.
 Q : Evaluation of performance is more often than not done for the purpose of reward or punishment for past performance.
 R : They must become an integral part of the executive system'.
 S : Even where the evaluation system is for one's promotion to assume higher responsibilities, it rarely includes terms that are a key for playing the role of strategist effectively, e.g., the skills of playing the role of change agent and creative problem solving.
 (a) S Q P R (b) S R Q P
 (c) R S Q P (d) Q S R P
 (e) None of these

118. P : Participation involves more than the formal sharing of decisions.
 Q : Through anticipation individuals or organisations consider trends and make plans, shielding institutions from trauma of learning by shock.

R : Innovative learning involves both anticipation and participation.
 S : It is an attitude characterised by the cooperation, dialogue and empathy.

- (a) Q R S P (b) P Q R S
 (c) R Q P S (d) S P Q R
 (e) None of these

119. P : Almost a century ago, when the father of the modern automobile industry, Henry Ford, sold the first Model T car, he decided that only the best would do for his customers.

Q : Today, it is committed to delivering the 'finest quality with over six million vehicles a year in over 200 countries across the world.

R : And for over 90 years, this philosophy has endured in the Ford Motor company.

S : Thus a vehicle is ready for the customers only, if it passes the Ford 'Zero Defect Programme'.

- (a) P Q R S (b) P R Q S
 (c) R S P Q (d) P R S Q
 (e) None of these

120. P : Finish specialists recommended a chewing gum containing xylitol-a natural sweetener present in birch, maple, corn and straw-to be used several times a day by young children.

Q : Chewing gum is a new solution that "may work for parents whose children suffer from chronic ear infections.

R : An experiment was conducted involving three hundred and six children between two and six years.

S : After Finish studies showed that xylitol is effective in preventing cavities, a team of researchers decided to investigate its effects on a very similar type of bacteria which causes ear infections.

- (a) Q R S P (b) P Q R S
 (c) R Q P S (d) Q P S R
 (e) None of these

DIRECTIONS (Q. 121-125) : Read each sentence to find out whether there is any error in it. The error, if any, will be in one part of the sentence. The number of that part is the answer. If there is no error, the answer is (e). (Ignore errors of punctuation, if any.)

121. The ongoing merger among /the two companies will/
 (a) (b)
 have an adverse/impact on consumers. No error
 (c) (d) (e)
122. It is evident that/the banking sector has underwent/
 (a) (b)
 tremendous changes during/the past two decades. No error
 (e)

123. According to the consultant/a more detail analysis of/ (a) (b) customer needs / and product pricing is required. No error (c) (d) (e)
124. Over the next five years / the government needs to invest/ (a) (b) at less 350 billion dollars/in rural infrastructure. No error (c) (d) (e)
125. The lack of no funds / has resulted in several / delays in (a) (b) launching our / new product in India. No error (c) (d) (e)
129. The author wants the reoriented physical education programme to be : (a) given minimal curriculum time (b) very comprehensive (c) relevant to the modern society (d) thoughtful (e) None of these
130. In order to improve the physical education programme, we should first of all : (a) allot more time to the teaching and learning of physical activity (b) decide on the number of activities to be taught (c) employ qualified instructors (d) increase the teaching load of instructors (e) None of these

DIRECTIONS (Qs. 126-130) : Read the following passage carefully to give the answer.

Regular physical activity provides numerous health benefits — from leaner bodies and lower blood pressure to improved mental health and cognitive functioning. As the school physical education programme promotes physical activity and can teach skills as well as form or change behaviour, it holds an important key to influencing health and well-being across the life span. To improve the fitness of students, we need to rethink the design and delivery of school-based physical education programme. Adults in the United States think that information about health is more important for students to learn than contents in language, arts, mathematics, science, history or any other subject. Despite this high ranking, most schools devote minimal curriculum time to teaching students how to lead healthy lives. Our first step might be to consider ways to increase curriculum time devoted to physical education. In addition, schools need to thoughtfully analyse the design and delivery of school physical education programme to ensure that they are engaging, developmentally appropriate, inclusive and instructionally powerful.

126. According to this passage, regular physical activity is needed to : (a) control one's blood pressure (b) lose one's weight (c) improve one's cognitive skill (d) improve one's physical as well as mental health (e) None of these
127. In order to tone up the physical education programme : (a) it should be made compulsory at school (b) an assessment of the existing programme should be made (c) a committee should be set up in every school (d) the programme should be reoriented and implemented (e) None of these
128. According to American, health education is more important than teaching : (a) social sciences (b) liberal arts (c) any subject (d) natural sciences (e) None of these
131. (a) developed (b) cured (c) improved (d) enhanced (e) characterised
132. (a) sources (b) finances (c) funds (d) manpower (e) industries
133. (a) exhaustive (b) unexploited (c) abundant (d) indefinite (e) unreliable
134. (a) upward (b) drastic (c) negligible (d) incredible (e) sudden
135. (a) diminishes (b) degenerates (c) increases (d) succumbs (e) stabilizes
136. (a) plans (b) attempts (c) attention (d) resources (e) strategy

DIRECTIONS (Qs. 131-140) : In the following passage there are blanks, each of which has been numbered. These numbers are printed below the passage and against each five words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

Economic backwardness of a region is **131** by the co-existence of unutilized **132** on the one hand, and **133** natural resources, on the other. Economic development essentially means a process of **134** change whereby the real per capita income of a economy **135** over a period of time. Then, a simple but meaningful question arises; what causes economy development ? Or what makes a country developed ? This question has absorbed the **136** of scholars of socio-economic change for decades. Going through the **137** history of developed countries like America, Russia and Japan, man is essentially found as **138** in the process of economic development. Japan, whose economy was **139** damaged from the ravages of the Second World War, is the clearest example of our time to **140** kingdom role in economic development.

137. (a) existing (b) glorious (c) ancient (d) economic (e) discouraging
138. (a) pivotal (b) neutral (c) insignificant (d) enchanted (e) vicious
139. (a) increasingly (b) always (c) gradually (d) deliberately (e) badly
140. (a) enlighten (b) validate (c) negate (d) underestimate (e) belittle
- (a) IT managers
(b) the government
(c) network administrators
(d) password administrators
(e) None of these
148. What is a benefit of networking your computer with other computers?
(a) Increase in the computer's speed
(b) Sharing of cables to cut down on expenses and clutter
(c) You have another computer if yours has a breakdown
(d) Increase in the speed of the network
(e) Sharing of resources to cut down on the amount of equipment needed

COMPUTER KNOWLEDGE

141. In computer, what are the .xls, .doc. are
(a) File names (b) Extensions
(c) Viruses (d) Binary files
(e) None of these
142. What is the shortcut key to insert new document?
(a) ctrl+a (b) ctrl+n
(c) ctrl+s (d) ctrl+d
(e) None of these
143. What is the full form of LAN?
(a) Local Area Network
(b) Land Area Network
(c) Long Area Network
(d) Line Area Network
(e) None of these
144. Hard copy is a term used to describe...?
(a) Printed output
(b) Writing on a hard board
(b) Storing information on the hard disk
(c) All of the above
(d) None of these
145. The operating system is also called the _____ between the user and the computer.
(a) interrelate (b) interface
(c) interference (d) intermediate
(e) None of these
146. If a computer is constantly rebooting itself, what is most commonly the problem?
(a) Insufficient Power-Supply Unit
(b) Bad Sectors on Hard Drive
(c) Processor Overheating
(d) Defective/Bad Memory
(e) None of these
147. Networks are monitored by security personnel and supervised by _____ who set(s) up accounts and passwords for authorized network users.
(a) IT managers
(b) the government
(c) network administrators
(d) password administrators
(e) None of these
149. In a synchronous modem, the digital-to-analog converter transmits signal to the _____.
(a) equalizer (b) modulator
(c) demodulator (d) terminal
(e) None of these
150. The term "host" with respect to the internet, means _____.
(a) A computer that is a stand alone computer
(b) A computer that is connected to the Internet
(c) A computer reserved for use by the host
(d) A large collection of computers
(e) Hyperlink
151. Which of the following operations is safe if an e-mail from an unknown sender is received?
(a) Open it to know about the sender and answer it.
(b) Delete it after opening it.
(c) Delete it without opening it.
(d) Open it and try to find who the sender is.
(e) None of these
152. Letters, numbers and symbols found on a keyboard are –
(a) Icon (b) Screen
(c) Keys (d) Menu
(e) None of these
153. Capital letters on a keyboard are referred to as –
(a) caps lock key (b) grownups
(c) big guys (d) upper case letters
(e) None of these
154. A symbol on the screen that represents a disk, document or program that you can select –
(a) keys (b) caps
(c) icon (d) monitor
(e) None of these
155. To insert a copy of the clipboard contents, whatever was last cut or copied at the insertion point.
(a) paste (b) stick in
(c) fit in (d) push in
(e) None of these

156. Documentation of computer program is important so that
- users can learn how to use the program
 - other programmers can know how to maintain the program
 - the programmer can see why the code is written that way while hunting for sources of error
 - All of the above
 - None of the above
157. A program that enables you to perform calculations involving rows and columns of numbers is called a _____.
- spreadsheet program
 - word processor
 - graphics package
 - window
 - None of the above
158. What does the data dictionary identify?
- Field names
 - Field types
 - Field formats
 - All of the above
 - None of these
159. Which is one function of a database management system (DBMS)?
- Ensuring usability
 - Identifying what a user needs
 - Deciding what to do with legacy systems
 - Preventing errors arising, while enabling multiple, simultaneous users
 - None of these
160. A relation (from the relational database model) consists of a set of tuples, which implies that
- relational model supports multi-valued attributes whose values can be represented in sets.
 - for any two tuples, the values associated with all of their attributes may be the same.
 - for any two tuples, the value associated with one or more of their attributes must differ.
 - all tuples in particular relation may have different attributes.
 - None of these
163. Which of the following is the state where the number of people living below poverty line is maximum?
- Bihar
 - Andhra Pradesh
 - Uttar Pradesh
 - Rajasthan
 - Odisha
164. Who is the person closely associated with operation flood programmes and was honoured by Padma Vibhushan recently?
- Dr. V. Kurien
 - Dr. M. S. Swaminathan
 - Dr. Amartya Sen
 - Dr. A. P. J. Abdul Kalam
 - None of these
165. What is the full form of MTSS?
- Money Transfer Service Scheme
 - Money Transparency Service Scheme
 - Market Transfer Service Scheme
 - Market Tax Service Scheme
 - None of these
166. What is the full form of EFT?
- Electric funds transfer
 - Electronic finance transaction
 - Electronics Fund Transfer
 - Emergency fund transfer
 - None of these
167. RuPay is an Indian domestic card scheme conceived and launched by
- National Payments Corporation of India (NPCI)
 - Industrial Finance Corporation of India (IFCI)
 - National Minorities Development & Finance Corporation (NDMC)
 - National Handicapped Finance and Development Corporation (NHFDC)
 - None of these
168. Which of the following is referred as Fastest mode of transaction?
- Transfer funds into different bank's accounts using NEFT(National Electronic Funds Transfer).
 - Transfer funds into other bank accounts using RTGS (Real Time Gross Settlement).
 - Transfer funds into various accounts using IMPS (Immediate Payment Service).
 - Transfer funds into different account of the same bank
 - None of these
169. What is the full for of CBS?
- Customer Bond Solution
 - Core banking System
 - Core Banking Solution
 - Customer Bond system
 - None of these
170. What do you mean by Customer relationship management (CRM)?
- It is a system for managing a company's interactions with current and future customers.

**GENERAL AWARENESS WITH
REFERENCE TO BANKING**

161. To combat the menace of money laundering, which of the following financial institutions has introduced the 'Know Your Customer' Scheme?
- IDBI
 - RBI
 - NABARD
 - SIDBI
 - None of these
162. Which of the following sectors contributes maximum in deciding the growth in income of the states in India?
- Energy
 - Tourism
 - Service
 - Transport
 - Agriculture

- II. It is a system for managing a company's interactions with current and past customers.
- II. It often involves using technology to organize, automate, and synchronize sales, marketing, customer service, and technical support.
- (a) Only I (b) Only II
(c) Both II and III (d) Both I and III
(e) None of these
171. How RBI measured to liquidate the market?
(a) By Reverse Repo rate
(b) By Repo rate
(c) By Cash Reserve Ratio
(d) By Statutory liquidity ratio
(e) None of these
172. The Bank should comply and intimate the compliance of Award to Ombudsman?
(a) Within Two Months
(b) Within 3 months
(c) Within one month
(d) Within one year
(e) None of these
173. Cheque truncation can be done by?
(a) Using MICR data
(b) Sending cheque by speed post
(c) Using image processing
(d) Both (a) & (b)
(e) None of the above
174. Which of the following is not insured by the DICGC (Deposit Insurance and Credit Guarantee Corporation)?
(a) All Indian commercial Banks
(b) Foreign Banks branches functioning in India
(c) Local Area Banks
(d) Cooperative Banks
(e) Primary cooperative societies
175. Who is the current Secretary General of UNO?
(a) Ban Ki-moon
(b) Kofi Annan
(c) U Thant
(d) Trygve Halvdan Lie
(e) None of these
176. What is the new name given to the Cadbury's India?
(a) Ferrero Rocher Ltd
(b) Dante Confections
(c) Tootsie Roll Industries
(d) Mondelez India Foods Ltd
(e) None of these
177. Which day would be celebrated as Safe Motherhood Day as announced by Health Ministry of India?
(a) 7th March
(b) 8th March
(c) 9th March
(d) 10 March
(e) None of these
178. Which Hollywood personality got awarded at IIFA 2014?
(a) John Travolta (b) Arnold Sch
(c) Vin Diesel (d) Kevin Spacey
(e) None of these
179. Which author had received Padmabhushan award 2014?
(a) Shobha Dey (b) Ruskin Bond
(c) Ravinder Singh (d) Chetan Bhagat
(e) None of these
180. What is the full form of IBSA ?
(a) Indonesia, Brazil, South Africa
(b) Italy, Brazil, Sudan
(c) India, Brazil, South Africa
(d) India, Belgium, Saudi Arabia
(e) None of these
181. Who is the author of the book '2 states' in the same name a film was released recently?
(a) Ravinder Singh
(b) Drijoy Dutta
(c) Amish Patel
(d) Chetan Bhagat
(e) None of these
182. Who is appointed as the new deputy governor of RBI?
(a) R Gandhi (b) S S Mudra
(c) Arjit Patel (d) Anil Sinha
(e) None of these
183. Name the committee which is probing the IPL Spot-Fixing?
(a) Murali Panel Committee
(b) Mudgal Panel committee
(c) Rangaswamy Panel Committee
(d) Rangarajan Panel Committee
(e) None of these
184. Kudamkulam Nuclear power plant is situated in which state?
(a) Andhra Pradesh (b) Karnataka
(c) Odhisha (d) TamilNadu
(e) None of these
185. Who is the current Prime Minister of UK?
(a) David Cameroon
(b) James Cameroon
(c) Robert Cameroon
(d) Davis Cameroon
(e) None of these
186. Shivasumdaram Hydro Power Project is located in which state?
(a) Andhra Pradesh (b) Karnataka
(c) Kerala (d) Tamilnadu
(e) None of these
187. Catolania referendum is related to which country?
(a) Spain (b) Italy
(c) Brazil (d) Germany
(e) None of these

188. What is the minimum capital required for foreign bank to open branch in India?
- (a) 400 Crore (b) 450 Crore
(c) 500 Crore (d) 550 Crore
(e) None of these
189. Priyanka Chopra in the movie Mary Kom, played the role of?
- (a) Gymnastics (b) Singer
(c) Boxer (d) Wrestler
(e) None of these
190. What is the current Repo Rate?
- (a) 7% (b) 7.5 %
(c) 8% (d) 8.5 %
(e) None of these
191. 2014 Asian Games was held at?
- (a) Doha, Qatar
(b) Incheon, South Korea
(c) Rio de Janeiro, Brazil
(d) Beijing, China
(e) None of these
192. Recently, Northern Railways started a smart Card system, what is the name of the Card?
- (a) Go Bharat Smart Card
(b) Go Nation Smart Card
(c) Go India Smart Card
(d) Go Railway Smart Card
(e) None of these
193. What is the name of the Pension Scheme of the Unorganised Sector in India?
- (a) Aajeevika Scheme
(b) Swavalamban Scheme
(c) Indira Awas Yojna
(d) Varishtha Scheme
(e) None of these
194. SEBI extended the time guideline to appoint at least one women in board of director to _____?
- (a) 31st December 2014
(b) 31st March 2015
(c) 30th June 2015
(d) 31st December 2015
(e) None of these
195. Which account will not come under RBI's limitation of ATM Transaction?
- (a) Current Deposits/Account
(b) Basics Savings Bank Deposit Account
(c) Recurring Deposit/Account
(d) Fixed Deposit/Account
(e) None of these
196. What is the name of BRICS Bank?
- (a) Federative Republic Bank
(b) New Republic Bank
(c) New Development Bank
(d) New BRICS Bank
(e) None of these
197. What is the capital of Portugal?
- (a) Ankara (b) Tunis
(c) Lisbon (d) Algiers
(e) None of these
198. What is the currency of Saudi Arabia?
- (a) Dinar (b) Riyal
(c) Take (d) Ruble
(e) None of these
199. Upalappu Srinivas of famous for?
- (a) Mandolin (b) Table
(c) Guitar (d) Sexophone
(e) None of these
200. Who is the new Chairman & Managing Director of Allahabad Bank?
- (a) S. K. Roy (b) T.C.A Ranganathan
(c) Rakesh Sethi (d) U. K. Sinha
(e) Rahul Khullar

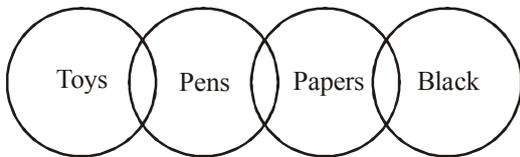
ANSWER KEY

1	(c)	21	(e)	41	(d)	61	(c)	81	(b)	101	(d)	121	(a)	141	(b)	161	(b)	181	(d)
2	(a)	22	(a)	42	(b)	62	(c)	82	(c)	102	(b)	122	(b)	142	(b)	162	(c)	182	(a)
3	(e)	23	(b)	43	(d)	63	(a)	83	(d)	103	(c)	123	(b)	143	(a)	163	(e)	183	(b)
4	(d)	24	(e)	44	(b)	64	(b)	84	(c)	104	(b)	124	(c)	144	(a)	164	(a)	184	(d)
5	(b)	25	(d)	45	(c)	65	(a)	85	(b)	105	(b)	125	(a)	145	(b)	165	(a)	185	(a)
6	(d)	26	(d)	46	(d)	66	(d)	86	(a)	106	(c)	126	(d)	146	(a)	166	(c)	186	(b)
7	(c)	27	(d)	47	(a)	67	(b)	87	(d)	107	(c)	127	(d)	147	(c)	167	(a)	187	(a)
8	(d)	28	(c)	48	(b)	68	(a)	88	(c)	108	(a)	128	(c)	148	(e)	168	(b)	188	(c)
9	(a)	29	(b)	49	(c)	69	(a)	89	(a)	109	(e)	129	(d)	149	(b)	169	(c)	189	(c)
10	(c)	30	(c)	50	(a)	70	(d)	90	(c)	110	(c)	130	(a)	150	(b)	170	(d)	190	(c)
11	(d)	31	(e)	51	(c)	71	(b)	91	(d)	111	(a)	131	(e)	151	(c)	171	(b)	191	(b)
12	(b)	32	(d)	52	(a)	72	(b)	92	(c)	112	(b)	132	(d)	152	(c)	172	(c)	192	(c)
13	(c)	33	(e)	53	(b)	73	(b)	93	(a)	113	(a)	133	(b)	153	(a)	173	(d)	193	(b)
14	(c)	34	(a)	54	(d)	74	(a)	94	(c)	114	(b)	134	(b)	154	(c)	174	(e)	194	(b)
15	(c)	35	(c)	55	(a)	75	(e)	95	(d)	115	(c)	135	(c)	155	(a)	175	(a)	195	(b)
16	(a)	36	(d)	56	(d)	76	(b)	96	(d)	116	(b)	136	(c)	156	(d)	176	(d)	196	(c)
17	(e)	37	(a)	57	(b)	77	(a)	97	(a)	117	(d)	137	(d)	157	(a)	177	(b)	197	(c)
18	(b)	38	(c)	58	(a)	78	(b)	98	(d)	118	(c)	138	(a)	158	(d)	178	(a)	198	(b)
19	(e)	39	(c)	59	(b)	79	(c)	99	(a)	119	(b)	139	(e)	159	(d)	179	(b)	199	(a)
20	(a)	40	(a)	60	(c)	80	(d)	100	(e)	120	(d)	140	(b)	160	(c)	180	(c)	200	(c)

Answers & Explanations

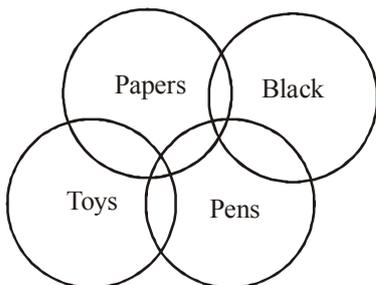
SOLUTIONS (1-5)

1. (c) All possible cases

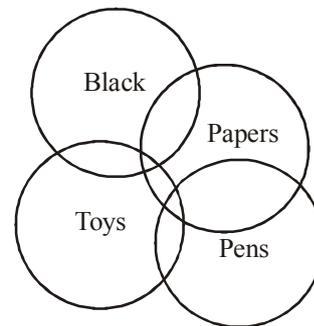


- I. False
 - II. False
 - III. False
 - IV. False
- } Either

OR

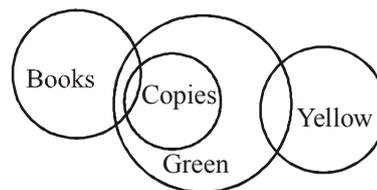


OR



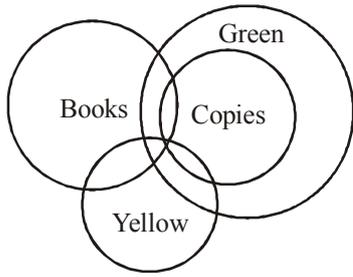
Alternative Here, special case can be applied for Conclusions I and III. Also for Conclusion II and Conclusion IV.

2. (a) All possible cases

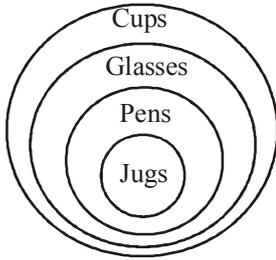


- I. False
 - II. True
 - III. False
 - IV. False
- Hence, only II follows.

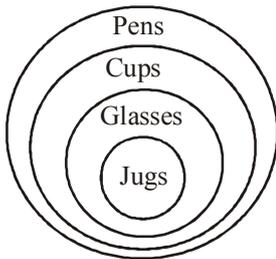
OR



3. (e) All possible cases are



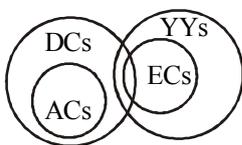
OR



- I. False II. False
- III. False IV. False

Hence, none follows.

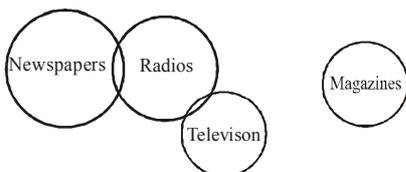
4. (d) All possible cases



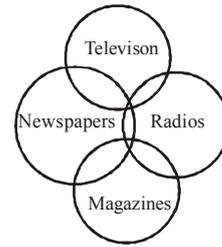
- I. False
 - II. True
 - III. False
 - IV. False
- } Either

Hence, either I or III and II follow.

5. (b) All possible cases



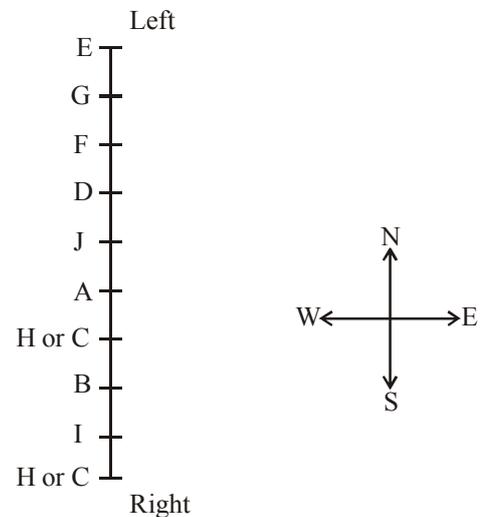
OR



- I. False II. False
- III. True IV. False

Hence, conclusions III follow.

SOLUTIONS (6-10):



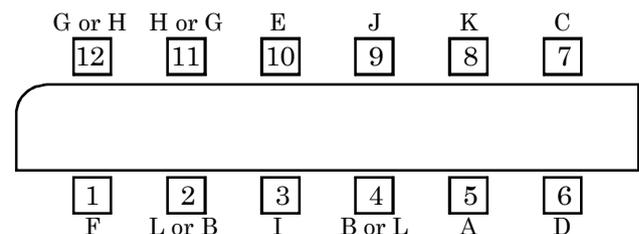
SOLUTIONS (11-15):

Let us denote these 12 students by their 1st letter of name, like Abhishek is A and so on.

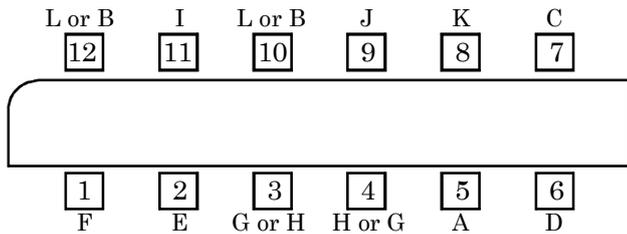
From the given information we can conclude that (C) and (D) are at seat numbers 7 and 6, respectively. And (K) is the only person between (C) and (J) while (A) is opposite to (K). Hence, (A), (K) and (J) must be at seat numbers 5, 8 and 9, respectively.

Then we have following two cases:

Case I



Case II



- 11. (d) From the above 2 cases, it follows case (i) and opposite to Fatima is either Lalit or Binit.
- 12. (b) From the above 2 cases,
In case (i) if Lalit is sitting opposite to Hena then Fatima is sitting opposite to Garima.
In case (ii) if Lalit is sitting opposite to Hena then Jatin is sitting opposite to Garima.
- 13. (c) From the above 2 cases, it follows case (i) and number of persons sitting between Binit and Dhiraj is either 1 or 3.
- 14. (c) From the given options only option (c) is correct.
- 15. (c) From the given options option (c) is in correct.

SOLUTIONS(16-20):

Given that there are five stages of the project from stage 1 to stage 5 on the field with starting and ending points from amongst P1, P2, P3, P4 and P5. Now given information is as follows:

- (i) Stage 3 finished at P1.
- (ii) Stage 4 must have started from point P1.
- (iii) Fourth stage work was given to farmer F4; hence, from all these outcomes we can conclude that 2nd stage is from P5 to P3.

Hence we can conclude that-

- Stage 1- From point P2 to point P5
- Stage 2- From point P5 to point P3
- Stage 3- From point P3 to point P1
- Stage 4- From point P1 to point P4
- Stage 5- From point P4 to point P2

Now it is given that-

- Farmer F3 first stage.
- Farmer F4 fourth stage (from 5th information).
- Farmer F5 fifth stage (given that work of stage starting at point P4 is given to farmer 5).
- Farmer F1 second stage.

- Stage 1- From point P2 to point P5 Farmer F3
- Stage 2- From point P5 to point P3 Farmer F1
- Stage 3- From point P3 to point P1 Farmer F2
- Stage 4- From point P1 to point P4 Farmer F4
- Stage 5- From point P4 to point P2 Farmer F5

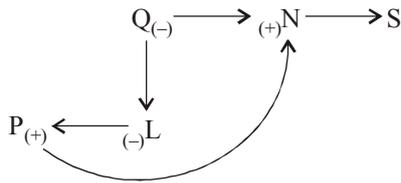
- 16. (a) Point P1
- 17. (e) From the above result, we get that the fifth stage was ploughed by farmer F5.
- 18. (b) From the above result we get that the starting and ending points of stage 2 are P5 and P3.
- 19. (e) From the above result, we get that the P2 was the finishing point for farmer F5.
- 20. (a) From the above result, we get that the starting point for farmer F3 was P2.

SOLUTIONS (21-25)

- $P * Q \Rightarrow P > Q$
- $P \oplus Q \Rightarrow P \geq Q$
- $P \$ Q \Rightarrow P = Q$
- $P \pounds Q \Rightarrow P < Q$
- $P @ Q \Rightarrow P \leq Q$

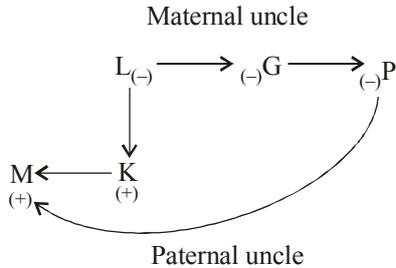
- 21. (e) **Statements**
 $O \geq F \geq E \geq P = R$
Conclusions
I. $O \$ P \rightarrow O = P$ (False)
II. $E \oplus R \rightarrow E \geq R$ (True)
III. $P \pounds O \rightarrow P < O$ (False)
- 22. (a) **Statements**
 $E > D = A > B \leq C$
Conclusions
I. $E * B \rightarrow E > B$ (True)
II. $C \$ A \rightarrow C = A$ (False)
III. $D @ E \rightarrow D \leq E$ (False)
- 23. (b) **Statements**
 $I \geq H = T > S \leq R$
Conclusions
I. $I * T \rightarrow I > T$
II. $I \$ T \rightarrow I = T$ } Either
III. $S * H \rightarrow S > H$ (False)
- 24. (e) **Statements**
 $S \leq T < N = Q > O$
Conclusions
I. $S \$ N \rightarrow S = N$ (False)
II. $N \oplus O \rightarrow N \geq O$ (False)
III. $N * O \rightarrow N > O$ (True)
- 25. (d) **Statements**
 $H \geq J > K = L, K \leq M$
Conclusions
I. $K \pounds M \rightarrow M > K$ (False)
II. $L \$ J \rightarrow L = J$ (False)
III. $H \oplus L \rightarrow H \geq L$ (False)
- 26. (d) **From I and II:** We get
 $D > B \dots (i)$
 $K > W > M \dots (ii)$
Still, we lack some clue as to whether B or M is the youngest. Hence, both statements I and II even together are not sufficient.
- 27. (d) **From I:** Na Ni Nok Ne \rightarrow I will tell you ... (i)
Ni Nok Ne Nam \rightarrow he will tell you ... (ii)
From (i) & (ii) Na \rightarrow I and Nam = he
From II: Ni Ne Mo Nam \rightarrow will he call you ... (iii)
Ne Mok Sac Ni \rightarrow how will you go ... (iv)
Ne Ni is common in all the four statements. Exact transformation of Ne can't be determined.
- 28. (c) **From I :** $P > R, P > T, U > P, U > Q, U > S$
 \rightarrow U is tallest. [Since U is taller than P, Q & S and P is taller than R and T]
From II : $R < U, P \& Q \dots (i); Q > P \dots (ii)$
From (i) and (ii) $R < P < Q < U$
Hence U is tallest.

29. (b) From I:



N is maternal uncle of P.

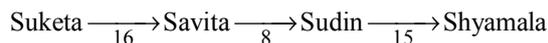
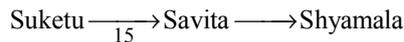
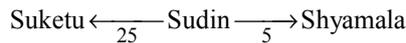
From II:



M is the paternal uncle of P

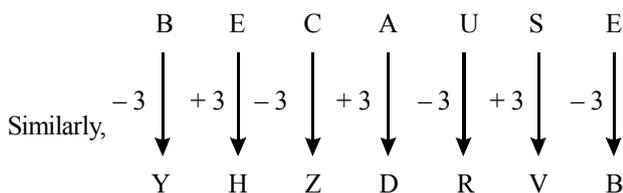
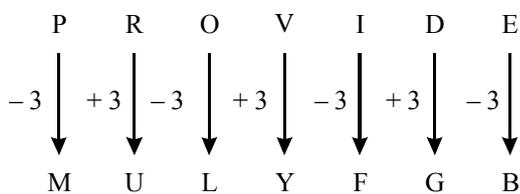
30. (c) From I : Ramesh = 17th
 ∴ Shyam = (17 + 6) = 23th
 Sudin = (23 + 7) = 30th

From II:



So, sudin is 26th in rank in class of 44 students.

31. (e) In online shopping the customer may be deceived as he cannot touch the product he is paying for.
 32. (d) The customer whose view is presented has shopped at retail stores as well as online.
 33. (e) The number of people migrating from rural to urban areas in search of jobs may reduce.
 34. (a) At least some people who visits the park have pets.
 35. (c) As,



SOLUTIONS (36-38):

Total Number of flats = 13; Unoccupied flats = 5

Occupied flats = 8

Number of flats on second floor = 4

Second floor comprises four flats. One occupant is lawyer and since he has only one neighbour, this implies that out of four flats on second floor, two are unoccupied.

Again, since no flat is unoccupied on the third floor, it implies that there are three unoccupied flats on floor IV.

Since there are at least three flats on any floor and no two same profession stay on any floor and the doctor is not the neighbour of any lawyer, then floor III comprises only three flats. Thus, floor IV comprises six flats (3 occupied + 3 unoccupied).

Since there are three managers and no two same profession stay on any floor, therefore, there will be a manager in each floor. Also there are only two occupant in second floor and one of them is lawyer, therefore, second occupant should be manager.

Again, since there are two teachers, there will be a teacher each on floors III and IV. Again, doctor can't be neighbour of a lawyer. Hence, the doctor and lawyer will not reside on same floor. Therefore, on floor III – either Doctor or Lawyer then, on floor IV – either Lawyer or Doctor.

Floor	Total Flats	Occupied flats	Unoccupied flats	Occupants
II	4	2	2	Lawyer, Manager
III	3	3	0	Teacher, Manager, Lawyer or Doctor
IV	6	3	3	Teacher, Manager, Doctor or Lawyer

36. (d) Clearly, there are three flats.
 37. (a) From above table that combination is Lawyer & Manager.
 38. (c) Both the manager and the teacher are the neighbour of other lawyer.

SOLUTIONS (39-44):

Here, logic is very simple. It is a case of **Arrangement**. Input and following steps give the following information: **In step I** the word which comes first according to alphabetical order rearranges first.

In the second step the highest among the given numbers gets arranged and occupies the place after the word arranged in step I.

These two steps get repeated alternately. Thus, in the last step all the words get arranged alphabetically whereas numbers get arranged in descending order.

If any word or number is already arranged in any step, the next number or word is arranged.

39. (c) **Input** : 98 11 64 22 but will an it
Step I : an 98 11 64 22 but will it
Step II : an 98 but 11 64 22 will it
Step III : an 98 but 64 11 22 will it
Step IV : an 98 but 64 it 11 22 will
Step V : an 98 but 64 it 22 11 will
Step VI : an 98 but 64 it 22 will 11
40. (a) **Input** : 32 now 20 gift 53 box 62 at
Step I : at 32 now 20 gift 53 box 62
Step II : at 62 32 now 20 gift 53 box
Step III : at 62 box 32 now 20 gift 53
Step IV : at 62 box 53 32 now 20 gift
41. (d) **Input** : pay by 18 36 nose ear 72 54
Step I : by pay 18 36 nose ear 72 54
Step II : by 72 pay 18 36 nose ear 54
Step III : by 72 ear pay 18 36 nose 54
Step IV : by 72 ear 54 pay 18 36 nose
Step V : by 72 ear 54 nose pay 18 36
Step VI : by 72 ear 54 nose 36 pay 18
42. (b) **Step III** : damn 96 flag 87 78 14 saint put
Step IV : damn 96 flag 87 put 78 14 saint
Step V : damn 96 flag 87 put 78 saint 14

Step V is the last step. Therefore, penultimate step is step IV.

43. (d) Previous steps cannot be determined .
 44. (b) '17' cannot be before 'sky'

SOLUTIONS (45 - 48):

From Statement A :-Yellow was the only colour used in all the four rooms. It was used at least once for walls, carpets and curtains

From statement B, Dining and bed room have same set of colours.

	Walls	Carpet	Curtain
Living Room			
Study Room			

From statement C, The same colour was chosen for the curtains in the bedroom, the carpet in the living room and the walls in the dining room. And that colour is not used in Study Room, hence that colour must not be yellow as it is used in all the four rooms. And must not be grey as it is used only twice and that too for curtains (From statement E)

	Walls	Carpet	Curtain
	////		
			////
Living Room		////	
Study Room			

From statement D:- The only room with both green and grey in its colour scheme had carpet of the same colour as in the dining room. If a room that has green and grey colour then its 3rd colour must be Yellow as it is used in all the rooms. That room must not be Dining and Bed room as they have same set of colours. The Carpet of this room must not be of grey colour (From statement E).

From statement F:-The study room walls were painted the same colour as the living room walls.

	Walls	Carpet	Curtain
Dining Room	////		
Bed Room			////
Living Room	XXXX	////	
Study Room	XXXX		

Now from D, E and F, we have two cases

Case (i)

Walls	Carpet	Curtain
Green /Yellow	Yellow/Green	Grey

This combination must belongs to either Living or Study rooms.

If it belongs to living rooms then

	Walls	Carpet	Curtain
Living Room	Green	Yellow	Grey

But this combination is ruled out as from condition C the common colour can not be Yellow.

	Walls	Carpet	Curtain
Living Room	Yellow	Green	Grey

But in this case from statement D Dining room will have Walls and carpet with green colour, but it is not possible as repetition of colour is not allowed.

Case (ii) So only possibility is that yellow grey green belongs to study room. And then the common colour mentioned in statement C is Orange colour, hence we have two possibilities-

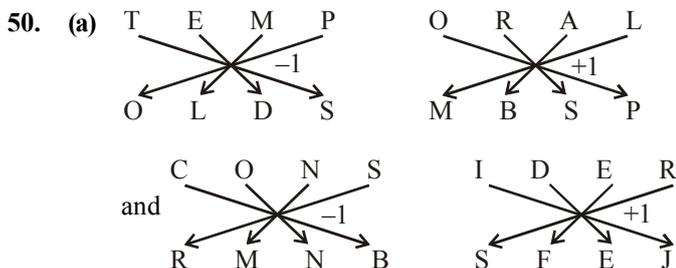
	Walls	Carpet	Curtain	Explanation
Dining Room	Orange	Yellow	Grey	From statement D, Curtains colour is grey
Bed Room			Orange	
Living Room	Green	Orange	Yellow	The 3rd colour in curtain is Yellow
Study Room	Green	Yellow	Grey	

This case is ruled out as Dining and bed room has same combination hence Grey can not be used other than Curtain.

OR

	Walls	Carpet	Curtain	
Dining Room	Orange	Green	Yellow	Carpets Green colour is from Statement D, & Yellow must be present (Step 1)
Bed Room	Green	Yellow	Orange	In carpet Yellow must be used
Living Room	Yellow	Orange	Grey	(As Grey is used at least twice step 2)
Study Room	Yellow	Green	Grey	

45. (c) Using above matrix, we can say Bed room
 46. (d) Green carpets:
 48. (b) Dining room- yellow curtains.
 49. (c) How many goals scored → 5397 ... (1)
 Many more matches → 982 ... (2)
 He scored five → 163 ... (3)
 From (1) & (2)
 Many → 9
 From (1) & (3)
 scored → 3
 ∴ goals can be 5 or 7.



51. (c) Ratio of milk in the containers are,

$$5 \times \frac{1}{6} : 4 \times \frac{3}{8} : 5 \times \frac{5}{12} = \frac{5}{6} : \frac{3}{2} : \frac{25}{12}$$

and the ratio of water in the containers are,

$$5 \times \frac{5}{6} : 4 \times \frac{5}{8} : 5 \times \frac{7}{12} = \frac{25}{6} : \frac{5}{2} : \frac{35}{12}$$

Ratio of mixture of milk and water in the containers

$$= \left(\frac{1}{6} \times 5 + \frac{3}{8} \times 4 + \frac{5}{12} \times 5 \right) : \left(\frac{5}{6} \times 5 + \frac{5}{8} \times 4 + \frac{7}{12} \times 5 \right)$$

$$= 106 : 230 = 53 : 115$$

52. (a) % change in rate = $\frac{27-24}{24} \times 100 = \frac{100}{8}\%$

For fixed expenditure, % change in consumption

$$= \frac{\% \text{ change in rate}}{100 + \% \text{ change in rate}} \times 100$$

$$= \frac{100/8}{100 \left[1 + \frac{1}{8} \right]} \times 100 = \frac{100}{9}\% = 11\frac{1}{9}\%$$

53. (b) $L \times B \times 2 = 48$

$\Rightarrow L \times B = 24$

Now, $6 - 6 \times 10\% = 5.4$,

$5 - 5 \times 10\% = 4.5$ and

Therefore, $5.4 \times 4.5 = 24.3$

Clearly, $5 < L < 5.5$

54. (d) Let the original rate be R%. Then, new rate = (2R)%.

$\therefore \left(\frac{725 \times R \times 1}{100} \right) + \left(\frac{362.50 \times 2R \times 1}{100 \times 3} \right) = 33.50$

$\Rightarrow (2175 + 725)R = 33.50 \times 100 \times 3 = 10050$

$\Rightarrow R = \frac{10050}{2900} = 3.46\%$

55. (a) For first year, S.I. = C.I.

Now, ₹ 10 is S.I. on ₹ 100.

\therefore ₹ 16 is S.I. on ₹ $\left(\frac{100}{10} \times 16 \right) = ₹ 160$.

So, S.I. on principal for 1 year at 10% is ₹ 160

\therefore Principal = ₹ $\left(\frac{100 \times 160}{10 \times 1} \right) = ₹ 1600$.

Amount for 2 years compounded half yearly

$= ₹ \left[1600 \times \left(1 + \frac{5}{100} \right)^4 \right] = ₹ 1944.81$.

\therefore C.I. = ₹ $(1944.81 - 1600) = ₹ 24.81$.

S.I. = ₹ $\left(\frac{1600 \times 10 \times 2}{100} \right) = ₹ 320$.

\therefore (C.I.) - (S.I.) = ₹ $(344.81 - 320) = ₹ 24.81$.

56. (d) Let the principal be ₹ P and rate of interest be R% per annum.

Difference of C.I. and S.I. for 3 years

$= \left[P \times \left(1 + \frac{R}{100} \right)^3 - P \right] - \left(\frac{P \times R \times 3}{100} \right) = \frac{PR^2}{10^4} \left(\frac{300 + R}{100} \right)$.

Difference of C.I. and S.I. for 2 years = $P \left(\frac{R}{100} \right)^2$

$\therefore \frac{PR^2 \left(\frac{300 + R}{100} \right)}{10^4} = \frac{25}{8} \Rightarrow \left(\frac{300 + R}{100} \right) = \frac{25}{8}$

$\Rightarrow R = \frac{100}{8} = 12\frac{1}{2}\%$.

57. (b) Let x additional men employed.

117 men were supposed to finish the whole work in $46 \times 8 = 368$ hours.

But 117 men completed $\frac{4}{7}$ of the work in 33×8

= 264 hours

\therefore 117 men could complete the work in 462 hours.

Now (117 + x) men are supposed to do $\frac{3}{7}$ of the work, working 9 hours a day, in $13 \times 9 = 117$ hours, so as to finish the work in time.

i.e. (117 + x) men are supposed to complete the whole work in $117 \times \frac{7}{3} = 273$ hours.

$\therefore (117 + x) \times 273 = 117 \times 462$

$\Rightarrow (117 + x) \times 7 = 3 \times 462$

$\Rightarrow x + 117 = 3 \times 66 = 198 \Rightarrow x = 81$

\therefore Required number of additional men to finish the work in time = 81.

58. (a) Let A and B together work for x minutes than amount

of water filled in the period = $x \left(\frac{1}{30} + \frac{1}{40} \right) = \frac{7x}{120}$

Remaining part = $1 - \frac{7x}{120} = \left(\frac{120 - 7x}{120} \right)$

Work done by A in (10 - x) minutes = $\frac{120 - 7x}{120}$

$= 1 - \frac{7x}{120}$

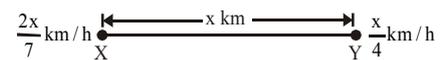
$\frac{7x}{120} + \frac{10 - x}{30} = 1$ or $7x + 40 - 4x = 120$

$3x = 120 - 40 = 80$

$x = 26\frac{2}{3}$ min

59. (b) Let the distance between X and Y be x km. Then, the

speed of A is $\frac{x}{4}$ km/h and that of B is $\frac{2x}{7}$ km/h.



Relative speeds of the trains

$= \left(\frac{x}{4} + \frac{2x}{7} \right) = \frac{15x}{28}$ km/h

Therefore the distance between the trains at 7 a.m. =

$$x - \frac{x}{2} = \frac{x}{2} \text{ km}$$

Hence, time taken to cross each other

$$= \frac{\frac{x}{2}}{\frac{15x}{28}} = \frac{x}{2} \times \frac{28}{15x} = \frac{14}{15} \times 60 = 56 \text{ min}$$

Thus, both of them meet at 7 : 56 a.m.

60. (c) Let the man's upstream speed be S_u kmph and downstream speed be S_d kmph. Then,

Distance covered upstream in 8 hrs 48 min.

d = Distance covered downstream in 4 hrs.

$$\Rightarrow \left(S_u \times 8 \frac{4}{5} \right) = (S_d \times 4) \Rightarrow \frac{44}{5} S_u = 4 S_d \Rightarrow S_d = \frac{11}{5} S_u.$$

\therefore Required ratio

$$= \left(\frac{S_d + S_u}{2} \right) : \left(\frac{S_d - S_u}{2} \right) = \left(\frac{16 S_u}{5} \times \frac{1}{2} \right) : \left(\frac{6 S_u}{5} \times \frac{1}{2} \right) = \frac{8}{5} : \frac{3}{5} \\ = 8 : 3.$$

61. (c) Cost of gear box = $20 \times \frac{1,00,000}{100} \times \frac{15}{100} = 3000$

62. (c) Cost of brake = $\frac{20 \times 1,00,000}{100} \times \frac{30}{100} = 6000$

$$\therefore \text{Required percentage} = \frac{6000}{1,00,000} \times 100 = 6.0\%$$

63. (a) Price of tyres = $\frac{20 \times 1,00,000}{100} \times \frac{15}{100} = 3000$

$$\text{Increased price of tyres} = 3000 \times \frac{125}{100} = 3750$$

$$\therefore \text{Price should be increased} = 3750 - 3000 = ₹750$$

64. (b) Increased transmission cost = $20,000 \times \frac{120}{100} = 24000$

$$\therefore \text{increase in transmission cost} = 24000 - 20000 = ₹4000$$

Here, this increase will reduce the profit by 4000.

65. (a) Price of clutch = 30% of 20,000 = 6,000

$$\therefore \text{Required percentage} = \frac{6000}{1,00,000} \times 100 = 6\%$$

66. (d) Total electric energy consume by 60 W bulb in whole month = $16 \times 60 \times 7 \times 30 \text{ W} = 201.6 \text{ unit}$

67. (b) Electricity consumed by all fans = $14 \times 80 \times 11 \times 30 \text{ W}$
Electricity consumed by all laptops = $9 \times 200 \times 5 \times 30$

$$\text{Required\%} = \frac{14 \times 80 \times 11 \times 30}{9 \times 200 \times 5 \times 30} \times 100 = 136.88\%$$

68. (a) Electricity consumed by all fans

$$= 14 \times 80 \times 11 \times 30 = 369600 \text{ W}$$

Electricity consumed by all laptops

$$= 9 \times 200 \times 5 \times 30 = 270000 \text{ W}$$

Electricity consumed by all tubelights

$$= 17 \times 40 \times 8 \times 30 = 163200 \text{ W}$$

Electricity consumed by all TV's

$$= 17 \times 120 \times 8 \times 30 = 288000 \text{ W}$$

Electricity consumed by 100 W bulb

$$= 11 \times 100 \times 9 \times 30 = 297000 \text{ W}$$

hence fans consumed more electricity.

69. (a) One unit cost = ₹ 2.70.

Power (used by AC's) Unit cost = ₹ 3.70

Electricity consumed by all equipment (except AC's)

$$= (201.6 + 369.6 + 270 + 163.2 + 288 + 297) \text{ unit}$$

$$= (1292.4 + 297.00) \text{ unit} = 1589.4 \text{ unit}$$

$$\text{Cost for these unit} = 1589.4 \times 2.7 = 4291.38$$

Electricity consumed by AC's

$$= 11 \times 2100 \times 9 \times 30 \text{ W} = 623700 \text{ W} = 6237 \text{ Unit}$$

$$\text{Cost for it} = 6237 \times 3.7 = 23076.9$$

$$\text{Total cost} = 23076.9 + 4291.38 = ₹ 27368$$

70. (d) Required ratio = $\frac{201.6}{297} = \frac{2}{3}$

71. (b)

I. $2x^2 + 5x + 1 = x^2 + 2x - 1$

$$x^2 + 3x + 2 = 0$$

$$x^2 + 2x + x + 2 = 0$$

$$x(x + 2) + 1(x - 2) = 0$$

$$(x + 2)(x + 1) = 0$$

$$x = -2, -1$$

II. $2y^2 - 8y + 1 = -1$

$$2y^2 - 8y + 2 = 0$$

$$y^2 - 4y + 1 = 0$$

$$\frac{+4 \pm \sqrt{16 - 4 \times 1 \times 1}}{2 \times 1}$$

$$= 2 \pm \sqrt{12} = 2 \pm 2\sqrt{3}$$

Hence, $y > x$

72. (b)

I. $x^2 + 2x - 1 = 2$
 $x^2 + 2x - 3 = 0$
 $x + 3x - x - 3 = 0$
 $x(x + 3) - 1(x + 3) = 0$
 $(x + 3)(x - 1) = 0$
 $x = -3, 1$

II. $2y^2 - 12y + 18 = 0$
 $y^2 - 6y + 9 = 0$
 $(y - 3)^2 = 0$
 $y = 3, 3$

Hence, $y > x$

73. (b)

I. $4x^2 - 24x + 20 = 0$
 $x^2 - 6x + 5 = 0$
 $x^2 - 5x - x + 5 = 0$
 $x(x - 5) - 1(x - 5) = 0$
 $(x - 5)(x - 1) = 0$
 $x = 5, 1$

II. $y^2 - 13y + 42 = 0$
 $y^2 - 7y - 6y + 42 = 0$
 $y(y - 7) - 6(y - 7) = 0$
 $(y - 7)(y - 6) = 0$
 $y = 7, 6$
 Hence, $y > x$.

74. (a)

I. $2y^2 + 3y - 5 = 0$
 $2y^2 + 5y - 2y - 5 = 0$
 $y(2y + 5) - 1(2y + 5) = 0$
 $(2y + 5)(y - 1) = 0$

$y = \frac{-5}{2}, 1$

II. $x^2 - 3x = 2x - 6$
 $x^2 - 5x + 6 = 0$
 $x^2 - 3x - 2x + 6 = 0$
 $x(x - 3) - 2(x - 3) = 0$
 $(x - 3)(x - 2) = 0$
 $x = 3, 2$
 Hence, $x > y$

75. (e)

I. $6x^2 + 14x = 12$
 $3x^2 + 7x - 6 = 0$
 $(x + 3)(3x - 2) = 0$
 $x = -3, \frac{2}{3}$

II. $1 + 2y^2 = \frac{17}{6}y$
 $12y^2 - 17y + 6 = 0$
 $12y^2 - 8y - 9y + 6 = 0$
 $4y(3y - 2) - 3(3y - 2) = 0$
 $(3y - 2)(4y - 3) = 0$

$y = \frac{2}{3}, \frac{3}{4}$

Hence, $x \leq y$

76. (b) Suppose Giridhar invested ₹ x in company A .

$\therefore \frac{x \times 14}{100} + \frac{(25000 - x) \times 13}{100} = 3340$

or, $\frac{14x}{100} + 3250 - \frac{13x}{100} = 3340$

or, $\frac{x}{100} = 90$ or, $x = ₹ 9000$.

77. (a) Amount of dividend received by Anuja in 2011 from company B

$= \frac{35000 \times 19}{100} = ₹ 6650$

Total amount invested by Anuja in 2012 in Company A
 $= 35000 + 6650 = ₹ 41650$

Reqd amount $= 41650 \times \frac{120}{100} = ₹ 49980$

78. (b) Total dividend $= 18000 \times \left(\frac{20}{100} + \frac{15}{100} \right) = ₹ 6300$

79. (c) Reqd ratio $= \frac{5 \times 12}{8 \times 10} = 3 : 4$

80. (d) From the graph it is obvious that Suraj will get less dividend in 2014 from company A than from B .

Reqd less amount $= 3\%$ of $56000 = ₹ 1680$.

81. (b) Production of company AVC in 2012 = 360 crore units

Average production of AVC over the given years

$= \frac{1970}{6}$

Hence, required percent $= \frac{360 \times 6}{1970} \times 100 = 109.64\%$

$\approx 110\%$

82. (c) Approximate per cent increase or decrease in production from the previous year for SIO are as follows :

$2010 = \frac{2}{85} \times 100 = 2.35\%$;

$$2011 = \frac{2 \times 100}{87} = 2.29\%$$

$$2012 = \frac{2 \times 100}{89} = 2.24\% ;$$

$$2013 = \frac{1 \times 100}{91} = 1.09\%$$

$$2014 = \frac{4 \times 100}{92} = 4.35\%$$

Quicker method : See the difference of produced units between two consecutive years. The difference is maximum for 2013 to 2014, and production during all these years is almost same. Hence, in the year 2014, SIO registered maximum increase in production over the previous year.

83. (d) Sum of the productions of companies in the first three years and the last three years is as follows :

Company	First three years	Last three years
TP	358	349
ZIR	238	267
AVC	900	1070
CTU	836	852
PEN	90	127
SIO	261	279

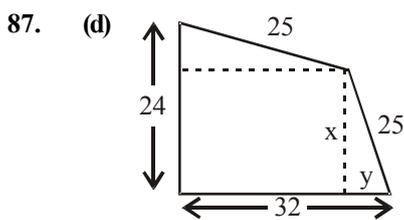
84. (c) Total production of the six companies in first two given years = $863 + 927 = 1790$

Again, total production of the six companies in last two given years = $989 + 991 = 1980$

$$\text{Therefore, required per cent} = \frac{1790 \times 100}{1980} = 90.40\%$$

85. (b) The required difference = $(91 - 92)$ crore units = $1 \times 10000000 = 10000000$ units

86. (a) Net effect = $x + y + \frac{xy}{100} = -20 + 80 + \frac{(-20 \times 80)}{100}$
 $= 60 - 16 = 44\%$ increased



$$(32 - y)^2 + (24 - x)^2 = 625 \quad \dots(1)$$

$$x^2 + y^2 = 625 \quad \dots(2)$$

$$\Rightarrow (24)^2 + (32)^2 - 64y - 48x = 0 \quad (\text{From (1) \& (2)})$$

$$\Rightarrow 64y + 48x = 576 + 1024$$

$$\Rightarrow 4y + 3x = 36 + 64 = 100$$

$$\text{or } y = \left(\frac{100 - 3x}{4} \right)$$

$$\therefore x^2 + \left(\frac{100 - 3x}{4} \right)^2 = 625 \quad (\text{From (2)})$$

$$\Rightarrow -600x + 16x^2 + 10000 + 9x^2 = 625 \times 16$$

$$\Rightarrow 25x^2 - 600x + 10000 - 625 \times 16 = 0$$

$$\Rightarrow x = 24 \text{ and } y = 7$$

$$\therefore \text{Area} = (24 \times 25) + \frac{1}{2} \times 24 \times 7 = 684$$

88. (c) The word 'LEADING' has 7 different letters.

When the vowels EAI are always together, they can be supposed to form one letter.

Then, we have to arrange the letters LNDG (EAI).

Now, $5 (4 + 1 = 5)$ letters can be arranged in $5! = 120$ ways.

The vowels (EAI) can be arranged among themselves in $3! = 6$ ways.

$$\therefore \text{Required number of ways} = (120 \times 6) = 720.$$

89. (a) Let S be the sample space and E be the event of selecting 1 girl and 2 boys.

Then, $n(S) =$ Number ways of selecting 3 students out of 25

$$= {}^{25}C_3$$

$$= \frac{(25 \times 24 \times 23)}{(3 \times 2 \times 1)} = 2300.$$

$$n(E) = ({}^{10}C_1 \times {}^{15}C_2)$$

$$= \left[10 \times \frac{(15 \times 14)}{(2 \times 1)} \right]$$

$$= 1050.$$

$$\therefore P(E) = \frac{n(E)}{n(S)} = \frac{1050}{2300} = \frac{21}{46}$$

90. (c) Let the amount taxable purchases be Rs. x.

$$\text{Then, } 6\% \text{ of } x = \frac{30}{100}$$

$$\Rightarrow x = \left(\frac{30}{100} \times \frac{100}{6} \right) = 5.$$

∴ Cost of tax free items = Rs. [25 - (5 + 0.30)] = ₹19.70

91. (d) The correct pattern is $+ 6^3, + 5^3, + 4^3, + 3^3, \dots$
So, 521 is wrong and must be replaced by $(498 + 3^3)$ i.e. 525.
92. (c) The correct pattern is $\div 12, \div 10, \div 8, \div 6, \dots$
So, 24 is wrong and must be replaced by $(48 \div 6)$ i.e. 8.
93. (a) The terms of the series are $(2^3 - 3), (3^3 - 3), (4^3 - 3), (5^3 - 3), (6^3 - 3), (7^3 - 3), (8^3 - 3)$.
So, 27 is wrong and must be replaced $(3^3 - 3)$ i.e. 24.
94. (c) The given sequence is a combination of two series :
I. 11, 20, 40, 74 and
II. 5, 12, 26, 54
The correct pattern in I is $+ 9, + 18, + 36, \dots$
So, 40 is wrong and must be replaced by $(20 + 18)$ i.e. 38.
95. (d) The correct pattern is $\times 2 + 1, \times 3 + 1, \times 4 + 1, \times 3 + 1 + 1, \dots$
So, 356 is wrong and must be replaced by $(129 \times 3 + 1)$ i.e. 388.
96. (d) Having a glance at the given options one can find out that the two nearest values have a difference of 300. So round off the numbers to the nearest ten's values.
 $9228.789 \approx 9230; 5021.832 \approx 5020$ and $1496.989 \approx 1500$
Now the equation will become
 $9230 - 5020 + 1500 = ?$
 $? = 5710$
But the nearest value is 5700.
97. (a) It can be rounded off to the nearest ten's places.
 $1002 \approx 1000; 49 \approx 50; 99 \approx 100$ and $1299 \approx 1300$
Now the equation will become
 $1000 \div 50 \times 100 - 1300 = ?$
 $20 \times 100 - 1300 = ?$
 $2000 - 1300 = ?$
 $? = 700$
98. (d) The difference between two nearest values is 70 (210 and 280). So round off the numbers to the nearest integers. 29.8% of $260 \approx 30\%$ of 260 ; 60.01% of $510 \approx 60\%$ of 510 and $103.57 \approx 104$
Now the equation will become
 30% of $260 + 60\%$ of $510 - 104 = ?$
 $30/100 \times 260 + 60/100 \times 510 - 104 = ?$
 $78 + 306 - 104 = ?$
 $? = 384 - 104 = 280$

99. (a) $(21.98)^2 \approx (22)^2$
 $(25.02)^2 \approx (25)^2$
and $(13.03)^2 \approx (13)^2$
The equation will become
 $22^2 - 25^2 + 13^2 = ?$
 $484 - 625 + 169 = ?$
 $653 - 625 = ?$
 $? = 28$ so the nearest value is 25
100. (e) $\frac{50 \times 25}{10} = \frac{1250}{10} = 125$
104. (b) Only (c)
105. (b) The realization of the link between food security and political stability.
106. (c) To make those countries more self sufficient to whom it previously provided food.
107. (c) It prompted increased investment and interest in agriculture.
108. (a) Misapprehension that it would alleviate poverty as it did in other countries.
109. (e) Only (b) and (c).
110. (c) Only (b)
111. (a) The meaning of the word **Starve (Verb)** as used in the passage is : keep deprived of : to not give something that is needed.
Hence, the words **starved** and **deprived** are synonyms.
112. (b) The meaning of the word **Slap (Verb)** as used in the passage is : impose : to order especially in a sudden or an unfair way, that something must happen or somebody must do something.
Hence, the words **slapped** and **imposed** are synonyms.
113. (a) The meaning of the word **Plow (Verb)** as used in the passage is : to invest a large amount of money in a company or project : to cultivate.
Hence, the words **plowed** and **cultivated** are synonyms.
114. (b) The meaning of the word **Pressing (Adjective)** as used in the passage is : urgent, serious, insistent, needing to be dealt with immediately.
Hence, the words **pressing** and **undemanding** are antonyms.
115. (c) The meaning of the word **Evaporate (Verb)** as used in the passage is : to disappear, especially by gradually becoming less and less.
Hence, the words **evaporated** and **grew** are antonyms.
116. (b) Q is the opening sentence, it defines the status quo, followed by S, because S illustrates about customised tailoring outfit, a subject mentioned in Q 'custom made clothing'. Thus will be followed by P, since P explains further customised tailoring industry.

117. (d) Q is the opening sentence as it introduces the subject of evaluation followed by S, which is linked with Q because, it gives conditions attached with the subject of Q.
118. (c) R is the opening sentence as it has the subject. There may be a confusion between P and R, but the subject of P- participation, is an object in R, Thus R will be the just sentence, followed Q and then P, as Q and P explain the objects of R.
119. (b) P is the opening sentence, followed by R because the 'this' in R refers to the idea stated in the opening sentence and works as a link between them. This will be followed by Q, because the pronoun subject 'it' refers to Ford Motor company.
120. (d) Q is the opening sentence, it introduces the subject. This will be followed by P which has a link with Q- Chewing gum, then will be S which has a link with P-Finish.
121. (a) Substitute between for among
122. (b) Substitute undergone
123. (b) Substitute detailed
124. (c) Substitute at least
125. (a) Delete no.
126. (d) According to this passage, regular physical activity is needed to improve one's physical as well as mental health
127. (d) In order to tone up the physical education programme the programme should be reoriented and implemented
128. (c) According to American, health education is more important than teaching any subject
129. (d) The author wants the reoriented physical education programme to be thoughtful
130. (a) In order to improve the physical education programme, we should first of all allot more time to the teaching and learning of physical activity

IBPS

Common Written Exam (PO/MT)

Held on : 27-10-2013

(Based On Memory)

Time : 2 Hrs.

REASONING

DIRECTIONS (Qs. 1-5) : Study the following information carefully and answer the questions given below:

An organization wants to recruit system analysts. The following conditions apply.

The candidate must

- be an engineering graduate in computer/IT with at least 60% marks.
- have working experience in the field of computer at least for 2 yr after acquiring the requisite qualification.
- have completed minimum 25 yr and maximum 30 yr of age as on 1.12.2013.
- be willing to sign a bond for ₹ 50000.
- have secured minimum 55% marks in selection test. However, if a candidate fulfils all other conditions

Except

- at (i) above, but is an Electronics Engineer with 65% or more marks the case is to be referred to the General Manager (GM)-IT.
- at (iv) above, but has an experience of atleast 5 yr as a Software Manager, the case is to be referred to the VP.

In each question below, detailed information of candidate is given. You have to carefully study the information provided in each case and take one of the following courses of actions based on the information and the conditions given above. You are not to assume anything other than the information provided in each question. All these cases are given to you as on 01.12.2013. You have to indicate your decision by marking answers to each question as follows:

Give Answer:

- If the case is to be referred to VP
 - If the case is to be referred to GM
 - If the data provided is not sufficient to take a decision
 - If the candidate is to be selected
 - If the candidate is not to be selected
- Ms. Suneeta is an IT Engineer with 60% marks at graduation as well as in selection test. She is working as a Software Engineer for last 3 yr after completing engineering degree and has completed 27 yr of age. She is willing to sign the bond of ₹ 50000.
 - Rakesh Rao is a Computer Engineer Graduate and thereafter is working as a Software Manager for last 6 yr. He has secured

72% marks at graduation and 67% marks in selection test. His date of birth is 5th December, 1984. He is not willing to sign the bond for ₹ 50000.

- Ramkumar is an Engineering graduate in computers with 78% marks passed out in 2007 at the age of 23 yr. Since, then he is working as a Software Manager in an engineering firm. He doesn't want to sign the bond for ₹ 50000. He has cleared the selection test with 72% marks.
- Nishant is an Electronics Engineer passed out in June, 2010 at the age of 22 yr. Since, then he is working as a Programmer in a software company. He has passed the selection test with 66% marks and is willing to sign the bond.
- Kalyani is an Engineer with 72% marks in Telecommunication. She has just completed 27 yr of age. She has cleared the selection test with 59% marks. She is willing to sign the bond.

DIRECTIONS (Qs. 6) : Analyse the following passage and answer the question.

Some words are highly inflammable. Fusion is one them. You can get two sets of people into a war mode by just uttering the words 'fusion music'. One set will breathe fire and say it violates the purity of music the other set will tell you earnestly that it opens up the borders of music.

- From the purists perspective, the 'war' between the two set of people can best be
 - categorized as an ideological conflict between two ideas
 - termed as a conflict between generations the younger versus the older generation
 - an attempt to preserve the core principles
 - seen as an attempt of people at the margin to occupy centre stage
 - seen as preserving the social identity of purists
- Unlike other retail outlets, where items are purchased in any number of units the customer wants, in super-markets items are grouped in bulk packages. This bulk buying offers saving to the customer. The option to buy at wholesale prices by buying in bulk makes super-market a practical choice for budget-conscious consumers. Which of the following assumption may be driven from the above information.
 - Super-markets often have greater buying power and lower overhead costs, so they can offer a greater variety of products than regular retail outlets

- (b) Super-markets are often more conveniently located and have better parking facilities
- (c) The emergence of super-markets has caused many small retail stores to close down and thus eliminate competitions
- (d) It is economically wise to buy single items since bulk packages seldom offer significant savings
- (e) The financial savings from purchasing bulk packages may outweigh the inconvenience of being unable to purchase in any number of units that suits the customers' need
8. Nations do not complete with each other in the way corporations do. Which of the following most favours the weakness of the argument?
- (a) Trade deficit is a sign of national strength, profits are a sign of corporate strength
- (b) Increase in human development index improves national standing, increase in market share improves corporate standing
- (c) Climate change negotiations lead to global improvement; CSR initiatives lead to image improvement
- (d) Nations go to war to capture territory, corporates contend against each other to capture market share
- (e) None of the above
9. Civilization has taught us to be friendlier towards one another. Which of the following most favours the strengthens of the argument?
- (a) Cats are loyal to their children, whereas men are loyal to their communities
- (b) Elephants move in a herd, whereas men live in nuclear families
- (c) Lions protect their own territories, whereas men capture other men's territories
- (d) Nilgai and Cheetal stay together, whereas men of one race dominate another
- (e) None of the above
10. The mushrooming of business schools in the country is a cause for shortage of faculty with Ph.D qualification. In addition, the higher pay and generous fringe benefits given by industry has encouraged qualified people to not seek academic positions. Which of the following statements, if true, would tend to STRENGTHEN the argument?
- (a) The average salary for industry positions in Gujarat is more than the average salary for faculty positions in some business schools in Ahmedabad by around 30%
- (b) The average salary for industry positions in Gujarat is less than the average salary for faculty positions in a top business school in Ahmedabad by around 30%
- (c) The average salary for recent Ph. D graduates in the industry is 20% higher than that in academics
- (d) The rate of growth of salaries for the industry positions has been higher than the rate of growth of salaries for academic positions for the past three years
- (e) None of the above

DIRECTIONS (Qs. 11-13) : Study the information given below carefully to answer the following questions

In a certain code language the following lines written as:

'lop eop aop fop' means 'Traders are above laws'

'fop cop bop gop' means 'Developers were above profitable'

'aop bop uop qop' means 'Developers stopped following traders'

'cop jop eop uop' means 'Following maps were laws'

11. 'Developers are following laws' would be correctly written as
- (a) 'bop cop uop eop' (b) 'lop bop eop uop'
- (c) 'oup cop lop aop' (d) 'gop cop uop qop'
- (e) None of these
12. 'qop gop cop eop' would correctly mean
- (a) profitable laws were stopped
- (b) developers stopped following laws
- (c) traders were above profitable
- (d) were laws profitable traders
- (e) None of the above
13. 'aop qop bop' would correctly mean
- (a) following were above
- (b) traders stopped developers
- (c) developers are laws
- (d) traders above stopped
- (e) laws are stopped

DIRECTIONS (Qs. 14-18) : In each of the questions below are given four statements followed by three conclusions numbered I, II and III. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

14. Statements: All petals are flowers. Some flowers are buds. Some buds are leaves. All leaves are plants.
Conclusions: I. Some petals are not buds.
II. Some flowers are plants.
III. No flower is plant.
- (a) Only I follows (b) Either II or III follows
- (c) I and II follow (d) Only III follows
- (e) None of the above
15. Statements: Some pens are keys. Some keys are locks. All locks are cards. No card is paper
Conclusions:
I. No lock is paper.
II. Some cards are keys.
III. Some keys are not paper.
- (a) I and II follow (b) Only I follows
- (c) Only II follows (d) All follow
- (e) None follows
16. Statements: Some pearls are gems. All gems are diamonds. No diamond is stone. Some stones are corals.
Conclusions:
I. Some stones are pearls.
II. Some corals being diamond is a possibility.
III. No stone is pearl.
- (a) Only I follows (b) Only II follows
- (c) Either I or III follows (d) I and II follow
- (e) None of these

17. Statements: Some apartments are flats. Some flats are buildings. All buildings are bungalows. All bungalows are gardens.
Conclusions:
I. All apartments being building is a possibility
II. All bungalows are not buildings.
III. No flat is garden.
(a) None follows (b) Only I follows
(c) Either I or III follows (d) II and III follow
(e) Only II follows
18. Statements: All chairs are tables. All tables are bottles. Some bottles are jars. No jar is bucket.
Conclusions:
I. Some tables being jar is a possibility.
II. Some bottles are chairs.
III. Some bottles are not bucket.
(a) Only I follows (b) I and II follow
(c) All follow (d) Only II follows
(e) None of these
19. A person starts from point P in East and moves 12 m to point Q. Then, he moves right 8 m to point R. Again he moves right for 6 m to point S. Then, he moves 6 m in the North to point T. Finally from there he goes to left for 6 m to point U. Which of three point he would form a triangle whose all the angles are less than 90°?
(a) PTQ (b) QTR
(c) UTS (d) TSR
(e) SQR

DIRECTIONS (Qs. 20-25) : Read the following information carefully and answer the questions that follow.

Seven friends A, B, C, D, E, F and G are sitting around a circular table facing either the centre or outside. Each one of them belongs to a different department viz. Finance, Marketing Sales, HR, Corporate Finance, Investment Banking and Operations but not necessarily in the same order.

C sits third to the right of G. G faces the centre. Only one person sits between C and the person working in the HR department immediate neighbours of C face outside. Only one person sits between F and D. Both F and D face the centre. D does not work in the HR department. A works in Investment Banking Department. A faces the centre. Two people sit between the persons who work in Investment Banking and Marketing Departments. The person who works in Corporate Finance sits to the immediate left of E. C faces same direction as E. The person who works in corporate finance sits to the immediate left of the person who works for Finance department.

20. For which of the following departments does B work?
(a) Finance (b) Marketing
(c) HR (d) Corporate Finance
(e) Operations
21. What is position of B with respect to the person who works for Sales department?
(a) Immediate right (b) Third to the left
(c) Second to the right (d) Second to the left
(e) Fourth to the right

22. Who sits to the immediate right of E ?
(a) The person who works for Marketing department
(b) C
(c) B
(d) The person who works for HR department
(e) A
23. Who amongst the following sits exactly between C and the person who works for HR department?
(a) B
(b) The person who works for Marketing department
(c) The person who works for Operations department
(d) D
(e) G
24. Who amongst the following sit between the persons who work for Marketing and Investment Banking departments when counted for the left hand side of the person working for Marketing department?
(a) F and G (b) E and C
(c) C and B (d) F and D
(e) B and D
25. How many people sit between the person who works for Operations department and A, when counted from the right hand side of A?
(a) One (b) Two
(c) Three (d) Four
(e) More than four

DIRECTIONS (Qs. 26-30) : In these questions the symbols @, #, \$, % and ★ are used with different meanings as follow.

'A @ B' means 'A is not smaller than B'.
'A # B' means 'A is neither smaller than nor equal to B'.
'A \$ B' means 'A is neither greater than nor smaller than B'.
'A % B' means 'A is not greater than B'.
'A ★ B' means 'A is neither greater than nor equal to B'.
In each questions, four statements showing relationships have been given, which are followed by three conclusions I, II and III. Assuming that the given statements are true, find out which conclusion (s) is/are definitely true?

26. **Statements:** V \$ Y, Y @ Z, Z % X, X # T
Conclusions:
I. T # Z II. X # Y
III. Z ★ Y
(a) None follows (b) Only I follows
(c) II and III follow (d) I and III follow
(e) Only III follows
27. **Statements:** R @ J, J % F, F ★ E, E % M
Conclusions:
I. M # J II. F % M
III. M ★ R
(a) Only I follows (b) Only II follows
(c) Only III follows (d) I and II follow
(e) All follow
28. **Statements:** H # R, R @ L, L ★ W, W % F
Conclusions:
I. H # J II. F # L
III. H \$ F
(a) Only I follows (b) I and II follow
(c) II and III follow (d) Either I or II follows
(e) All follow

- 29. Statements:** M # K, M \$ F, F % Q, Q ★ H
Conclusions:
 I. H # K
 II. Q # K
 III. Q @ M
 (a) I and II follow (b) Either I or II follows
 (c) All follow (d) II and III follow
 (e) None of the above
- 30. Statements:** D ★ Q, Q \$ L, L # T, T % H
Conclusions:
 I. D ★ L
 II. L @ H
 III. H # L
 (a) Only I follows (b) I and II follow
 (c) Either II or III follows (d) All follow
 (e) None follow
- 31.** In a code language 'PROVIDE' is written as 'MULYFGB', then what will be code for 'BECAUSE' in same languages
 (a) YZHDRV B (b) ZHYDRV B
 (c) YHZDRV B (d) ZYD HVBR
 (e) None of these
-
- DIRECTIONS (Qs. 32-36) :** Each of the questions below consists of a question and two statements numbered I and II are given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and
-
- Give answer:**
- (a) If the data in Statements I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question
 (b) If the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question
 (c) If the data in Statement I alone or in Statement II alone is sufficient to answer the question
 (d) If the data in both the Statements I and II are not sufficient to answer the question
 (e) If the data in both the Statements I and II together are necessary to answer the question
- 32.** How many children are there in the group if no two children have same weight?
 Statements:
 I. Sahil is fifth from the top in order of weight if all the children in the group were arranged in descending order.
 II. Ramesh, who is heavier than 14 children in the group is immediately next to Sahil in weight.
- 33.** What is the code for 'healthy' in the code language?
 Statements:
 I. In the code language 'eat healthy food' is written as 'ka mare'.
 II. In code language 'food for healthy people' is written as 'ta ma jo re'.
- 34.** How many brothers does 'H' have?
 Statements:
 I. 'H' is sister of 'K' who is son of 'T'.
 II. T is mother of 'K' who is brother of 'H'.
- 35.** Who among J, T, W, R and Q reached the office first?
 Statements:
 I. J reached before Q, R and T but after W.
 II. Q reached before R but after W.
- 36.** Village 'F' is in which direction with respect to village 'K'?
 Statements:
 I. Village 'J' is to the East of village 'F' and to the North of village 'K'.
 II. Village 'R', which is to the South of village 'F' is to the West of village 'K'.
- 37.** The increase in the number of newspaper articles exposed as fabrications serves to bolster the contention that publishers are more interested in boosting circulation than in printing the truth. Even minor publications have staff to check such obvious fraud.?
 Which of the following may be the assumption of the given argument?
 (a) Newspaper stories exposed as fabrication are a recent phenomenon
 (b) Everything a newspaper print must be factually verifiable
 (c) Fact checking is more comprehensive for minor publications than for major ones
 (d) The publishers of newspapers are the people who decide what to print in their newspapers
 (e) None of the above
- 38.** The rate of violent crime in this state is upto 30% from last year. The fault lies entirely in our system of justice. Recently our judges' sentences have been so lenient that criminals can now do almost anything without fear of a long prison term.
 The argument above would be weakened if it were true that
 (a) 85% of the other States in the nation have lower crime rates than does this state
 (b) white-collar crime in this state has also increased by over 25% in the last year
 (c) 35% of the police in this state have been laid off in the last year due to budget cuts
 (d) polls show that 65% of the population in this state opposes capital punishment
 (e) None of the above
- 39.** All German philosophers, except for Marx, are idealists. From which of the following can the statement above be most properly inferred?
 (a) Except for Marx, if someone is an idealist, then he or she is a philosopher, as long as he German
 (b) Marx is the only non-German philosopher who is an idealist
 (c) If a German is an idealist, then he or she is a philosopher, as long as he or she is not Marx
 (d) Aside from the philosopher Marx, If someone is a German, then he or she is an idealist
 (e) None of the above
- 40.** During the SARS days, about 23, 500 doctors who had treated SARS sufferers died and about 23, 670 doctors who had not engaged in treatment for SARS sufferers died. On the basis of those Figures, it can be concluded that it was not much more dangerous to participate in SARS treatment

during the SARS day than it was not to participate in SARS treatment.

Which of the following would reveal most clearly the absurdity of the conclusion drawn above?

- Counting deaths among doctors who had participated in SARS treatment in addition to deaths among doctors who had not participated in SARS treatment
- Expressing the difference between the numbers of deaths among doctors who had treated SARS sufferers and doctors who had not treated SARS sufferers as a percentage of the total number of deaths
- Separating deaths caused by accidents during the treatment to SARS sufferers from deaths caused by infection of SARS sufferers
- Comparing death rates per thousand members of each group rather than comparing total numbers of deaths
- None of the above

DIRECTIONS (Qs. 41-44) : Read the following passage carefully and answer the Question given below it.

Six friends Abhishek, Deepak, Mridul, Pritam, Ranjan and Salil married within a year in the months of February, April, July, September, November and December and in the cities of Ahmedabad, Bengaluru, Chennai, Delhi, Mumbai and Kolkata, but not necessarily following the above order. The brides' names were Geetika, Jasmine, Hema, Brinda, Ipsita and Veena, once again not following any order. The following are some facts about their weddings.

- Mridul's wedding took place in Chennai, however he was not married to Geetika or Veena
- Abhishek's wedding took place in Ahmedabad and Ranjan's in Delhi; however neither of them was married to Jasmine or Brinda
- The wedding in Kolkata took place in February
- Hema's wedding took place in April, but not in Ahmedabad
- Geetika and Ipsita got married in February and November and in Chennai and Kolkata but not following the above order
- Pritam visited Bengaluru and Kolkata only after his marriage in December
- Salil was married to Jasmine in September

41. Hema's husband is

- Abhishek
- Deepak
- Ranjan
- Pritam
- Mridul

42. Deepak's wedding took place in

- Bengaluru
- Mumbai
- Kolkata
- Delhi
- Chennai

43. In Mumbai, the wedding of one of the friends took place in the month of

- April
- September
- November
- December
- July

44. Salil's wedding was held in

- Bengaluru
- Chennai
- Kolkata
- Delhi
- Mumbai

DIRECTIONS (Qs. 45-50) : Given an input line the machine arranges the words and numbers in steps in a systematic manner as illustrated below:

Input line 59 dress fine shine 32 66 72 offer

Step I 72 56 dress fine shine 32 66 offer

Step II 72 shine 56 dress fine 32 66 offer

Step III 72 shine 66 56 dress fine 32 offer

Step IV 72 shine 66 offer 56 dress fine 32

Step V 72 shine 66 offer 56 fine dress 32

Step VI 72 shine 66 offer 56 fine 32 dress

STEP VI is the last step and the output in Step VI is the final output.

As per the rules followed in the above steps, find out in each of the following questions the appropriate step for the given input.

45. Step IV of an input is '62 sound 56 sleep roam present 33 49'.

What will be the input definitely?

- Sound 62 sleep 56 roam present 33 49
- Sleep sound 62 56 roam present 33 49
- 62 Sound sleep 56 roam present 33 49
- Cannot be determined
- None of the above

46. Which of the following will be the third step for input 'jockey firm 36 43 growth chart 22 45'?

- 45 jockey 43 growth firm 36 chart 22
- 45 jockey 43 firm growth 36 chart 22
- 45 jockey 43 growth 36 firm chart 22
- 45 jockey 43 firm 36 growth chart 22
- None of the above

47. Step II of an input is '53' window 42 50 door lock key 36'. How many more steps will be required to complete the arrangement?

- Three
- Four
- Five
- Six
- None of these

48. What will be the fifth step of an input whose first step is '85 journey train 36 54 daily 28 mansion'?

- 85 train 54 mansion 28 journey daily 36
- 85 train 54 mansion journey 36 daily 28
- 85 train 54 mansion 36 journey daily 28
- There is no such step
- None of the above

49. Which step will be the last step for an input whose second step is '63' Sour 18 56 grapes healthy 32 rise'?

- IV
- V
- VIII
- VII
- None of these

50. Which word/number will be sixth from right in step fifth whose second step is '63 Sour 18 56 grapes healthy 32 rise'?

- Rise
- 56
- Sour
- 32
- 18

ENGLISH LANGUAGE

DIRECTIONS (Qs. 51-58) : *Read the following passage carefully and answer the questions given below it. Certain words have been printed in bold to help you to locate them while answering some of the questions.*

The great fear in Asia a short while ago was that the region would suffer through the wealth destruction already taking place in the U.S as a result of the financial crisis. Stock markets tumbled as exports plunged and economic growth deteriorated. Lofty property prices in China and elsewhere looked set to bust as credit tightened and buyers evaporated. But with surprising speed, fear in Asia swung back to greed as the region shows signs of recovery and property and stock prices are soaring in many parts of Asia. Why should this sharp Asian turnaround be greeted with skepticism? Higher asset prices mean households feel wealthier and better able to spend, which could further fuel the region's nascent rebound. But just as easily, Asia could soon find itself saddled with overheated markets similar to the U.S. housing market. In short, the world has not changed, it has just moved placed.

The incipient bubble is being created by government policy. In response to the global credit crunch of 2008. Policy makers in Asia slashed interest rates and flooded financial sectors with cash in frantic attempts to keep loans flowing and economies growing. These steps were logical for central bankers striving to reverse a deepening economic crisis. But there is evidence that there is too much easy money around. It's winding up in stocks and real estate, pushing prices up too far and too fast for the undenyng economic fundamentals. Much of the concern is focused on China where government stimulus efforts have been large and effective, Money in China has been especially easy to find. Aggregate new bank lending surged 201% in first half of 2009 from the same period a year earlier, to nearly 51.1 trillion on. Exuberance over a quick recovery which was given a boost by China's surprisingly strong 7.9% GDI growth in the second quarter has buoyed investor sentiment not just for stocks but also for real estate.

Former U.S. Federal Reserve Chairman Alan Greenspan argued that bubbles could only be recognised in hand sight. But investor who have been well schooled in the dangers of bubbles over the past decade are increasingly wary that prices have risen too far and that the slightest bit of negative, economic news could knock markets for a loop. These fears are compounded by the possibility that Asia's central bankers will begin taking steps to shut off the money. Rumours that Beijing was on the verge of tightening led to Shanghai stocks plunging 5%. Yet many economists believe that, there is close to a zero possibility that the Chinese government will do anything this year that constitutes tightening. And without a major shift in thinking, the easy-money condition will stay in place. In a global economy that has produced more dramatic ups and downs than anyone thought possible over the past two years. Asia may be heading for another disheartening plunge.

51. To which of the following has the author attributed the 2008 Asian financial crisis?
- Reluctance or Asian governments to taper off the economic stimulus.
 - Greed of Asian investors causing them to trade stocks of American companies at high prices.
 - Inflated real estate prices in Asian countries.
- (a) None (b) Only (A)
(c) Only (C) (d) (A) and (B)
(e) Only (B)
52. What does the author want to convey through the phrase "The world has not changed it has just moved places"?
- At present countries are more dependent on Asian economies than on the US economy
 - Economies have become interlinked on account of globalisation
 - Asian governments are implementing the same economic reforms as developed countries
 - All economies are susceptible to recession because of the state of the US economy
 - None of the above
53. Which of the following can be said about the Chinese government's efforts to revive the economy?
- These were largely unsuccessful as only the housing market improved
 - The governments only concern was to boost investor confidence in stocks
 - These efforts were ineffectual as the economy recovered owing to the US market stabilising
 - These were appropriate and accomplished the goal of economic revival
 - They blindly imitated the economic reforms adopted by the US
54. Why do experts predict that Asian policymakers will not withdraw fiscal stimulus?
- The US economy is not likely to recover for a long time.
 - Stock markets are yet to regain their former levels.
 - Fear of revolt by greedy citizens.
- (a) None of these (b) Only (C)
(c) (A) and (C) (d) Only (B)
(e) (B) and (C)
55. What do the statistics about loans given by Chinese banks in 2009 indicate?
- There was hardly any demand for loans in 2008
 - The Chinese government has borrowed funds from the US
 - China will take longer than the US to recover from the economic crisis
 - The GDP of China was below expectations
 - None of the above
56. Why has investor confidence in the Chinese stock market been restored?
- Existing property prices which are stable and affordable.
 - The government has decided to tighten credit.
 - Healthy growth of the economy indicated by GDP figures.
- (a) Only (C) (b) (A) and (B)
(c) All (A), (B) and (C) (d) Only (B)
(e) None of these

57. What is the author's main objective in writing the passage?
- Illustrating that Asian economies are financially more sound than those of developed countries
 - Disputing financial theories about how recessions can be predicted and avoided
 - Warning Asian countries about the dangers of favouring fast growth and profits over sound economic-principles
 - Extolling China's incredible growth and urging other countries to emulate it
 - Advising governments about the changes in policy to strengthen economic fundamentals
58. Why does the author doubt the current resurgence of Asian economics?
- Their economies are too heavily reliant on the American economy which is yet to recover
 - Central banks have slashed interest rates too abruptly which is likely to cause stock markets to crash
 - With their prevailing economic conditions they are at risk for a financial crisis
 - Their GDP has not grown significantly during the last financial year
 - None of the above

DIRECTIONS (Qs. 59-65) : Read the following passage carefully and answer the questions given below it. Certain words have been printed in bold to help you to locate them while answering some of the questions.

Delays of several months in National Rural Employment Guarantee Scheme (NREGS) wage payments and work sites where labourers have lost all hope of being paid at all have become the norm in many states. How are workers who exist on the margins of subsistence supposed to feed their families? Under the scheme, workers must be paid within 15 days, failing which they are entitled, to compensation under the Payment of Wages Act - upto 3000 per aggrieved worker. In reality, compensation is received in only a few isolated instances. It is often argued by officials that the main reason for the delay is the inability of banks and post offices to handle mass payments of NREGS wages. Though there is a grain of truth in this, as a diagnosis it is misleading. The 'jam' in the banking system has been the result of the hasty switch to bank payments imposed by the Central Government against the recommendation of the Central Employment Guarantee Council which advocated a gradual transition starting with villages relatively close to the nearest bank. However, delays are not confined solely to the banking system. Operational hurdles include implementing agencies taking more than fifteen days to issue payment orders, viewing of work measurement as a cumbersome process resulting in procrastination by the engineering staff and non maintenance of muster rolls and job card etc. But behind these delays lies a deeper and deliberate 'backlash' against the NREGS. With bank payments making it much harder to embezzle NREGS funds, the programme is seen as a headache by many government functionaries the workload has remained without the "inducements". Slowing down wage payments is a convenient way of sabotaging the scheme because workers will desert NREGS worksites.

The common sense solution advocated by the government is to adopt the business correspondent model. Where in bank agents will go to villages to make cash payments and duly record them on handheld, electronic devices. This solution is based on the wrong diagnosis that distance separating villages from banks is the main issue. In order to accelerate payments, clear timelines for every step of the payment process should be incorporated into the system as Programme Officers often have no data on delays and cannot exert due pressure to remedy the situation. Workers are both clueless and powerless with no provision for them to air their grievances and seek redress. In drought affected areas the system of piece rate work can be dispensed with where work measurement is not completed within a week and wages may be paid on the basis of attendance. Buffer funds can be provided to gram panchayats and post offices to avoid bottlenecks in the flow of funds. Partial advances could also be considered provided wage payments are meticulously tracked. But failure to recognise problems and unwillingness to remedy them will remain major threats to the NREGS.

59. What impact have late wage payments had on NREGS workers?
- They cannot obtain employment till their dues are cleared
 - They have benefited from the compensation awarded to them
 - They have been unable to provide for their families
 - They have been ostracised by their families who depend on them for sustenance
 - None of the above
60. Which of the following factors has not been responsible for untimely payment of NREGS wages?
- Communication delays between agencies implementing the scheme
 - Improper record keeping
 - Behind schedule release of payments by banks
 - Drought conditions prevalent in the country
 - Delays in work measurement
61. What has the outcome of disbursing NREGS wages through banks been?
- Theft of funds by administration officials responsible for the scheme has reduced
 - Increased work load for local government officials
 - Protests by workers who have to travel long distances to the nearest bank to claim their wages
 - Time consuming formalities have to be completed by workers
 - None of the above
62. According to the passage, which of the following has/have been the consequence (s) of delayed wage payments?
- Compensation to victimised workers has amounted to crores.
 - Banks will no longer be entrusted with remitting wages.
 - Regulations to ensure punctual wage payments have come into force.
- None of these
 - Only (A)
 - (A) and (C)
 - (A) and (B)
 - (B) and (C)

63. To which of the following has the author attributed the delay in wage payments?
- Embezzlement of funds by corrupt bank staff
 - Lack of monitoring by the Central Employment Guarantee Council
 - An attempt to derail the NREGS by vested interests
 - Overworked bank staff deliberately delay payments to protest against extra work
 - Engineers efforts to wreck the NREGS because of low wages
64. Which of the following is NOT true in the context of the passage?
- Workers are reluctant to open bank accounts as branches are not conveniently located.
 - Local officials often delay wage payments in drought prone areas to benefit workers.
 - The Government has not implemented ever' recommendation of the Central Employment Guarantee Council.
- Only (B)
 - (A) and (B)
 - (B) and (C)
 - (A) and (C)
 - All of these
65. Which of the following can be considered a deficiency in the NREGS?
- Lack of co-ordination among Programme Officers
 - Local officials are unaware of correct operational procedures
 - Workers have no means of obtaining redressal for untimely wage payments
 - Disbursing wages through banks instead of readily accessible post offices
 - The Central Employment Guarantee Council is reluctant to award compensation to workers

DIRECTIONS (Qs. 66-70) : Rearrange the following sentences (A), (B), (C), (D) (E) and (F) into a meaningful paragraph and then answer the questions given below it.

- Moreover salaries in public sector enterprises are not as competitive as those offered by private or foreign corporates, connection
 - This trend should be a wake up call for stakeholders to examine why employees are seeking better opportunities with private companies in India and abroad.
 - Public Sector Enterprises (PSEs) have been experiencing severe challenges in attracting motivating and retaining their key staff.
 - Having identified these as the reasons employees leave PSEs it is important empower stakeholders to find ways to remedy the situation.
 - One reason is that young employees lured away to private firms are more willing to undertake professional risks.
 - Employees in specialist roles especially have become increasingly difficult to retain.
66. Which of the following should be the FIRST sentence after rearrangement?
- A
 - B
 - C
 - D
 - E

67. Which of the following should be the SECOND sentence after rearrangement?
- A
 - B
 - C
 - D
 - F
68. Which of the following should be the THIRD sentence after rearrangement?
- A
 - B
 - C
 - D
 - E
69. Which of the following should be FIFTH sentence after rearrangement?
- A
 - B
 - C
 - D
 - E
70. Which of the following should be the LAST (SIXTH) sentence after rearrangement?
- A
 - B
 - C
 - D
 - E

DIRECTIONS (Qs. 71-80) : In the following passage, there are blanks each of which has been numbered. These numbers are printed below the passage and against each five words have been suggested, one of which fills the blanks appropriately. Find out the appropriate word in each case.

Traditional bank architecture is based on bank branches. These branches ensure the physical (71) of a customer's savings. A customer may go there to deposit and withdraw money, (72) loans and (73) in other financial transactions. In the past two decades banking architecture has changed the Automated Teller Machine (ATM) has been a big (74) and credit and debit cards have created new financial spaces. (75) the bank branch has remained the bedrock of the banking system after all a person needs a bank account in a branch before he can operate a debit or ATM card. This may be about to change as technocrats now (76) cell phones as the new architecture of virtual banks. This has the potential to make branches (77). Cell phone banking looks especially relevant for India, since it can penetrate the countryside cheaply and (78). The world over cell phones are spreading at a (79) rate and in India alone new cell phone connection are growing at the rate of six million a month a rate of customer (80) that no bank can dream of.

71. (a) Knowledge (b) security
(c) presence (d) confidentiality
(e) guarantee
72. (a) negotiate (b) advance
(c) credit (d) disburse
(e) sanction
73. (a) pursue (b) interact
(c) operate (d) enable
(e) engage
74. (a) drawback (b) hurdle
(c) consequence (d) luxury
(e) innovation
75. (a) Despite (b) Although
(c) Even (d) Yet
(e) Until

76. (a) View (b) realize
(c) Display (d) engineer
(e) assess
77. (a) essential (b) obsolete
(c) extant (d) retreat
(e) expired
78. (a) moderately (b) occasionally
(c) compulsorily (d) indiscriminately
(e) effectively
79. (a) phenomenal (b) gradual
(c) proportionate (d) competitive
(e) projected
80. (a) discount (b) base
(c) expansion (d) satisfaction
(e) relationship

DIRECTIONS (Qs. 81-85) : Each question below has two blanks, each blank indicating that something has been omitted. Choose the set of words for each blank that best fits the meaning of the sentence as a whole.

81. In an effort to provide for higher education to all, most of the universities have been providing education without adequate infrastructure, thus churning out graduates every year.
(a) chances, fresh
(b) platform, capable
(c) opportunities, unemployable
(d) prospects, eligible
(e) policy, incompetent
82. The move to allow dumping of mercury An outcry from residents of the area who that high levels of mercury will affect their health and destroy ecologically sensitive forest area.
(a) resulted, insist (b) provoked, fear
(c) incited, determined (d) activated, accept
(e) angered, believe
83. Even as the elsewhere in the world are struggling to come out of recession, Indian consumers are splurging on consumer goods and to this growth, companies are investing heavily in various sectors.
(a) economies, meet (b) countries, inhibit
(c) governments, measure (d) nations, inflict
(e) companies, counter
84. Drawing attention to the pitfalls of solely on Uranium as a fuel for nuclear reactors, Indian scientists warned that Uranium will not last for long and thus research on Thorium as its must be revived.
(a) using, substitute
(b) believing, replacement
(c) depending, reserve
(d) reckoning, option
(e) relying, alternative
85. has been taken against some wholesale drug dealers for dealing in surgical items without a valid license and maintaining a stock of drugs.
(a) Note, overwhelming (b) Step, impressive
(c) Execution, outdated (d) Action, expired
(e) Lawsuit, invalid

DIRECTIONS (Qs. 86-90) : Which of the phrases (a), (b), (c) and (d) given below each statement should be placed in the blank space provided so as to make a meaningful and grammatically correct sentence? If none of the sentences is appropriate, mark (e) i.e., 'None of the above' as the answer.

86. Overlooking the fact that water scarcity intensifies during summer,
(a) the government issued guidelines to all builders to limit their consumption to acceptable limits
(b) provision for rainwater harvesting has been made to aid irrigation in drought prone area
(c) the water table did not improve even after receiving normal monsoon in the current year
(d) many residential areas continue to use swimming pools, wasting large quantities water
(e) None of the above
87. Refuting the rationale behind frequent agitations for formation of separate states, a recent report
(a) proved that such agitations result in loss of governmental property
(b) indicated that the formation of small states does not necessarily improve the economy
(c) suggested that only large scale agitations have been effective in bringing out desired change in the past
(d) recommended dividing large states into smaller ones to improve governance
(e) None of the above
88. Achieving equality for women is not only a laudable goal,
(a) political reforms are also neglected preventing women from entering legislatures and positions of power
(b) the problem is also deep rooted in the society and supported by it
(c) their empowerment is purposefully hampered by people with vested interests in all sections of the society
(d) it is also equally difficult to achieve and maintain for a long term
(e) None of the above
89. he has lost most of his life's earning in the stock market but
(a) he still seems to be leading his life luxuriously and extravagantly
(b) he could not save enough to repay his enormous debts
(c) stock market is not a safe option to invest money unless done with caution
(d) experts have been suggesting to avoid investments in stock market because of its unpredictable nature
(e) None of the above
90. or else they would not keep electing him year after year.
(a) The party leader gave a strong message to the mayor for improving his political style
(b) Owing to numerous scandals against the mayor, he was told to resign from the post immediately
(c) The mayor threatened the residents against filing a complaint against him
(d) The residents must really be impressed with the political style of their mayor
(e) None of the above

QUANTITATIVE APTITUDE

DIRECTIONS (Qs. 91-95) : In each of the following questions, a question is followed by information given in three Statements I, II and III. You have to study the question along with the statements and decide the information given in which of the statement(s) is necessary to answer the question.

91. In how many days 10 women can finish the work?
I. 10 men finish the work in 6 days.
II. 10 women and 10 men finish the work in $3\frac{3}{7}$ days.
III. If 10 men work 3 days and after that 10 women are deployed to work for men, the rest work is finished in 4 days.
(a) I and II (b) Any two of three
(c) I and III (d) II and III
(e) None of these
92. What is the present age of Sabir?
I. The present age of Sabir is half of his father's age.
II. After five years the ratio of ages of Sabir and his father is 6 : 11.
III. Sabir is younger to his brother by five years.
(a) I and II (b) I and III
(c) II and III (d) All of these
(e) Cannot be determined
93. What is two digit number?
I. The difference between the number and the number formed by interchanging the digit is 27.
II. The difference between two digits is 3.
III. The digit at unit's place is less than that at ten place by 3.
(a) I and II (b) I and either II or III
(c) I and III (d) All of these
(e) None of these
94. What is the rate of interest Percent per annum?
I. An amount doubles itself in 5 yr on simple interest;
II. Difference between the compound interest and the simple interest earned on a certain amount in two years is ₹ 400.
III. Simple interest earned per annum is ₹ 2000.
(a) Only I (b) II and III
(c) Any two of three (d) I or II and III
(e) Only I or II and III
95. What is the cost of flooring the rectangular hall?
I. Length and the breadth of the hall are in the ratio of 3 : 2
II. Length of the hall is 48 m and cost of flooring is ₹ 850 per sq m.
III. Perimeter of the hall is 160 m and cost of flooring is ₹ 850 per sq m.
(a) I and II (b) I and III
(c) Only III (d) I and either II or III
(e) Any two of the three
96. If the numerator of a fraction is increased by 20% and the denominator is increased by 25%, the fraction obtained is $\frac{3}{5}$. What was the original fraction?

- (a) $\frac{5}{7}$ (b) $\frac{4}{7}$
(c) $\frac{3}{8}$ (d) Cannot be determined
(e) None of these

97. If the positions of the digits of a two-digit number are interchanged, the number obtained is smaller than the original number by 27. If the digits of the number are in the ratio of 1 : 2, what is the original number?
(a) 36 (b) 63
(c) 48 (d) Cannot be determined
(e) None of these
98. One of the angles of a quadrilateral is thrice the smaller angle of a parallelogram. The respective ratio between the adjacent angles of the parallelogram is 4:5. Remaining three angles of the quadrilateral are in ratio 4 : 11 : 9 respectively. What is the sum of the largest and the smallest angles of the quadrilateral?
(a) 255° (b) 260°
(c) 265° (d) 270°
(e) None of these
99. An aeroplane flies with an average speed of 756 km/h. A helicopter takes 48 h to cover twice the distance covered by aeroplane in 9 h. How much distance will the helicopter cover in 18 h? (Assuming that flights are non-stop and moving with uniform speed.)
(a) 5010km (b) 4875 km
(c) 5760km (d) 5103 km
(e) None of these

DIRECTIONS (Qs. 100-104) : Study the following table carefully and answer the question given below.

Number of People taking Fresh Loans from Different Banks over the Year and the Percentage of Defaulters Amongst them each Year

Year	Bank				
	P	Q	R	S	T
2004	27361	26345	25467	28246	30164
2005	32081	27456	32461	29435	35128
2006	25361	28637	32652	29565	32443
2007	23654	29045	32561	28314	36152
2008	36125	30467	25495	23764	35463
2009	35465	31963	27649	24356	33214
2010	34135	31974	28283	26553	31264

Approximate Percentage of Defaulters Amongst them

Year	Bank				
	P	Q	R	S	T
2004	12	9	15	13	19
2005	24	8	17	20	23
2006	22	13	16	21	25
2007	18	11	18	22	19
2008	12	10	13	23	18
2009	11	20	11	22	21
2010	9	21	1.2	21	23

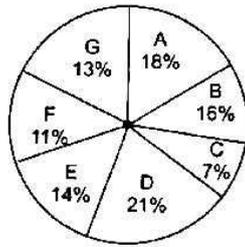
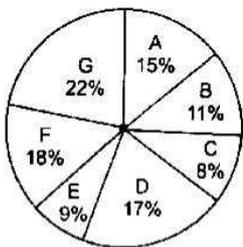
- 100.** Approximately how many people taking a loan from Bank S in the year 2006 were defaulters?
 (a) 6490 (b) 6210
 (c) 5020 (d) 6550
 (e) 5580
- 101.** Approximately what was the difference between the number of defaulters of Bank Q in the year 2004 and 2005?
 (a) 175 (b) 125
 (c) 190 (d) 205
 (e) 140
- 102.** In which of the following years was the number of defaulters of Bank R, the maximum among the given years?
 (a) 2005 (b) 2006
 (c) 2007 (d) 2010
 (e) None of these
- 103.** In which of the following years was the difference in number of people taking loan from Bank P from the previous year the highest?
 (a) 2008 (b) 2006
 (c) 2007 (d) 2005
 (e) None of these
- 104.** Approximately what was the total number of defaulters of Bank T in the years 2007 and 2008 together?
 (a) 14110 (b) 13620
 (c) 13250 (d) 14670
 (e) 15330

DIRECTIONS (Qs. 105-109) : In the following number series, a wrong number is given. Find out the wrong number.

- 105.** 29, 37, 21, 43, 13, 53, 5
 (a) 37 (b) 53 (c) 13 (d) 21 (e) 43
- 106.** 600, 125, 30, 13, 7.2, 6.44, 6.288
 (a) 6 (b) 10 (c) 15 (d) 12
 (e) None of these
- 107.** 80, 42, 24, 13.5, 8.75, 6.375, 5.1875
 (a) 8.75 (b) 13.5 (c) 24 (d) 6.375 (e) 42
- 108.** 10, 8, 13, 35, 135, 671, 4007
 (a) 8 (b) 671 (c) 135 (d) 13 (e) 35
- 109.** 150, 290, 560, 1120, 2140, 4230, 8400
 (a) 2140 (b) 560 (c) 1120 (d) 4230 (e) 290

DIRECTIONS (Qs. 110-114) : These questions are based on the following data. The distribution of appeared and qualified aspirants in competitive examination from different States.

Total appeared aspirants = 45000 Total qualified aspirants = 9000



- 110.** What is the ratio of the number of appeared aspirants from States C and E together to that of the appeared aspirants from States A and F together?
 (a) 17:33 (b) 11:13
 (c) 13:27 (d) 17:27
 (e) None of these
- 111.** In which state the percentage of qualified aspirants to appeared aspirants is the least?
 (a) C (b) F
 (c) D (d) E
 (e) G
- 112.** What is the difference in the number of qualified aspirants in states D and G?
 (a) 690 (b) 670
 (c) 780 (d) 720
 (e) None of these
- 113.** What is the percentage of qualified aspirants with respect to appeared aspirants from states B and C taken together? (Rounded off to two decimal places.)
 (a) 23.11 (b) 24.21
 (c) 21.24 (d) 23
 (e) None of these
- 114.** What is the ratio between number of candidates qualified from States B and D together and the number of candidates appeared from States 'C' respectively?
 (a) 8:37 (b) 11:12
 (c) 37:40 (d) 7:37
 (e) None of the above

DIRECTIONS (Qs. 115-119) : In the following questions, two equations numbered I and II are given. You have to solve both the equations and give answers.

- (a) if $x > y$
 (b) if $x \geq y$
 (c) if $x < y$
 (d) if $x \leq y$
 (e) if $x = y$ or the relationship cannot be established

- 115.** I. $12x^2 + 11x + 12 = 10x^2 + 22x$
 II. $13y^2 - 18y + 3 = 9y^2 - 10y$

- 116.** I. $\frac{18}{x^2} + \frac{6}{x} - \frac{12}{x^2} = \frac{8}{x^2}$
 II. $y^3 + 9.68 + 5.64 = 16.95$

- 117.** I. $\sqrt{1225x} + \sqrt{4900} = 0$
 II. $(81)^{1/4}y + (343)^{1/3} = 0$

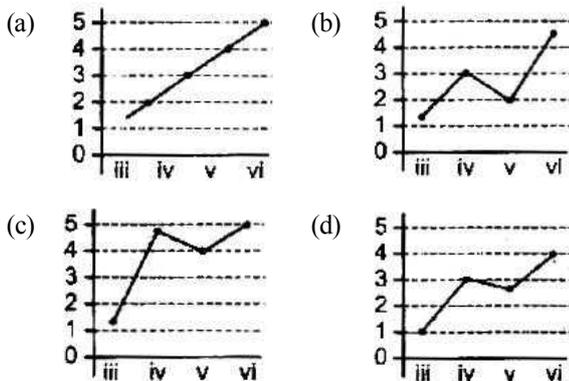
- 118.** I. $\frac{(2)^5 + (11)^3}{6} = x^3$
 II. $4y^3 = -(589 \div 4) + 5y^3$
- 119.** I. $(x^{7/5} \div 9) = 169 \div x^{3/5}$
 II. $y^{1/4} \times y^{1/4} \times 7 = 273 \div y^{1/2}$

DIRECTIONS (Qs. 120-124) : Study the following table to answer these questions.

**Plan of Public Sector Under Various Plans Sector-wise
Expenditure out of that total expenditure (in million)**

Plan	I	II	III	IV	V	VI
Public sector plan expenditure	19600	46720	85770	157240	394260	97500
Social service	4180	7440	12960	24620	63720	14035
Education	1530	2730	5890	7860	13360	25240
Health	980	2140	2260	3370	7610	18210
Family Planning	-	20	250	2780	4920	10100
Housing and urban services	330	800	1280	2470	11500	24880
Water supply and sanitation	-	-	1060	4740	10920	39220
Social welfare and related area	1340	1750	2220	3400	15410	22700

120. In various plans in the ratio of expenditure on public sector, which of the following graphs explain best the expenditure on water supply and sanitation?



(e) None of these

121. The ratio of public sector expenditure to the expenditure on social services was highest in which plan?

- (a) I (b) VI
(c) V (d) II
(e) None of these

122. In the successive plans in the ratio of public sector expenditure there was a continuous decrease in which sector?

- (a) In no sector (b) Health
(c) Education (d) Social services
(e) Social welfare and related areas

123. For plan VI out of public sector expenditure, what per cent of expenditure is on Housing and Urban services?

- (a) 0.35 (b) 25
(c) 25.5 (d) 2.5
(e) 20.5

124. For all the given plans, what was the difference in expenditure on education and health?

- (a) ₹ 220400000 (b) ₹ 224000000
(c) ₹ 22040000000 (d) ₹ 220400000000
(e) None of these

125. The respective ratio between the present ages of son, mother, father and grandfather is 2 : 7 : 8 : 12. The average age of son and mother is 27 yr. What will be mother's age after 7 yr?

- (a) 40 yr (b) 41 yr
(c) 48 yr (d) 49 yr
(e) None of these

126. In an examination, Raman scored 25 marks less than Rohit. Rohit scored 45 more marks than Sonia. Rohan scored 75 marks which is 10 more than Sonia. Ravi's score is 50 less than, maximum marks of the test. What approximate percentage of marks did Ravi score in the examination, if he gets 34 marks more than Raman?

- (a) 90 (b) 70
(c) 80 (d) 60
(e) 85

127. 8 men and 4 women together can complete a piece of work in 6 days. The work done by a man in one day is double the work done by a woman in one day. If 8 men and 4 women started working and after 2 days 4 men left and 4 new women joined, in how many more days will the work be completed?

- (a) 5 days (b) 8 days
(c) 6 days (d) 4 days
(e) 9 days

128. Mr Giridhar spends 50% of his monthly income on household items and out of the remaining he spends 50% on transport, 25% on entertainment, 10% on sports and the remaining amount of ₹ 900 is saved. What is Mr Giridhar's monthly income?

- (a) ₹ 6000 (b) ₹ 12000
(c) ₹ 9000 (d) Cannot be determined
(e) None of these

129. The cost of fencing a circular plot at the rate of ₹ 15 per m is ₹ 3300. What will be the cost of flooring the plot at the rate of ₹ 100 per sq m?

- (a) ₹ 385000 (b) ₹ 220000
(c) ₹ 350000 (d) Cannot be determined
(e) None of these

130. The simple interest accrued on a sum of certain principal in 8 yr at the rate of 13% per year is ₹ 6500. What would be the compound interest accrued on that principal at the rate of 8% per year in 2 yr?

- (a) ₹ 1040 (b) ₹ 1020
(c) ₹ 1060 (d) ₹ 1200
(e) None of these

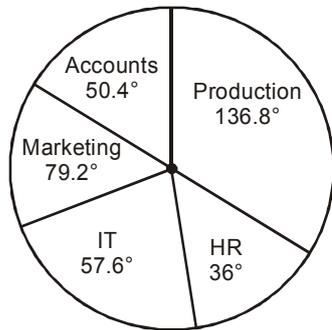
DIRECTIONS (Qs. 131-135) : Study the following information carefully to answer the questions that follow.

There are two trains A and B. Both trains have four different types of coaches viz. General coaches, sleeper coaches, first class coaches and AC coaches. In train A, there are total 700 passengers. Train B has 30% more passengers than train A. 20% of the passengers of train A are in general coaches. One-fourth of the total number of passengers of train A are in AC coaches. 23% of the passengers of train A are in sleeper class coaches. Remaining passengers of train A are in first class coaches. Total number of passengers in AC coaches in both the trains together is 480. 30% of the number of passengers of train B is in sleeper class coaches, 10% of the total passengers of train B are in first class coaches. Remaining passengers of train B are in general class coaches.

131. What is the ratio of the number of passengers in first class coaches of train A to the number of passengers in sleeper class coaches of train B?
 (a) 13 : 7 (b) 7 : 13
 (c) 32 : 39 (d) Data inadequate
 (e) None of these
132. What is the total number of passengers in the general coaches of train A and the AC coaches of train B together?
 (a) 449 (b) 459
 (c) 435 (d) 445
 (e) None of these
133. What is the difference between the number of passengers in the AC coaches of train A and total number of passengers in sleeper class coaches and first class coaches together of train B?
 (a) 199 (b) 178
 (c) 187 (d) 179
 (e) None of these
134. Total number of passengers in general class coaches in both the trains together is approximately. What percentage of total number of passengers in train B?
 (a) 35 (b) 42
 (c) 45 (d) 38
 (e) 31
135. If cost of per ticket of first class coach ticket is ₹ 450, what total amount will be generated from first class coaches of train A?
 (a) ₹ 100080 (b) ₹ 108000
 (c) ₹ 100800 (d) ₹ 10800
 (e) None of these

DIRECTIONS (Qs. 136-140) : Study the following pie chart carefully to answer the questions.

Degree Wise Break-up of Employees Working in Various Departments of an Organization and the ratio of Men to Women



Total number of employees = 3250

Respective Ratio of Men to Women in each Department

Department	Men	Women
Production	4	1
HR	12	13
IT	7	3
Marketing	3	2
Accounts	6	7

136. What is the number of men working in the Marketing department?

- (a) 462 (b) 454
 (c) 418 (d) 424
 (e) None of these
137. What is the respective ratio of the number of women working in the HR department to the number of men working in the IT department?
 (a) 11:12 (b) 17:29
 (c) 13:28 (d) 12:35
 (e) None of these
138. The number of men working in the production department of the organisation forms what per cent of the total number of employees working in that department?
 (a) 88% (b) 90%
 (c) 75% (d) 65%
 (e) None of these
139. The number of women working in the IT department of the organization forms what per cent of the total number of employees in the organization from all departments together?
 (a) 3.2% (b) 4.8%
 (c) 6.3% (d) 5.6%
 (e) None of these
140. What is the total number of men working in the organization?
 (a) 2198 (b) 2147
 (c) 2073 (d) 2236
 (e) None of these

GENERAL AWARENESS

With special reference to Banking Industry

141. Which of the following is a receipt listed in India and traded in rupees declaring ownership of shares of a foreign company?
 (a) Indian Depository Receipt (IDR)
 (b) European Depository Receipt (EDR)
 (c) Global Depository Receipt (GDR)
 (d) American Depository Receipt (ADR)
 (e) Luxemburg Depository Receipt (LDR)
142. A bank without any branch network that offers its services remotely through online banking, telephone/mobile banking and interbank ATM network alliances is known as
 (a) Universal Banking (b) Indirect Bank
 (c) Door Step Bank (d) A Direct Bank
 (e) Unit Banking
143. Which of the following Indian Universities is Asia's largest residential university?
 (a) Allahabad University
 (b) Utkal University
 (c) Banaras Hindu University
 (d) Anna University
 (e) Jawaharlal Nehru University
144. In October, 2013, which country has confirmed plans to create a secure mail service to protect its citizens and businesses against foreign espionage?
 (a) Mexico (b) Brazil
 (c) Sweden (d) Germany
 (e) None of these

145. The campaign name 'Heal India' aims to create awareness about which of the following diseases?
 (a) Mental illness (b) AIDS
 (c) Leprosy (d) Alzheimer
 (e) None of these
146. The target set by the UIDAI for issuance of Aadhaar cards upto 2014 is
 (a) 50 crore cards (b) 55 crore cards
 (c) 45 crore cards (d) 40 crore cards
 (e) 60 crore cards
147. Which of the following nations has signed a com-prehensive free trade agreement with European Union?
 (a) Japan (b) China
 (c) Russia (d) Canada
 (e) None of these
148. According to the provisions of the income Tax Act, 1961 a resident individual is categorised as a 'very senior citizen' when he is
 (a) 80 yr of age or older (b) 75 yr of age or older
 (c) 90 yr of age or older (d) 85 yr of age or older
 (e) 65 yr of age or older
149. Who among the following has recently been conferred with the first Yash Chopra Memorial Award?
 (a) Other than those given as options
 (b) Madhuri Dixit Nene
 (c) Ramesh Sippy
 (d) Lata Mangeshkar
 (e) AR Rahman
150. Which of the following is an investment advisory discipline?
 (a) Corporate Industrial Finance
 (b) Offshare Banking
 (c) Wholesale Banking
 (d) Wealth Management
 (e) Trade Finance
151. The Aadhar-enabled Payment System (AEPS) is a bank-led model that facilitates banking facilities through banking correspondents across banks. However, Aadhaar-enabled basic types of banking transactions do 'not' include
 (a) Aadhaar to Aadhaar funds transfer
 (b) Small overdraft facility
 (c) Cash withdrawal
 (d) Balance enquiry
 (e) Cash deposit
152. A type of fraud wherein criminals use an innocent person's details to open or use an account to carry out financial transactions is known as
 (a) identity theft (b) hacking
 (c) money laundering (d) espionage
 (e) phishing
153. Deepak Lathore is related to which of the following sports?
 (a) Hockey (b) Cricket
 (c) Badminton (d) Football
 (e) Weightlifting
154. Who among the following is the author of the book "The Lowland"?
 (a) Jhumpa Lahiri (b) Amitav Ghosh
 (c) Salman Rushdie (d) Hamid Ansari
 (e) Chetan Bhagat
155. Which of the following Indian actresses has recently (October, 2013) been honoured at the British House of Commons for her contribution to the global entertainment industry?
 (a) Shabana Azmi (b) Kareena Kapoor
 (c) Nandita Das (d) Aishwarya Rai Bachchan
 (e) Vidya Balan
156. Who among the following is the current Chief Election Commissioner (CEC) of India?
 (a) KG Balakrishnan
 (b) Ranjit Sinha
 (c) Montek Singh Ahluwalia
 (d) VS Sampath
 (e) SY Quraishi
157. The part of a company's earnings or profits which are paid out to shareholders is known as
 (a) capital gains (b) taxes
 (c) interest on borrowings (d) dividends
 (e) penal interest
158. NABARD is responsible for regulating and supervising the functions of
 (a) Investment and Industrial Finance Banks
 (b) Cooperative Banks and Regional Rural Banks
 (c) Corporate Finance and Overseas Banking Units
 (d) Private Sector and Multinational Banks
 (e) Reserve Bank of India
159. The government of India has announced a 'funding for lending' scheme. Who are the beneficiaries for this scheme?
 (a) Commercial Banks
 (b) Regional Rural Banks
 (c) Micro-finance Institutions
 (d) Finance Departments of the State Governments
 (e) None of the above
160. The arrangement under which banks sell insurance products acting as the agents of the respective companies is called the
 (a) Insurance joint venture
 (b) Bancassurance Model
 (c) Hybrid Insurance Model
 (d) Insurance Broking
 (e) Integrated Model
161. The concept of 'Micro Credit' essentially concentrates on
 (a) consumption smoothening as and when needed
 (b) providing safe place to hold savings
 (c) accepting deposits
 (d) provision of credit to the poor
 (e) facility to transfer money
162. With effect from July 1, 2012, for calculation of lending rates, the Reserve Bank of India has advised banks to switch over to the
 (a) MSF Rate System
 (b) Reverse Repo Rate System
 (c) Bank Rate System
 (d) Repo Rate System
 (e) Base Rate System
163. An Equity share is also commonly referred to as
 (a) ordinary share (b) debenture
 (c) convertible share (d) security receipt
 (e) preferred stock?

164. Which among the following Companies in India has a tie-up with the Japanese Financial Nomura for insurance market?
 (a) ICICI Bank
 (b) UCO Bank
 (c) Kotak Finance
 (d) Life Insurance Corporation of India
 (e) None of the above
165. The seed capital of Bhartiya Mahila Bank is
 (a) ₹ 2000 crore (b) ₹ 1000 crore
 (c) ₹ 4000 crore (d) ₹ 3000 crore
 (e) None of these
166. The World Health Organization (WTHO) is a specialised agency of the United Nations (UN) that is concerned with international Public Health. It is headquartered at
 (a) Sweden (b) Switzerland
 (c) United Kingdom (d) France
 (e) Germany
167. The process by which a life insurance policyholder can transfer all rights, title and interest- under a policy contract to a third person is known as
 (a) Assignment of the policy
 (b) Hypothecation of the policy
 (c) Reinvestment of the policy
 (d) Negotiation of the policy
 (e) Nomination of the policy
168. Which of the following communities is 'not' notified as a 'minority community' by the ministry of Welfare, Government of India?
 (a) Sikhs (b) Zoroastrians
 (c) Buddhists (d) Jains
 (e) Christians
169. In October, 2013, which of the following countries has decided to scrap its two currency system?
 (a) Mongolia (b) Sweden
 (c) Cuba (d) Jamaica
 (e) None of these
170. Cheraw, the Bamboo Dance, is of which Indian states?
 (a) Mizoram (b) Sikkim
 (c) Arunachal Pradesh (d) Manipur
 (e) Asom
171. 8th National Conference of Krishi Vigyan Kendra-2013 was held at
 (a) Chennai (b) Mumbai
 (c) Lucknow (d) Kolkata
 (e) Bangalore
172. Which of the following institutions is regarded as the 'Lender of the Last Resort' by Banks in India?
 (a) State Bank of India (SBI)
 (b) The State Treasury
 (c) Reserve Bank of India (RBI)
 (d) World Bank
 (e) Department of Financial Services (DFS)
173. A bank's 'fixed deposit' is also referred to as a
 (a) term deposit (b) savings bank deposit
 (c) current deposit (d) demand deposit
 (e) home savings deposit
174. To improve access of the poor to banking, RBI has advised banks to open branches with minimum infrastructure supporting up to 8 to 10 Business Correspondents (BC) at a reasonable distance of 3-4 km. Such branches are known as
 (a) Nodal branches (b) Micro branches
 (c) Mini branches (d) Ultra small branches
 (e) Satellite branches
175. Which of the following services relate to execution of transactions directly with consumers, rather than corporations or other banks?
 (a) Wholesale Banking Services
 (b) Industrial Banking Services
 (c) Investment Banking Services
 (d) Corporate Banking Services
 (e) Retail Banking Services
176. World Food Day is celebrated every year around the world on
 (a) July 4
 (b) October 16
 (c) Other than those given as options
 (d) August 12
 (e) May 18
177. As per Census 2011, which of the following Indian states has the lowest population density?
 (a) Nagaland
 (b) Manipur
 (c) Arunachal Pradesh
 (d) Himachal Pradesh
 (e) Meghalaya
178. The minimum age for becoming a member of Rajya Sabha is
 (a) 28 yr (b) 40 yr
 (c) 30 yr (d) 35 yr
 (e) 25 yr
179. Banks' mandatory lending to farmers for agriculture, micro and small enterprises and other weaker sections where in banks are required to lend up to 40% of the loans is generally described as
 (a) Para banking
 (b) Sub-prime lending
 (c) Retail lending
 (d) Non-priority sector lending
 (e) Priority sector lending
180. Which of the following statements regarding the 'Direct Benefits Transfer Scheme (DBT)' of the government of India is 'not' true?
 (a) The scheme covers LPG subsidies, pension payments and scholarships
 (b) Indirect transfers of benefits are more prone to leakage than direct transfers
 (c) Under DBT, money is directly transferred into bank accounts of beneficiaries
 (d) The scheme was launched on January 1, 2013 to cover 20 districts initially
 (e) The scheme is likely to increase the subsidy bill of the government?

COMPUTER KNOWLEDGE

181. Macros stored in the global macro sheet can be used
 (a) in the current document only
 (b) in any document
 (c) can be used only with other macros of the global macro sheet
 (d) not consistent behaviour
 (e) None of the above

182. About pasting from the clip board
- a part of the clip board contents can be pasted
 - whole of the contents of clip board can be pasted
 - sometimes (a) and sometimes (b)
 - (a) and (b)
 - None of the above
183. One of the following statements is not true for BUFFERS command
- increasing numbers of BUFFERS can speed program execution, but only to a certain extent
 - the more buffers that exist the more sectors can be stored In memory; hence fewer accesses of disk are necessary
 - The BUFFERS command is used to establish the number of disk buffers set up by MS-DOS during booting
 - All of the above
 - None of the above
184. EPROM can be used for
- erasing the contents of ROM
 - reconstructing the contents of ROM
 - erasing and reconstructing the contents of ROM
 - duplicating the ROM
 - None of the above
185. Attributes can be defined for
- entity
 - switch board
 - macro
 - pages
 - None of the above
186. Where will we find the referential integrity command ?
- Tools
 - View
 - Format
 - Table
 - None of these
187. Anything that is typed in a worksheet appears
- in the formula bar only
 - in the active cell only
 - in both active cell and formula bar
 - in the formula bar first and when we press ENTER it appears in active cell
 - None of the above
188. Which bar is usually located below the Title Bar that provides categorised options?
- Menu Bar
 - Toolbar
 - Status Bar
 - Scroll Bar
 - None of the above
189. A pixel is
- a computer program that draws picture
 - a picture stored in the secondary memory
 - the smallest resolvable part of a picture
 - a virus
 - None of the above
190. How many types of cell references are available in Excel?
- 3
 - 4
 - 8
 - 10
 - None of these
191. VIRUS stands for
- Very Important Record User Searched
 - Verify Interchanged Result Until Source
 - Virtual Information Resource Under Seize
 - Very Important Resource Under Search
 - None of the above
192. Unlike filters queries can be saved as in a database.
- objects
 - filters
 - database
 - Any of the above
 - None of these
193. Table of contents can be prepared by using
- macros
 - headings as H1, H2, H3 and more in the document
 - by table of contents in tools menu
 - (b) and (c)
 - None of the above
194. Table in Word is a grid of rows and columns, with each cell can have
- text or graphics
 - only text
 - only graphics
 - both
 - None of these
195. What is a database ?
- It is a collection of data arranged in rows
 - It is a collection of data arranged in columns
 - It is a collection of data arranged in rows and columns
 - All of the above
 - None of the above
196. Which switch should be used in the DIR command to view files in a directories ?
- /P
 - /W
 - /S
 - /L
 - None of these
197. When a key is pressed on the keyboard, which standard is used for converting the keystroke into the corresponding bits?
- ANSI
 - ASCII
 - EBCDIC
 - ISO
 - None of the above
198. External database is
- Database created in EXCEL
 - Database created using DBMS package
 - Database created in MS-Word
 - All of the above
 - None of the above
199. Which command we will give if we want to show the database objects with its description ?
- Details
 - Show
 - List
 - Any of the above
 - None of the above
200. Word allows user to import graphics from
- the library which comes bundled with Word
 - any where in the computer
 - various graphics format like gif, bmp, png, etc
 - only gif format
 - None of the above

ANSWER KEY

1	(d)	21	(d)	41	(c)	61	(b)	81	(c)	101	(a)	121	(b)	141	(a)	161	(d)	181	(b)
2	(a)	22	(d)	42	(c)	62	(a)	82	(b)	102	(c)	122	(a)	142	(d)	162	(e)	182	(b)
3	(a)	23	(b)	43	(d)	63	(c)	83	(a)	103	(a)	123	(d)	143	(c)	163	(a)	183	(d)
4	(c)	24	(c)	44	(a)	64	(b)	84	(e)	104	(c)	124	(c)	144	(b)	164	(d)	184	(c)
5	(e)	25	(a)	45	(d)	65	(c)	85	(d)	105	(e)	125	(d)	145	(c)	165	(b)	185	(a)
6	(b)	26	(a)	46	(a)	66	(c)	86	(d)	106	(e)	126	(b)	146	(e)	166	(b)	186	(e)
7	(e)	27	(a)	47	(b)	67	(e)	87	(b)	107	(c)	127	(a)	147	(d)	167	(a)	187	(c)
8	(d)	28	(b)	48	(c)	68	(e)	88	(e)	108	(b)	128	(b)	148	(a)	168	(d)	188	(a)
9	(a)	29	(e)	49	(e)	69	(b)	89	(a)	109	(c)	129	(a)	149	(d)	169	(c)	189	(c)
10	(a)	30	(e)	50	(b)	70	(d)	90	(d)	110	(a)	130	(a)	150	(d)	170	(a)	190	(a)
11	(b)	31	(c)	51	(c)	71	(b)	91	(b)	111	(e)	131	(c)	151	(b)	171	(e)	191	(ac)
12	(a)	32	(e)	52	(e)	72	(d)	92	(a)	112	(d)	132	(d)	152	(e)	172	(c)	192	(a)
13	(b)	33	(d)	53	(d)	73	(c)	93	(e)	113	(b)	133	(e)	153	(e)	173	(a)	193	(b)
14	(b)	34	(c)	54	(a)	74	(e)	94	(e)	114	(c)	134	(b)	154	(a)	174	(d)	194	(a)
15	(d)	35	(a)	55	(e)	75	(d)	95	(e)	115	(b)	135	(c)	155	(b)	175	(e)	195	(c)
16	(e)	36	(c)	56	(a)	76	(a)	96	(e)	116	(c)	136	(e)	156	(d)	176	(b)	196	(c)
17	(a)	37	(b)	57	(c)	77	(b)	97	(b)	117	(a)	137	(c)	157	(d)	177	(c)	197	(a)
18	(c)	38	(c)	58	(c)	78	(e)	98	(b)	118	(a)	138	(e)	158	(d)	178	(c)	198	(b)
19	(b)	39	(e)	59	(e)	79	(a)	99	(d)	119	(d)	139	(b)	159	(a)	179	(e)	199	(a)
20	(a)	40	(d)	60	(d)	80	(c)	100	(b)	120	(a)	140	(b)	160	(b)	180	(e)	200	(c)

Answers & Explanations

Solutions (1-5)

Candidate	I	II	III	IV	V	(A)	(B)
Suneeta	✓	✓	✓	✓	✓		
Rakesh	✓	✓	✓	-	✓		✓
Ramkumar	✓	✓	✓	-	✓		✓
Nishant	-	✓	✓	✓	✓		
Kalyani	✗	✓	✓	✓	✓		

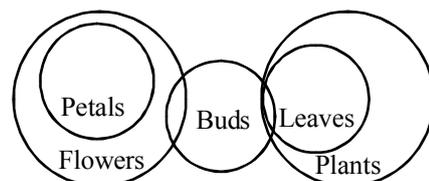
- (d) Suneeta Fulfils all conditions so, she is to be selected.
- (a) Rakesh Rao fulfils condition (B) instead of (IV) so, his case is to be referred to VP.
- (a) Ramkumar fulfils condition (B) instead of (IV) so, his case is to be referred to VP.
- (c) Percentage marks of Nishant in graduation is not given so, data is insufficient.
- (e) Kalyani is telecommunication engineer so, she is not to be selected.
- (b) A war between the original and the improvised.
- (e) Buying in wholesale and bulk depends upon the choice of the customer's choice and may cause of financial saving.
- (d) This option says that aggressiveness is a common way for both.
- (a) Cultivation taught us the moral duties regarding the children and relatives.

Solutions (11-13):

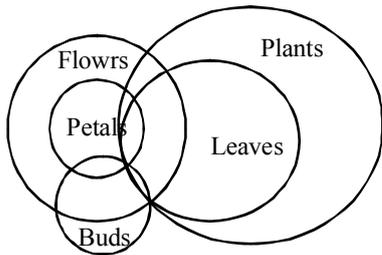
lop eop aop fop - Traders are above laws → (i)
 fop cop bop gop - Developers were above profitable → (ii)
 aop bop uop qop - Developers stopped following traders → (iii)
 cop job cop uop - Following maps were laws → (iv)
 From (i) and (ii), fop - above
 From (i) and (iii), aop - traders
 From (ii) and (iii), bop - developers
 From (ii) and (iv), cop - were
 From (iii) and (iv), uop - following
 From (i) and (iv), eop - laws

Therefore, remaining codes are
 lop - are [from (i)]
 gop - profitable [from (ii)]
 qop - stopped [from (iii)]
 job - maps [from (iv)]

- (b) Developers are following laws = bop lop uop eop = lop bop eop uop
- (a) qop gop cop eop = Stopped profitable were laws = profitable laws were stopped.
- (b) aop qop bop = traders stopped developers.
- (b) According to question,



OR

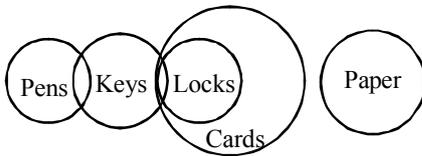


Conclusions I. false

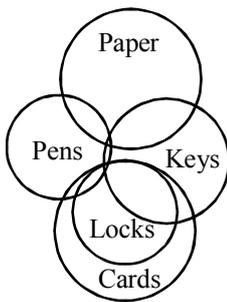
II. false } or
III. false }

Hence, only either II or III follows.

15. (d) According to question



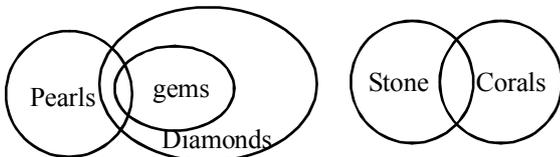
OR



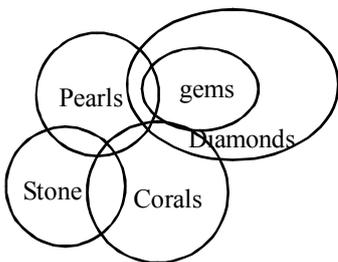
Conclusions I. True
II. True
III. True

Hence, All conclusions follow.

16. (e) According to question,



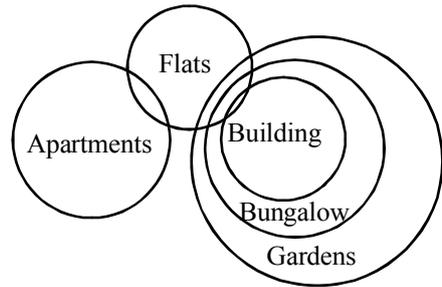
OR



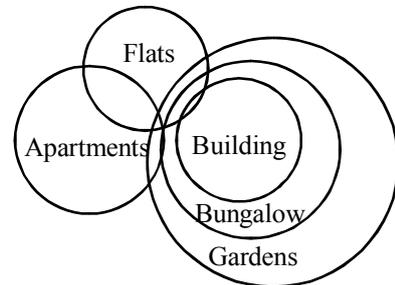
I. False }
Conclusion II. True } or
III. False }

Hence, only conclusions II and either I or III follow.

17. (a) According to question,



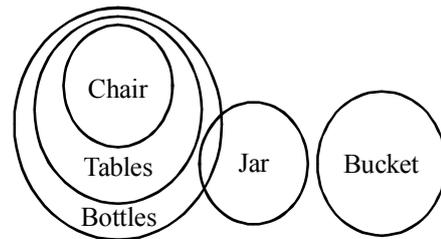
Or



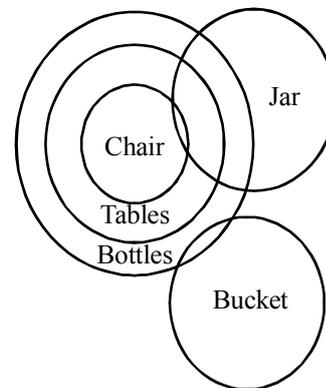
Conclusions I. ✓, II. X, III. X

Hence, only conclusion I follows.

18. (c) According to question,

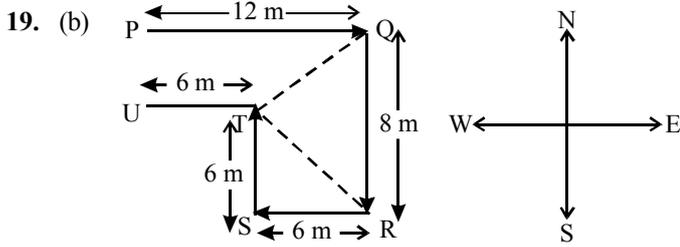


OR



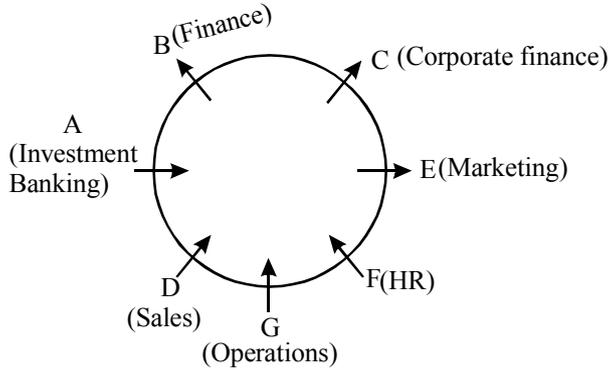
Conclusions, I. ✓, II. ✓, III. ✓

Hence, All I, II and III follow.



Therefore, three points Q, T and R, would form a triangle whose all the angles are less than 90°

Solutions (Q. Nos. 20-25)



- 20. (a) B works for Finance department.
- 21. (d) Second to the left of D.
- 22. (d) F, who works for HR department.
- 23. (b) E, who works for Marketing department.
- 24. (c) C and B are sit between them.
- 25. (a) Only one i.e. D

Solutions. (Q. No. 26 to 30)

★ ⇒ <	# ⇒ >	@ ⇒ ≥
% ⇒ ≤	\$ ⇒ =	

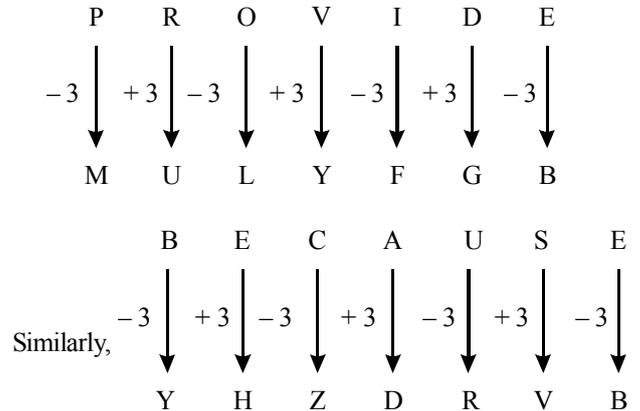
- 26. (a) $V\$Y \Rightarrow V = Y$
 $Y@Z \Rightarrow Y \geq Z$
 $Z\%X \Rightarrow Z \leq X$
 $X\#T \Rightarrow X > T$
 From all above statements,
 $V = Y \geq Z \leq X > T$
 Conclusions I. $T\#Z \Rightarrow T > Z$ (False)
 II. $X\#Y \Rightarrow X > Y$ (False)
 III. $Z\%Y \Rightarrow Z < Y$ (False)
 None follows.
- 27. (a) $R@J \Rightarrow R \geq J$
 $J\%F \Rightarrow J \leq F$
 $F\%E \Rightarrow F < E$
 $E\%M \Rightarrow E \leq M$
 From all above statements, $R \geq J \leq F < E \leq M$
 Conclusions I: $M\#J \Rightarrow M > J$ (True)
 II. $F\%M \Rightarrow F \leq M$ (False)
 III. $M\%R \Rightarrow M < R$ (False)
 Only (I) follows.

- 28. (b) $H\#R \Rightarrow H > R$
 $R@L \Rightarrow R \geq L$
 $L\%W \Rightarrow L < W$
 $W\%F \Rightarrow W \leq F$
 From all above statements, $H > R \geq L < W \leq F$
 Conclusions I. $H\#L \Rightarrow H > L$ (True)
 II. $F\#L \Rightarrow F > L$ (True)
 III. $H\$F \Rightarrow H = F$ (False)

- 29. (e) $M\#J \Rightarrow M > J$
 $M\$F \Rightarrow M = K$
 $F\%Q \Rightarrow F \leq Q$
 $Q\%H \Rightarrow Q < H$
 From all above statements,
 $K < M = F \leq Q < H$
 Conclusions. I. $H\#K \Rightarrow H > K$ (True)
 II. $Q\#K \Rightarrow Q > K$ (True)
 III. $Q@M \Rightarrow Q \geq M$ (True)

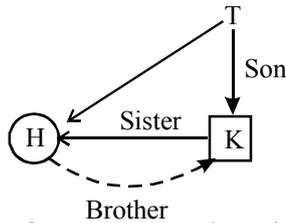
- 30. (e) $D\%Q \Rightarrow D < Q$
 $Q\$L \Rightarrow Q = L$
 $L\#T \Rightarrow L > T$
 $T\%H \Rightarrow T \leq H$
 From all above statements,
 $D < Q = L > T \leq H$
 Conclusions. I. $D\%L \Rightarrow D < L$ (True)
 II. $L@H \Rightarrow L \geq H$ (False)
 III. $H\#L \Rightarrow H > L$ (False)
 Only (I) and either (II) or (III) follow.

31. (c) As,



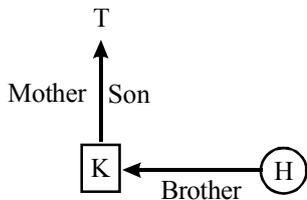
- 32. (e) From statements (I) and (II)
 According to weight, the position of Sahil is 5th.
 According to weight, the position of Ramesh is 5th.
 So, the number of children in group = 5 + 15 = 20
 So, both statements are required to given the answer.
- 33. (d) From statement I,
 eat healthy food → Ka ma re
 From statement II.
 food for healthy people → ta ma jo re
 So, from both statements, code of 'healthy' can not be determined exactly but it may be 'ma' or 're'.

34. (c) From statement I,



So, it is clear from statement I that K is the only brother of H.

From Statement II,



So, from statement (II), K is the only brother of H. So, either I or II is sufficient.

35. (a) From statement (I). $W > J > (Q, R, T)$

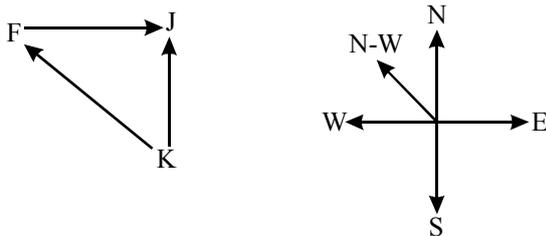
So, W reached office first.

From statement (II), $(J, T) > W > Q > R$

It is not clear from statement (II) that who reached the office first either J or T.

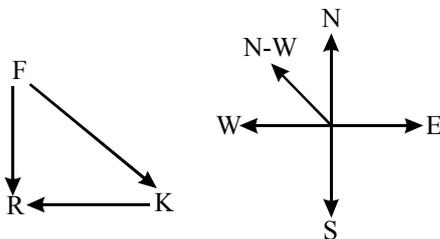
So, for giving the answer. Statement I is sufficient but statement II is not sufficient.

36. (c)



From statement I, village F is in North-West direction of village K.

From statement II,



From statement II, village F is in North-West direction of village K.

So, either I or II is sufficient to answer the question.

- 37. (b) The exposed articles by the publication must be verified.
- 38. (c) Thus the increase in crime rate has been contributed by other factors, not leniency in the punishment.
- 39. (e) None of the conclusion can be inferred from the above statement. So, option (e) is the right choice.
- 40. (d) Most logically such comparison should reveal mortality rate per thousand doctors indulged in SARS treatment and not indulged in treatment.

Sol. (41 - 44)

	Mridul	Abhishek	Ranjan	Salil	Deepak	Pritam
Place	Chennai	Ahmedabad	Delhi	Bengaluru	Kolkata	Mumbai
Month	November	July	April	September	February	December
Brides	Ipsita	Veena	Hema	Jasmine	Geetika	Brinda

- 41. (c) Ranjan is Hema's Husband.
- 42. (c) Deepak's wedding took place in Kolkata.
- 43. (d) It's in the month of December.
- 44. (a) Salil's wedding was held in Bengaluru.
- 45. (d) Input cannot be determined.
- 46. (a) Input: Jockey firm 36 43 growth chart 22 45
Step I: 45 Jockey firm 36 43 growth chart 22
Step II: 45 Jockey 43 firm 36 growth chart 22
Step III: 45 Jockey 43 growth firm 36 chart 22.
- 47. (b) Step II 53 window 42 50 door lock key 36
Step III 53 window 50 42 door lock key 36
Step IV 53 window 50 lock 42 door lock key 36
Step V 53 window 50 lock 42 door lock key 36
Step VI 53 window 50 lock 42 door lock key 36
the step VI is the last step of the arrangement.
Therefore four more steps are required to complete arrangement.
- 48. (c) Step I 85 journey train 36 54 daily 28 mansion
Step II 85 train journey 36 54 daily 28 mansion
Step III 85 train 54 journey 36 daily 28 mansion
Step IV 85 train 54 mansion journey 36 daily 28
Step V 85 train 54 mansion 36 journey daily 28
- 49. (e) Step II 63 sour 18 56 grapes healthy 32 rise
Step III 63 sour 56 18 grapes healthy 32 rise
Step IV 63 sour 56 rise 18 grapes healthy 32
Step V 63 sour 56 rise 32 18 grapes healthy
Step VI 63 sour 56 rise 32 healthy 18 grapes
So, the last step is step VI.
- 50. (b) As solved in Qs. 49. So, 56 is the sixth number from the right in step V.
- 91. (b) From I and II, 10 women can finish the work in 1 day
$$= \frac{7}{24} - \frac{1}{6} = \frac{7-4}{24} = \frac{1}{8}$$

∴ 10 women can finish the work in 8 days.
From II and III,
Let 10 men can finish the work in x days and 10 women can finish the same work in y days.
Hence, $\frac{1}{x} + \frac{1}{y} = \frac{7}{24}$... (i)
and from III - II, $\frac{3}{x} + \frac{4}{y} = 1$... (ii)
from (i) & (ii)
 $y = 8$ days
Again from I and III $\frac{3}{6} + \frac{4}{y} = 1 \Rightarrow y = 8$ days
- 92. (a) From I, Let present age of Sabir be x yr and age of his father be 2x yr.
From I and II, $\frac{x+5}{2x+5} = \frac{6}{11} \Rightarrow 12x+30=11x+55$
 $x = 25$ yr

From I and II, age of Sabir = 25 yrs.
Hence, only from I & II, age of Sabir and his father can be obtained.

93. (e) Let two digit number be $10x + y$.

$$\text{From I, either } x - y = \frac{27}{9} = 3 \Rightarrow y - x = \frac{27}{9} = 3$$

$$\text{From II, } x - y = 3 \Rightarrow y - x = 3$$

$$\text{From III, } x - y = 3$$

Hence, Even by (I) + (II) + (III) we cannot obtain the number.

94. (e) From I, If P = 100

$$A = 200 \text{ and SI} = 200 - 100 = 100$$

$$\text{Rate} = \frac{\text{SI} \times 100}{\text{P} \times \text{T}} = \frac{100 \times 100}{100 \times 5} = 20\%$$

$$\text{From II and III, Rate} = \frac{400 \times 100}{2000 \times 1} = 20\%$$

Hence, either I alone or II + III will be sufficient.

95. (e) From I and II.

$$\text{Length} = 3x = 48 \text{ m}$$

$$\therefore x = 16$$

$$\text{Breadth} = 2x = 32 \text{ m}$$

$$\text{Hence, Area of floor} = 48 \times 32$$

$$\text{Cost of flooring} = 48 \times 32 \times 850 = ₹ 1305600$$

$$\text{From I and III, } 2(l + b) = 160$$

$$\Rightarrow 2(3x + 2x) = 160 \Rightarrow 10x = 160$$

$$\therefore x = 16$$

$$\therefore \text{Length} = 3 \times 16 = 48 \text{ m}$$

$$\text{Breadth} = 2 \times 16 = 32 \text{ m}$$

$$\text{Cost of flooring} = (48 \times 32) \times 850 = ₹ 1305600$$

Similarly, from II and III, we can find $l = 48 \text{ m}$ and $b = 32 \text{ m}$ and Total cost of flooring = ₹ 1305600

96. (e) Let fraction be $\frac{x}{y}$.

$$\therefore \text{According to the question, } \frac{x \times 120\%}{y \times 125\%} = \frac{3}{5}$$

$$\Rightarrow \frac{x}{y} = \frac{3}{5} \times \frac{125}{120} = \frac{5}{8}$$

97. (b) Let one's digit = x

$$\text{ten's digit} = 2x$$

$$\text{Number} = 10(2x) + x = 21x$$

$$\text{After interchange the digit number} = 12x$$

$$\therefore 21x - 12x = 27$$

$$9x = 27$$

$$x = 3$$

$$\therefore \text{one's digit} = 3$$

$$\text{Let's digit} = 2 \times 3 = 6$$

$$\text{Number} = 10 \times 6 + 3 = 63$$

98. (b) Let the adjacent angles of the parallelogram be $4x$ and $5x$.

$$\therefore 4x + 5x = 180 \text{ or } 9x = 180 \therefore x = 20$$

$$\text{One angle of quadrilateral} = 3 \times 80^\circ = 240^\circ$$

$$\text{Again, sum of angles of quadrilateral}$$

$$4y + 11y + 9y + 240^\circ = 360^\circ$$

$$24y = 120^\circ \therefore y = 5$$

Hence, the sum of the largest and the smallest angles of the quadrilateral = $4 \times 5 + 240 = 260^\circ$

99. (d) Distance covered by the aeroplane in 9 h

$$= 9 \times 756 = 6804 \text{ km}$$

$$\text{Speed of helicopter} = \frac{2 \times 6804}{48} = 283.5 \text{ km/h}$$

$$\therefore \text{Distance covered by helicopter in 18 h}$$

$$= 283.5 \times 18 = 5103 \text{ km}$$

100. (b) Required number of people = 21% of 29565

$$= 6208.65 = 6210$$

101. (a) Required difference = 9% of 26345 - 8% of 27456

$$= 2371.05 - 2196.48 = 174.57 = 175$$

102. (c) Number of defaulters of Bank R in the year

$$2004 = 15\% \text{ of } 25467 = 3820.05$$

$$2005 = 17\% \text{ of } 32461 = 5518.37$$

$$2006 = 16\% \text{ of } 32652 = 5224.32$$

$$2007 = 18\% \text{ of } 32561 = 5860.98$$

$$2008 = 13\% \text{ of } 25495 = 3314.35$$

$$2009 = 11\% \text{ of } 27649 = 3041.39$$

$$2010 = 12\% \text{ of } 28283 = 3393.96$$

Hence, maximum number of defaulters of Bank R is in the year 2007.

103. (a) Difference of number of people taking loan from Bank P from the previous year in the year

$$2005 = 32081 - 27361 = 4720$$

$$2006 = 32081 - 27361 = 6720$$

$$2007 = 25361 - 23654 = 1707$$

$$2008 = 36125 - 35465 = 12471$$

$$2009 = 36125 - 35465 = 660$$

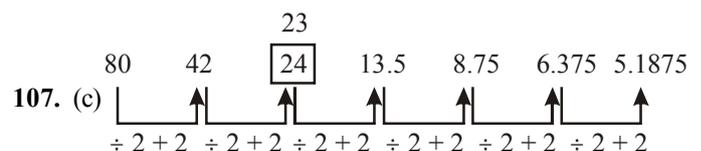
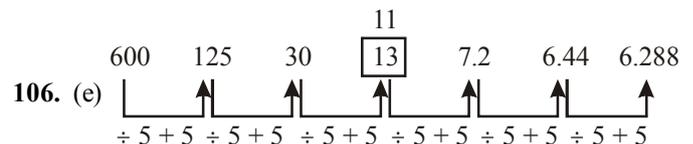
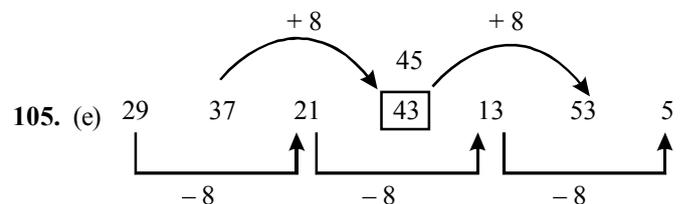
$$2010 = 35465 - 34135 = 1330$$

Hence, the year is 2008.

104. (c) Required number of defaulters

$$= 19\% \text{ of } 36152 + 18\% \text{ of } 35463$$

$$= 6868.88 + 6383.34 = 13252.22 \approx 13250$$



108. (b)

$$\begin{array}{cccccccc} 10 & 8 & 13 & 35 & 135 & \boxed{671} & 4007 \\ | & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \times 1-2 & \times 2-3 & \times 3-4 & \times 4-5 & \times 5-6 & \times 6-7 \end{array}$$

109. (c)

$$\begin{array}{cccccccc} & & & 1090 & & & & \\ & & & \uparrow & & & & \\ 150 & 290 & 560 & \boxed{1120} & 2140 & 4230 & 8400 \\ | & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow & \uparrow \\ \times 2-10 & \times 2-20 & \times 2-30 & \times 2-40 & \times 2-50 & \times 2-60 \end{array}$$

110. (a) Required ratio = $[45000 \times (8+9)\%] : [45000 \times (15+18)\%]$
 $= 17 : 33$.

111. (e) Qualified aspirants from C = $\frac{9000 \times 7\%}{45000 \times 8\%} \times 100 = 17.5\%$

From D = $\frac{9000 \times 21\%}{45000 \times 17\%} \times 100 = 24.70\%$

From E = $\frac{9000 \times 14\%}{45000 \times 9\%} \times 100 = 31.11\%$

From F = $\frac{9000 \times 11\%}{45000 \times 18\%} \times 100 = 12.22\%$

From G = $\frac{9000 \times 13\%}{45000 \times 22\%} \times 100 = 11.81\%$

Per cent is least in G.

112. (d) Required difference = $9000 \times (21\% - 13\%)$

$$= 9000 \times \frac{8}{100} = 720$$

113. (b) Required per cent = $\frac{9000 \times (16+7) \times 100}{45000 \times (11+8)} = 24.21\%$

114. (c) Number of candidates qualified from State (B + D)

$$= 9000 \times \frac{(16+21)}{100} = 90 \times 37 = 3330$$

Number of candidates appeared from states

$$= 45000 \times \frac{8}{100} = 3600$$

Required ratio = $\frac{3330}{3600} = 37 : 40$

115. (b) I. $12x^2 + 11x + 12 = 10x^2 + 22x$

$$2x^2 - 11x + 12 = 0$$

$$2x^2 - 8x - 3x + 12 = 0$$

$$(x-4)(2x-3) = 0$$

$$x = 4, x = 3/2$$

II. $13y^2 - 18y + 3 = 9y^2 - 10y$

$$4y^2 - 8y + 3 = 0$$

$$4y^2 - 6y - 2y + 3 = 0$$

$$(2y-3)(2y-1) = 0$$

$$y = \frac{3}{2}, \frac{1}{2}$$

$$\therefore x \geq y$$

116. (c) $\frac{18}{x^2} + \frac{6}{x} - \frac{12}{x^2} = \frac{8}{x^2}$

$$\Rightarrow \frac{18+6x-12}{x^2} = \frac{8}{x^2} \Rightarrow 6x+6=8$$

$$\therefore x = \frac{2}{6} = 0.33$$

II. $y^3 + 9.68 + 5.64 = 16.95$

$$\Rightarrow y^3 = 16.95 - 15.32$$

$$\Rightarrow y^3 = 1.63 = y = \sqrt[3]{1.63}$$

117. (a) I. $35x + 70 = 0$

$$\therefore x = \frac{-70}{35} = -2$$

II. $(81)^{1/4}y + (343)^{1/3} = 0$

$$\Rightarrow 3y + 7 = 0 \Rightarrow 3y = -7$$

$$\therefore y = -\frac{7}{3} = -2.33 \therefore x > y$$

118. (a) I. $\frac{(2)^5 + (11)^3}{6} = x^3$

$$\Rightarrow \frac{32+1331}{6} = x^3 \Rightarrow \frac{1363}{6} = x^3$$

$$\therefore x^3 = 227.167$$

II. $4y^3 = \frac{-589}{4} + 5y^3 \Rightarrow \frac{589}{4} = y^3$

$$\therefore y^3 = 147.25 \therefore x > y$$

119. (d) I. $x^{7/5} \div 9 = 169 \cdot x^{3/5}$

$$\frac{x^{7/5}}{9} = \frac{169}{x^{3/5}}$$

$$\Rightarrow x^{10/5} = 9 \times 169 \Rightarrow x^2 = 9 \times 169$$

$$x = \pm(3 \times 13) = \pm 39$$

II. $y^{1/4} \times y^{1/4} \times 7 = \frac{273}{y^{1/2}}$

$$y = \frac{273}{7} = 39$$

$$x \leq y$$

120. (a) From table we can say that expenditure on water supply and sanitation are increasing in every plan. So, the graph represent in option (a) is best explain of it.

121. (b) By watching table, we see that the ratio of public sector expenditure to the expenditure on social service was highest in the VIth plan.

122. (a) From table, we can say that in all the sector, there is no continuous decrease.

123. (d) Required percentage = $\frac{24880}{975000} \times 100\%$

$$= 2.551\% = 2.5\%$$

124. (c) Total expenditure on education in all the plans
 = 1530 + 2730 + 5890 + 7860 + 13360 + 25240
 = 56610 million
 Total expenditure on health in all the plans
 = 980 + 2140 + 2260 + 3370 + 7610 + 18210
 = 34570 million
 \therefore Required difference = (56610 - 34570)
 = 22040 million = ₹ 22040 × 1000000
 = ₹ 22040000000

125. (d) Total age of son and mother
 $2x + 7x = 2 \times 27$
 $9x = 54$
 $x = 6$
 \therefore Mother's age after 7 yr = $7x + 7 = 7 \times 6 + 7 = 49$ yr

126. (b) Rohan's marks = 75
 Sonia's marks = 65
 Rohit's marks = 65 + 45 = 110
 Raman's marks = 110 - 25 = 85
 Ravi got marks = 85 + 34 = 119
 Total maximum marks = 119 + 50 + 169
 Percentage of Ravi's mark = $\frac{119}{169} \times 100\% = 70.4\% = 70\%$

127. (a) $1M = 2W$
 $(8M + 4W) \times (6 \text{ days} - 2 \text{ days}) = (4M + 8W) \times x \text{ days}$
 $(8 \times 2W + 4W) \times (6 - 2) \text{ days}$
 $= (4 \times 2W + 8W) \times x \text{ days}$
 $(16 + 4)W \times 4 \text{ days} = 16W \times x \text{ days}$
 $\therefore x = \frac{20 \times 4}{16} = 5 \text{ days} [M_1D_1 = M_2D_2]$

128. (b) Let total monthly income of Mr. Giridhar be ₹ x.
 According to question,
 $\therefore x \times \frac{50}{100} \times \frac{15}{100} = 900$
 $x = ₹ 12000$
 Hence, monthly income of Mr. Giridhar = ₹ 12000.

129. (a) Circumference of circular plot = $\frac{3300}{15} = 220$
 $\Rightarrow 2\pi r = 220$
 $\therefore r = \frac{220}{2 \times 22} \times 7 = \frac{55 \times 7}{11} = 35 \text{ m}$
 Total cost of flooring the plot = $\pi r^2 \times 100$
 $= \frac{22}{7} \times 35 \times 35 \times 100 = ₹ 385000$

130. (a) $P = \frac{SI \times 100}{R \times T} = \frac{6500 \times 100}{8 \times 13} = 6250$
 $CI = 6250 \left(1 + \frac{8}{100}\right)^2 - 6250 = ₹ 1040$

Sol. (Q. Nos. 131-135)

Number of Passengers in train A = 700
 Number of Passenger in train B = 30% of 700 = 910

Coaches	General	Sleeper	First Class	AC	Total
Train A	140	161	224	175	700
Train B	241	273	91	305	910
Total	381	434	315	480	1610

131. (c) Number of passengers in first class coaches of train A = 224
 Number of passengers in sleeper class coaches of train B = 273

$$\therefore \text{Required ratio} = \frac{224}{273} = \frac{7 \times 32}{7 \times 39} = 32 : 39$$

132. (d) Passengers in the general coaches of train A = 140
 Passengers in the AC coaches of train B = 305
 \therefore Total = 140 + 305 = 445

133. (e) The number of passengers in AC coaches of train A = 175
 Total number of passengers in sleeper class coaches and first class coaches together of train B = (273 + 91) = 364
 \therefore Their difference = 364 - 175 = 189

134. (b) Passengers in general class coach of train A and train B = (140 + 241) = 381
 Total number of passengers in train B = 910

$$\therefore \text{Required percentage} = \frac{381}{910} \times 100\% = 41.8\% \approx 42\%$$

135. (c) The cost of per ticket of first class coach = ₹ 450
 Number of Passenger in first class coaches of Train A = 224.

$$\text{Total amount} = 450 \times 224 = ₹ 100800$$

136. (e) Number of men working in the marketing department

$$3250 \times \frac{79.2^\circ}{360^\circ} \times \frac{3}{5} = 429$$

137. (c) \therefore Required ratio = $\frac{3250 \times \frac{36^\circ}{360^\circ} \times \frac{13}{25}}{3250 \times \frac{57.6^\circ}{360^\circ} \times \frac{7}{10}} = 13 : 28$

138. (e) Number of men working in the production department

$$= 3250 \times \frac{136.8^\circ}{360^\circ} \times \frac{4}{5} = 988$$

Total number of employees in production department

$$3250 \times \frac{136.8^\circ}{360^\circ} = 1235$$

$$\text{Required percentage} = \frac{988}{1235} \times 100\% = 80\%$$

139. (b) Number of women working in IT department

$$= 3250 \times \frac{57.6^\circ}{360^\circ} \times \frac{3}{10} = 156$$

Total number of employees = 3250

Required percentage $\frac{156}{3250} \times 100\% = 4.8\%$

140. (b) Number of men working in accounts department

$$= 3250 \times \frac{50.4^\circ}{360^\circ} \times \frac{6}{13} = 210$$

Number of men working in marketing department

$$= 3250 \times \frac{79.2^\circ}{360^\circ} \times \frac{3}{5} = 429$$

Number of men working in IT department

$$= 3250 \times \frac{57.6^\circ}{360^\circ} \times \frac{7}{10} = 364$$

Number of men working in HR department

$$= 3250 \times \frac{36^\circ}{360^\circ} \times \frac{12}{25} = 156$$

Number of men working in production department

$$= 3250 \times \frac{136.8^\circ}{360^\circ} \times \frac{4}{5} = 988$$

Hence, total number of men working in the organization
 $= 210 + 429 + 364 + 156 + 988 = 2147$

141. (a) An IDR is a receipt, declaring ownership of shares of a foreign company. These receipts can be listed in India and traded in rupees. Just like overseas investors in the US-listed American Depository Receipts (ADRs) of Infosys and Wipro get receipts against ownership of shares held by an Indian custodian, an IDR is proof of ownership of foreign company's shares. The IDRs are denominated in Indian currency and are issued by a domestic depository and the underlying equity shares are secured with a custodian.
146. (e) The UIDAI has set a target of enrolment for 60 crore people for Aadhaar Numbers till the end of this year. The government has already started Aadhaar based direct benefit transfer (DBT) scheme in 43 districts within 3 months in the country and such type of implementation will help in reducing irregularities.
149. (d) In a tribute to the legendary filmmaker Yash Chopra on the eve of his first death anniversary, melody queen Lata Mangeshkar was conferred the first Yash Chopra Memorial Award at a glittering function in Mumbai.
150. (d) Wealth management as an investment-advisory discipline incorporates financial planning, investment portfolio management and a number of aggregated financial services. High-net-worth individuals (HNWIs),

small-business owners and families who desire the assistance of a credentialed financial advisory specialist call upon wealth managers to coordinate retail banking, estate planning, legal resources, tax professionals and investment management.

153. (e) Indian weightlifter, Deepak Lathore won Gold and two Silver medals in the Boys' 50 Kg category of the Commonwealth Weightlifting Championships on 25 November 2013 at Penang, Malaysia.
158. (d) The rural financial system in the country calls for a strong and efficient credit delivery system, capable of taking care of the expanding and diverse credit needs of agriculture and rural development. More than 50% of the rural credit is disbursed by the Co-operative Banks and Regional Rural Banks. NABARD is responsible for regulating and supervising the functions of Co-operative banks and RRBs. In this direction NABARD has been taking various initiatives in association with Government of India and RBI to improve the health of Co-operative banks and Regional Rural Banks.
161. (d) Microcredit is the term used to identify small loans that are made to individuals and entities that would otherwise not be able to obtain any type of credit. The main function of microcredit is to provide financial services to those poor who do not qualify for standard sources of credit and assist them in achieving a better quality of life.
166. (b) The World Health Organization (WHO) is a specialized agency of the United Nations (UN) that is concerned with international public health. It was established on 7 April 1948, headquartered in Geneva, Switzerland. WHO is a member of the United Nations Development Group.
177. (c) The population density of Arunachal Pradesh is even less than 20 people per kilometer square of area, according to Arunachal census of 2011. Population growth rate is more than 25% here, but has shown decrement since the last census.
180. (e) The Government launched Direct Cash Transfer scheme on 1 January 2013 to transfer cash into bank accounts of beneficiaries across 20 districts in the country. The money is directly transferred into bank accounts of beneficiaries having Aadhar cards. LPG and kerosene subsidies, pension payments, scholarships and employment guarantee scheme payments as well as benefits under other government welfare programmes will be made directly to beneficiaries. The money can then be used to buy services from the market.

IBPS

Common Written Exam (PO/MT)

Held on : 17-06-2012

(Based On Memory)

Time : 2 Hrs. 30 Min.

REASONING ABILITY

DIRECTIONS (Qs. 1-4) : Study the following information carefully and answer the given questions :

A word and number arrangement machine when given an input line of words and numbers rearranges them following a particular rule in each step. The following is an illustration of input and rearrangement (**All the numbers are two digits numbers**)

Input : tall 48 13 rise alt 99 76 32 wise jar high 28 56 bam
Step I : 13 tall 48 rise 99 76 32 wise jar high 28 56 bam alt
Step II : 28 13 tall 48 rise 99 76 32 wise jar high 56 alt bam
Step III : 32 28 13 tall 48 rise 99 76 wise jar 56 alt bam high
Step IV : 48 32 28 13 tall rise 99 76 wise 56 alt bam high jar
Step V : 56 48 32 28 13 tall 99 76 wise alt bam high jar rise
Step VI : 76 56 48 32 28 13 99 wise alt bam high jar rise tall
Step VII : 99 76 56 48 32 28 13 alt bam high jar rise tall wise
and Step VII is the last step of the above input, as the desired arrangement is obtained.

As per the rules followed in the above steps, find out in each of the following questions the appropriate step for the given input.

Input : 84 why sit 14 32 not best ink feet 51 27 vain 68 92
(All the numbers are two digits numbers)

- Which step number is the following output ?
32 27 14 84 why sit not 51 vain 92 68 feet best ink
(a) Step V (b) Step VI
(c) Step IV (d) Step III
(e) There is no such step
- Which word/number would be at 5th position from the right in Step V ?
(a) 14 (b) 92
(c) feet (d) best
(e) why
- How many elements (words or numbers) are there between 'feet' and '32' as they appear in the last step of the output ?
(a) One (b) Three
(c) Four (d) Five
(e) Seven
- Which of the following represents the position of 'why' in the fourth step ?
(a) Eighth from the left (b) Fifth from the right
(c) Sixth from the left (d) Fifth from the left
(e) Seventh from the left

DIRECTIONS (Qs. 5-11) : Study the following information carefully and answer the given questions :

A, B, C, D, E, F, G and H are sitting around a circle facing the centre but not necessarily in the same order.

- B sits second to left of H's husband. No female is an immediate neighbour of B.
 - D's daughter sits second to right of F. F is the sister of G. F is not an immediate neighbour of H's husband.
 - Only one person sits between A and F. A is the father of G. H's brother D sits to the immediate left of H's mother. Only one person sits between H's mother and E.
 - Only one person sits between H and G. G is the mother of C. G is not an immediate neighbour of E.
- What is position of A with respect to his mother-in-law ?
(a) Immediate left (b) Third to the right
(c) Third to the left (d) Second to the right
(e) Fourth to the left
 - Who amongst the following is D's daughter ?
(a) B (b) C
(c) E (d) G
(e) H
 - What is the position of A with respect to his grandchild ?
(a) Immediate right (b) Third to the right
(c) Third to the left (d) Second to the left
(e) Fourth to the left
 - How many people sit between G and her uncle ?
(a) One (b) Two
(c) Three (d) Four
(e) More than four
 - Four of the following five are alike in a certain way based on the given information and so form a group. Which is the one that does not belong to that group ?
(a) F (b) C
(c) E (d) H
(e) G
 - Which of the following is true with respect to the given seating arrangement ?
(a) C is the cousin of E
(b) H and H's husband are immediate neighbours of each other
(c) No female is an immediate neighbour of C
(d) H sits third to left of her daughter
(e) B is the mother of H

11. Who sits to the immediate left of C ?
 (a) F's grandmother (b) G's son
 (c) D's mother-in-law (d) A
 (e) G

DIRECTIONS (Qs. 12-18) : In each group of questions below are two/three statements followed by two conclusions numbered I and II. You have to take the given statements to be true even if they seem to be at variance from commonly known facts and then decide which of the given conclusions logically follows from the two/three statements disregarding commonly known facts.

Give answer (a) if only conclusion I follows;

Give answer (b) if only conclusion II follows;

Give answer (c) if either conclusion I or conclusion II follows;

Give answer (d) if neither conclusion I nor conclusion II follows;

Give answer (e) if both conclusion I and conclusion II follow.

12. **Statements** : Some exams are tests. No exam is a question.
Conclusions : I. No question is a test.
 II. Some tests are definitely not exams.
13. **Statements** : All forces are energies. All energies are powers. No power is heat.
Conclusions : I. Some forces are definitely not powers.
 II. No heat is force.
14. **Statements** : All forces are energies. All energies are powers. No power is heat.
Conclusions : I. No energy is heat.
 II. Some forces being heat is a possibility.
15. **Statements** : No note is a coin. Some coins are metals. All plastics are notes.
Conclusions : I. No coin is plastic.
 II. All plastics being metals is a possibility.
16. **Statements** : No note is a coin. Some coins are metals. All plastics are notes.
Conclusions : I. No metal is plastic.
 II. All notes are plastics.
17. **Statements** : Some symbols are figures. All symbols are graphics. No graphic is a picture.
Conclusions : I. Some graphics are figures.
 II. No symbol is a picture.
18. **Statements** : All vacancies are jobs. Some jobs are occupations.
Conclusions : I. All vacancies are occupations.
 II. All occupations being vacancies is a possibility.

DIRECTIONS (Qs. 19-21) : Study the following information carefully to answer the given questions :

Each of the six friends, A, B, C, D, E and F scored different marks in an examination. C scored more than only A and E. D scored less than only B. E did not score the least. The one who scored the third highest marks scored 81 marks. E scored 62 marks.

19. Which of the following could possibly be C's score ?
 (a) 70 (b) 94
 (c) 86 (d) 61
 (e) 81

20. Which of the following is true with respect to the given information ?
 (a) D's score was definitely less than 60
 (b) F scored the maximum marks
 (c) Only two people scored more than C
 (d) There is a possibility that B scored 79 marks
 (e) None is true
21. The person who scored the maximum, scored 13 marks more than F's marks. Which of the following can be D's score ?
 (a) 94 (b) 60
 (c) 89 (d) 78
 (e) 81

DIRECTIONS (Qs. 22-29) : Study the following information carefully to answer the given questions :

Eight persons from different banks viz. UCO bank, Syndicate bank, Canara bank, PNB, Dena Bank, Oriental Bank of Commerce, Indian bank and Bank of Maharashtra are sitting in two parallel rows containing four people each, in such a way that there is an equal distance between adjacent persons. In row-1 A, B, C and D are seated and all of them are facing south. In row-2 P, Q, R and S are seated and all of them are facing north. Therefore, in the given seating arrangement each member seated in a row faces another member of the other row. (All the information given above does not necessarily represent the order of seating as in the final arrangement)

- C sits second to right of the person from Bank of Maharashtra. R is an immediate neighbour of the person who faces the person from Bank of Maharashtra.
 - Only one person sits between R and the person for PNB. Immediate neighbour of the person from PNB faces the person from Canara Bank.
 - The person from UCO bank faces the person from Oriental Bank of Commerce. R is not from Oriental Bank of Commerce. P is not from PNB. P does not face the person from Bank of Maharashtra.
 - Q faces the person from Dena bank. The one who faces S sits to the immediate left of A.
 - B does not sit at any of the extreme ends of the line. The person from Bank of Maharashtra does not face the person from Syndicate bank.
22. Which of the following is true regarding A ?
 (a) The person from UCO bank faces A
 (b) The person from Bank of Maharashtra is an immediate neighbour of A
 (c) A faces the person who sits second to right of R
 (d) A is from Oriental Bank of Commerce
 (e) A sits at one of the extreme ends of the line
23. Who is seated between R and the person from PNB ?
 (a) The person from Oriental Bank of Commerce
 (b) P
 (c) Q
 (d) The person from Syndicate bank
 (e) S
24. Who amongst the following sit at extreme ends of the rows?
 (a) D and the person from PNB.
 (b) The person from Indian bank and UCO bank.
 (c) The person from Dena bank and P.
 (d) The persons from Syndicate bank and D.
 (e) C, Q

25. Who amongst the following faces the person from Bank of Maharashtra ?
 (a) The person from Indian bank
 (b) P
 (c) R
 (d) The person from Syndicate bank
 (e) The person from Canara bank
26. P is related to Dena bank in the same way as B is related to PNB based on the given arrangement. To who amongst the following is D related to, following the same pattern ?
 (a) Syndicate bank (b) Canara bank
 (c) Bank of Maharashtra (d) Indian bank
 (e) Oriental Bank of Commerce
27. Four of the following five are alike in a certain way based on the given seating arrangement and thus form a group. Which is the one that does not belong to that group ?
 (a) Canara bank (b) R
 (c) Syndicate bank (d) Q
 (e) Oriental Bank of Commerce
28. Who amongst the following is from Syndicate bank ?
 (a) C (b) R
 (c) P (d) D
 (e) A
29. C is from which of the following banks ?
 (a) Dena bank
 (b) Oriental Bank of Commerce
 (c) UCO bank
 (d) Syndicate bank
 (e) Canara bank
- (II) T does not live on an even numbered floor. Q lives on an even numbered floor. Q does not live on the topmost floor.
 (III) S lives on an odd numbered floor. There are two floors between the floors on which S and P live. T lives on a floor immediately above R's floor.
31. There are six letters W, A, R, S, N and E. Is 'ANSWER' the word formed after performing the following operations using these six letters only ?
 (I) E is placed fourth to the right of A. S is not placed immediately next to either A or E.
 (II) R is placed immediately next (either left or right) to E. W is placed immediately next (either left or right) to S.
 (III) Both N and W are placed immediately next to S. The word does not begin with R. A is not placed immediately next to W.
32. Point D is in which direction with respect to Point B ?
 (I) Point A is to the west of Point B. Point C is to the north of Point B. Point D is to the south of Point C.
 (II) Point G is to the south of Point D. Point G is 4 m from Point B. Point D is 9 m from Point B.
 (III) Point A is to the west of Point B. Point B is exactly midway between Points A and E. Point F is to the south of Point E. Point D is to the west of Point F.
33. How is 'one' coded in the code language ?
 (I) 'one of its kind' is coded as 'zo pi ko fe' and 'in kind and cash' is coded as 'ga, to ru ko'
 (II) Its point for origin' is coded as 'ba le fe mi' and 'make a point clear' is coded as 'yu si mi de'
 (III) 'make money and cash' is coded as 'to mi ru hy' and 'money of various kind' is coded as 'qu ko zo hy'.
34. Are all the four friends viz. A, B, C and D who are sitting around a circular table, facing the centre ?
 (I) B sits second to right of D. D faces the centre. C sits to immediate right of both B and D.
 (II) A sits to immediate left of B. C is not an immediate neighbour of A. C sits to immediate right of D.
 (III) D is an immediate neighbour of both A and C. B sits to the immediate left of A. C sits to the immediate right of B.

DIRECTIONS (Qs. 30-34) : Each of the questions below consists of a question and three statements numbered I, II and III given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read all the three statements and —

Give answer (a) if the data in Statement I and II are sufficient to answer the question, while the data in Statement III are not required to answer the question

Give answer (b) if the data in Statement I and III are sufficient to answer the question, while the data in Statement II are not required to answer the question

Give answer (c) if the data in Statement II and III are sufficient to answer the question, while the data in Statement I are not required to answer the question

Give answer (d) if the data in either Statement I alone or Statement II alone or Statement III alone are sufficient to answer the question.

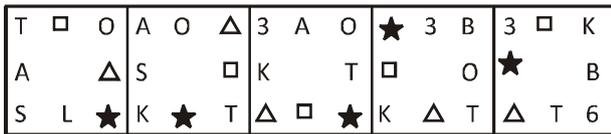
Give answer (e) if the data in all the Statements I, II and III together are necessary to answer the question.

30. Among six people P, Q, R, S, T and V each lives on a different floor of a six storey building having six floors numbered one to six (the ground floor is numbered 1, the floor above it, number 2 and so on and the topmost floor is numbered 6). Who lives on the topmost floor ?
 (I) There is only one floor between the floors on which R and Q live. P lives on an even numbered floor.

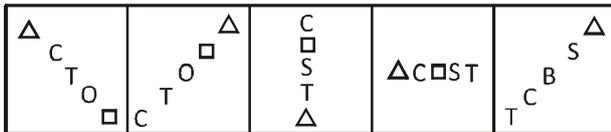
DIRECTION (Qs. 35) : Read the following information carefully and answer the question which follows :

- Farmers found using chemical fertilizers in the organic-farming area of their farms would be heavily fined.
35. Which of the following statements is an assumption implicit in the given statement ? (An assumption is something supposed or taken for granted.)
 (a) Chemical fertilisers harm the crop.
 (b) A farm's area for organic and chemical farming is different.
 (c) Farmers who do not use chemical fertilizers in the chemical farming area would be penalized as well.
 (d) All farmers undertake both these kinds of farming (chemical as well as organic) in their farms.
 (e) Organic fertilizers are banned in the area for chemical farming.

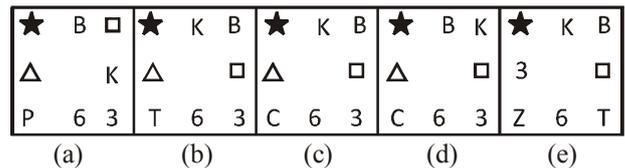
44. PROBLEMFIGURES



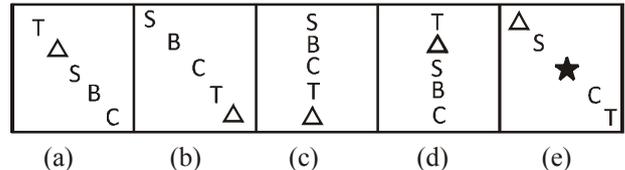
45. PROBLEMFIGURES



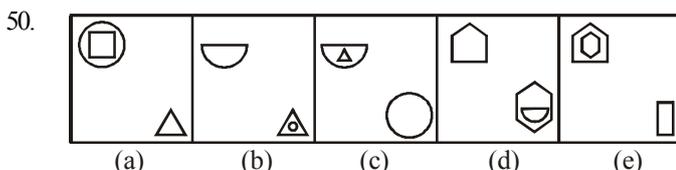
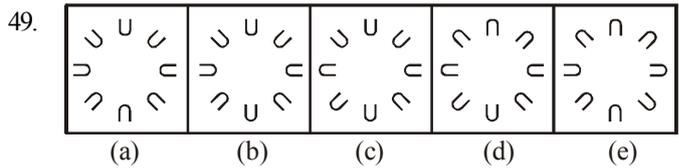
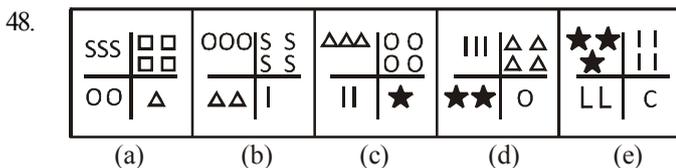
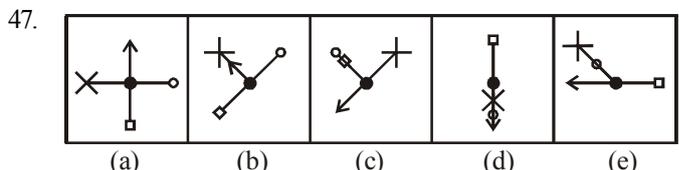
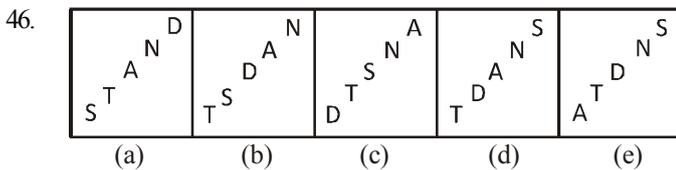
ANSWER FIGURES



ANSWER FIGURES



DIRECTIONS (Qs. 46-50) : In each of the following questions below, the figures follow a series/sequence (like Q.41-45). One and only one out of the five figures does not fit in the series/sequence. The number of that figure is your answer.



QUANTITATIVE APTITUDE

DIRECTIONS (Qs. 51-55) : What will come in place of the question mark (?) in the following questions ?

51. $4003 \times 77 - 21015 = ? \times 116$
 (a) 2477 (b) 2478
 (c) 2467 (d) 2476
 (e) None of these
52. $\left[(5\sqrt{7} + \sqrt{7}) + (4\sqrt{7} + 8\sqrt{7}) \right] - (19)^2 = ?$
 (a) 143 (b) $72\sqrt{7}$
 (c) 134 (d) $70\sqrt{7}$
 (e) None of these
53. $(4444 \div 40) + (645 \div 25) + (3991 \div 26) = ?$
 (a) 280.4 (b) 290.4
 (c) 295.4 (d) 285.4
 (e) None of these

54. $\sqrt{33124} \times \sqrt{2601} - (83)^2 = (?)^2 + (37)^2$
 (a) 37 (b) 33
 (c) 34 (d) 28
 (e) None of these
55. $5\frac{17}{37} \times 4\frac{51}{52} \times 11\frac{1}{7} + 2\frac{3}{4} = ?$
 (a) 303.75 (b) 305.75
 (c) $303\frac{3}{4}$ (d) $305\frac{1}{4}$
 (e) None of these

DIRECTIONS (Qs. 56-60) : What approximate value should come in place of the question mark (?) in the following questions? (Note : You are not expected to calculate the exact value.)

56. $8787 \div 343 \times \sqrt{50} = ?$
 (a) 250 (b) 140
 (c) 180 (d) 100
 (e) 280

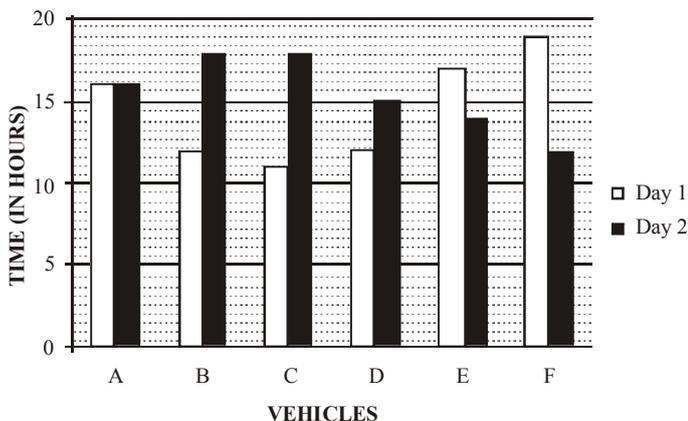
57. $\sqrt[3]{54821} \times (303 \div 8) = (?)^2$
 (a) 48 (b) 38
 (c) 28 (d) 18
 (e) 58
58. $\frac{5}{8}$ of 4011.33 + $\frac{7}{10}$ of 3411.22 = ?
 (a) 4810 (b) 4980
 (c) 4890 (d) 4930
 (e) 4850
59. 23% of 6783 + 57% of 8431 = ?
 (a) 6460 (b) 6420
 (c) 6320 (d) 6630
 (e) 6360
60. $335.01 \times 244.99 \div 55 = ?$
 (a) 1490 (b) 1550
 (c) 1420 (d) 1590
 (e) 1400

DIRECTIONS (Qs. 61-65) : In each of these questions a number series is given. In each series only one number is wrong. Find out the wrong number.

61. 5531 5506 5425 5304 5135 4910 4621
 (a) 5531 (b) 5425
 (c) 4621 (d) 5135
 (e) 5506
62. 6 7 9 13 26 37 69
 (a) 7 (b) 26
 (c) 69 (d) 37
 (e) 9
63. 1 3 10 36 152 760 4632
 (a) 3 (b) 36
 (c) 4632 (d) 760
 (e) 152
64. 7 4 5 9 20 51 160.5
 (a) 4 (b) 5
 (c) 9 (d) 20
 (e) 51
65. 157.5 45 15 6 3 2 1
 (a) 1 (b) 2
 (c) 6 (d) 157.5
 (e) 45

DIRECTIONS (Qs. 66-70) : Study the following graph and table carefully and answer the questions given below :

TIME TAKEN TO TRAVEL (IN HOURS) BY SIX VEHICLES ON TWO DIFFERENT DAYS



DISTANCE COVERED (IN KILOMETERS) BY SIX VEHICLES ON EACH DAY

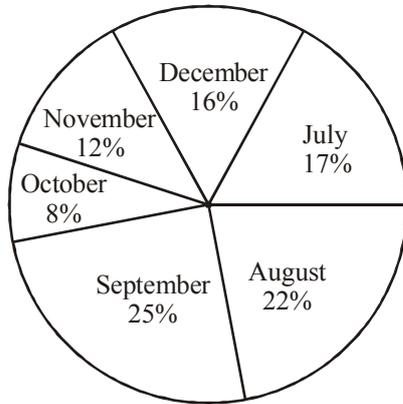
Vehicle	Day 1	Day 2
A	832	864
B	516	774
C	693	810
D	552	765
E	935	546
F	703	636

66. Which of the following vehicles travelled at the same speed on both the days ?
 (a) Vehicle A (b) Vehicle C
 (c) Vehicle F (d) Vehicle B
 (e) None of these
67. What was the difference between the speed of vehicle A on day 1 and the speed of vehicle C on the same day ?
 (a) 7 km/hr. (b) 12 km/hr.
 (c) 11 km/hr. (d) 8 km/hr.
 (e) None of these
68. What was the speed of vehicle C on day 2 in terms of meters per second ?
 (a) 15.3 (b) 12.8
 (c) 11.5 (d) 13.8
 (e) None of these
69. The distance travelled by vehicle F on day 2 was approximately what percent of the distance travelled by it on day 1 ?
 (a) 80 (b) 65
 (c) 85 (d) 95
 (e) 90
70. What is the respective ratio between the speeds of vehicle D and vehicle E on day 2 ?
 (a) 15:13 (b) 17:13
 (c) 13:11 (d) 17:14
 (e) None of these
71. An article was purchased for ₹ 78,350/-. Its price was marked up by 30%. It was sold at a discount of 20% on the marked up price. What was the profit percent on the cost price ?
 (a) 4 (b) 7
 (c) 5 (d) 3
 (e) 6
72. When X is subtracted from the numbers 9, 15 and 27, the remainders are in continued proportion. What is the value of X ?
 (a) 8 (b) 6
 (c) 4 (d) 5
 (e) None of these
73. What is the difference between the simple and compound interest on ₹ 7,300/- at the rate of 6 p.c.p.a. in 2 years ?
 (a) ₹ 29.37/- (b) ₹ 26.28/-
 (c) ₹ 31.41/- (d) ₹ 23.22/-
 (e) ₹ 21.34/-

74. Sum of three consecutive numbers is 2262. What is 41 % of the highest number ?
 (a) 301.51 (b) 303.14
 (c) 308.73 (d) 306.35
 (e) 309.55
75. In how many different ways can the letters of the word 'THERAPY' be arranged so that the vowels never come together ?
 (a) 720 (b) 1440
 (c) 5040 (d) 3600
 (e) 4800

DIRECTIONS (Qs. 76-80) : Study the following pie-chart and table carefully and answer the questions given below :

PERCENTAGEWISE DISTRIBUTION OF THE NUMBER OF MOBILE PHONES SOLD BY A SHOPKEEPER DURING SIX MONTHS
 Total number of mobile phones sold = 45,000



The respective ratio between the number of mobile phones sold of company A and company B during six months

Month	Ratio
July	8:7
August	4:5
September	3:2
October	7:5
November	7:8
December	7:9

76. What is the respective ratio between the number of mobile phones sold of company B during July and those sold during December of the same company ?
 (a) 119:145 (b) 116:135
 (c) 119:135 (d) 119:130
 (e) None of these
77. If 35% of the mobile phones sold by company A during November were sold at a discount, how many mobile phones of company A during that month were sold without a discount?
 (a) 882 (b) 1635
 (c) 1638 (d) 885
 (e) None of these

78. If the shopkeeper earned a profit of ₹433/- on each mobile phone sold of company B during October, what was his total profit earned on the mobile phones of that company during the same month ?
 (a) ₹ 6,49,900/- (b) ₹ 6,45,900/-
 (c) ₹ 6,49,400/- (d) ₹ 6,49,500/-
 (e) None of these
79. The number of mobile phones sold of company A during July is approximately what percent of the number of mobile phones sold of company A during December ?
 (a) 110 (b) 140
 (c) 150 (d) 105
 (e) 130
80. What is the total number of mobile phones sold of company B during August and September together ?
 (a) 10,000 (b) 15,000
 (c) 10,500 (d) 9,500
 (e) None of these

DIRECTIONS (Qs. 81-85) : Study the following information and answer the questions that follow :

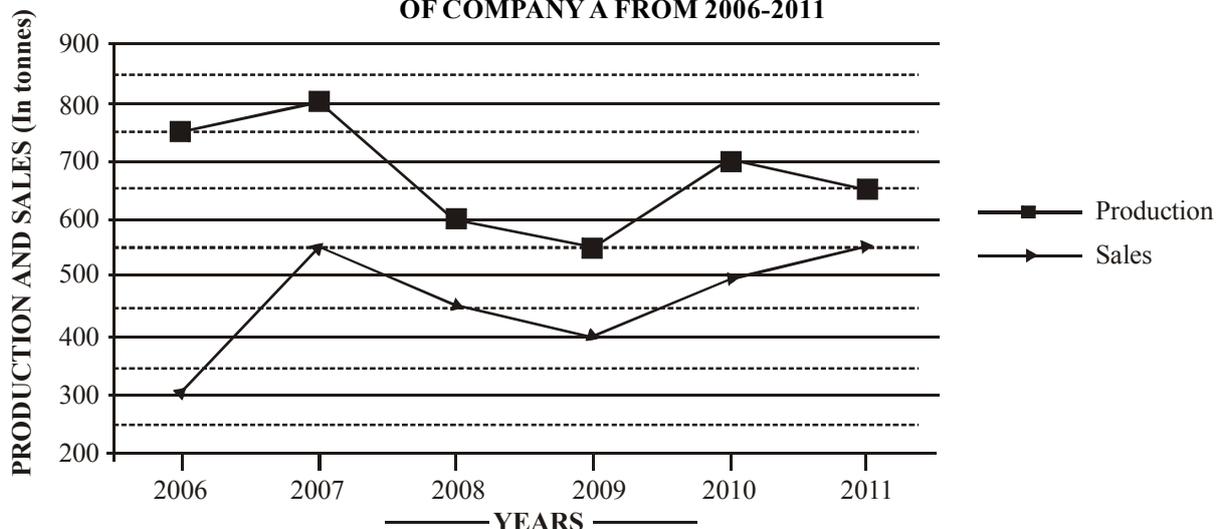
The premises of a bank are to be renovated. The renovation is in terms of flooring. Certain areas are to be floored either with marble or wood. All rooms/halls and pantry are rectangular. The area to be renovated comprises of a hall for customer transaction measuring 23 m by 29 m, branch manager's room measuring 13 m by 17 m, a pantry measuring 14 m by 13 m, a record keeping cum server room measuring 21m by 13 m and locker area measuring 29 m by 21 m. The total area of the bank is 2000 square meters. The cost of wooden flooring is ₹ 170/- per square meter and the cost of marble flooring is ₹ 190/- per square meter. The locker area, record keeping cum server room and pantry are to be floored with marble. The branch manager's room and the hall for customer transaction are to be floored with wood. No other area is to be renovated in terms of flooring.

81. What is the respective ratio of the total cost of wooden flooring to the total cost of marble flooring ?
 (a) 1879 : 2527 (b) 1887 : 2386
 (c) 1887 : 2527 (d) 1829 : 2527
 (e) 1887 : 2351
82. If the four walls and ceiling of the branch managers room (The height of the room is 12 meters) are to be painted at the cost of ₹ 190/- per square meter, how much will be the total cost of renovation of the branch manager's room including the cost of flooring ?
 (a) ₹ 1,36,800/- (b) ₹ 2,16,660/-
 (c) ₹ 1,78,790/- (d) ₹ 2,11,940/-
 (e) None of these
83. If the remaining area of the bank is to be carpeted at the rate of ₹ 110/- per square meter, how much will be the increment in the total cost of renovation of bank premises ?
 (a) ₹ 5,820/- (b) ₹ 4,848/-
 (c) ₹ 3,689/- (d) ₹ 6,890/-
 (e) None of these
84. What is the percentage area of the bank that is not to be renovated ?
 (a) 2.2 (b) 2.4
 (c) 4.2 (d) 4.4
 (e) None of these

85. What is the total cost of renovation of the hall for customer transaction and the locker area ?
 (a) ₹ 2,29,100/- (b) ₹ 2,30,206/-
 (c) ₹ 2,16,920/- (d) ₹ 2,42,440/-
 (e) None of these
86. A certain amount was to be distributed among A, B and C in the ratio 2 : 3 : 4 respectively, but was erroneously distributed in the ratio 7 : 2 : 5 respectively. As a result of this, B got ₹40 less. What is the amount ?
 (a) ₹ 210/- (b) ₹ 270/-
 (c) ₹ 230/- (d) ₹ 280/-
 (e) None of these
87. Rachita enters a shop to buy ice-creams, cookies and pastries. She has to buy atleast 9 units of each. She buys more cookies than ice-creams and more pastries than cookies. She picks up a total of 32 items. How many cookies does she buy ?
 (a) Either 12 or 13 (b) Either 11 or 12
 (c) Either 10 or 11 (d) Either 9 or 11
 (e) Either 9 or 10
88. The fare of a bus is ₹ X for the first five kilometers and ₹ 13/- per kilometer thereafter. If a passenger pays ₹ 2402/- for a journey of 187 kilometers, what is the value of X ?
 (a) ₹ 29/- (b) ₹ 39/-
 (c) ₹ 36/- (d) ₹ 31/-
 (e) None of these
89. The product of three consecutive even numbers is 4032. The product of the first and the third number is 252. What is five times the second number ?
 (a) 80 (b) 100
 (c) 60 (d) 70
 (e) 90
90. The sum of the ages of 4 members of a family 5 years ago was 94 years. Today, when the daughter has been married off and replaced by a daughter-in-law, the sum of their ages is 92. Assuming that there has been no other change in the family structure and all the people are alive, what is the difference in the age of the daughter and the daughter-in-law ?
 (a) 22 years (b) 11 years
 (c) 25 years (d) 19 years
 (e) 15 years
91. A bag contains 13 white and 7 black balls. Two balls are drawn at random. What is the probability that they are of the same colour ?
 (a) $\frac{41}{190}$ (b) $\frac{21}{190}$
 (c) $\frac{59}{190}$ (d) $\frac{99}{190}$
 (e) $\frac{77}{190}$
92. Akash scored 73 marks in subject A. He scored 56% marks in subject B and X marks in subject C. Maximum marks in each subject were 150. The overall percentage marks obtained by Akash in all the three subjects together were 54%. How many marks did he score in subject C ?
 (a) 84 (b) 86
 (c) 79 (d) 73
 (e) None of these
93. The area of a square is 1444 square meters. The breadth of a rectangle is $\frac{1}{4}$ th the side of the square and the length of the rectangle is thrice the breadth. What is the difference between the area of the square and the area of the rectangle?
 (a) 1152.38 sq.mtr. (b) 1169.33 sq.mtr
 (c) 1181.21 sq.mtr. (d) 1173.25 sq.mtr
 (e) None of these
94. ₹ 73,689/- are divided between A and B in the ratio 4 : 7. What is the difference between thrice the share of A and twice the share of B ?
 (a) ₹ 36,699/- (b) ₹ 46,893/-
 (c) ₹ 20,097/- (d) ₹ 26,796/-
 (e) ₹ 13,398/-
95. A and B together can complete a task in 20 days. B and C together can complete the same task in 30 days. A and C together can complete the same task in 40 days. What is the respective ratio of the number of days taken by A when completing the same task alone to the number of days taken by C when completing the same task alone ?
 (a) 2 : 5 (b) 2 : 7
 (c) 3 : 7 (d) 1 : 5
 (e) 3 : 5

DIRECTIONS (Qs. 96-100) : Study the following information and answer the questions that follow :

THE GRAPH GIVEN BELOW REPRESENTS THE PRODUCTION (IN TONNES) AND SALES (IN TONNES) OF COMPANY A FROM 2006-2011



The table given below represents the respective ratio of the production (in tonnes) of Company A to the production (in tonnes) of Company B, and the respective ratio of the sales (in tonnes) of Company A to the sales (in tonnes) of Company B.

Year	Production	Sales
2006	5:4	2:3
2007	8:7	11:12
2008	3:4	9:14
2009	11:12	4:5
2010	14:13	10:9
2011	13:14	1:1

96. What is the approximate percentage increase in the production of Company A (in tonnes) from the year 2009 to the production of Company A (in tonnes) in the year 2010 ?
 (a) 18 (b) 38
 (c) 23 (d) 27
 (e) 32
97. The sales of Company A in the year 2009 was approximately what percent of the production of Company A in the same year ?
 (a) 65 (b) 73
 (c) 79 (d) 83
 (e) 69
98. What is the average production of Company B (in tonnes) from the year 2006 to the year 2011 ?
 (a) 574 (b) 649
 (c) 675 (d) 593
 (e) 618
99. What is the respective ratio of the total production (in tonnes) of Company A to the total sales (in tonnes) of Company A ?
 (a) 81 : 64 (b) 64 : 55
 (c) 71 : 81 (d) 71 : 55
 (e) 81 : 55
100. What is the respective ratio of production of Company B (in tonnes) in the year 2006 to production of Company B (in tonnes) in the year 2008 ?
 (a) 2 : 5 (b) 4 : 5
 (c) 3 : 4 (d) 3 : 5
 (e) 1 : 4
103. Which of the following Ministries along with Planning Commission of India has decided to set up a Corpus Fund of ₹ 500 crore, so that Tribals in Naxal-hit areas can be provided proper means of livelihood ?
 (a) Ministry of Rural Development
 (b) Ministry of Home Affairs
 (c) Ministry of Tribal Affairs
 (d) Ministry of Corporate Affairs
 (e) Ministry of Finance
104. Which of the following was the issue over which India decided to vote against Sri Lanka in the meeting of one of the UN governed bodies/agencies ?
 (a) Violations of human rights in Sri Lanka
 (b) Allowing China to establish a military base in Indian ocean
 (c) Issue of subsidy on agricultural products in the meeting of the WTO
 (d) Allowing part of Sri Lanka to become an independent country governed by LTTE
 (e) Sri Lanka's claim to become a permanent member of UN Security Council
105. The term 'Smart Money' refers to _____.
 (a) Foreign Currency (b) Internet Banking
 (c) US Dollars (d) Travelers' cheques
 (e) Credit Cards
106. Which one of the following is not a 'Money Market Instrument' ?
 (a) Treasury Bills (b) Commercial Paper
 (c) Certificate of Deposit (d) Equity Shares
 (e) None of these
107. Which one of the following is a retail banking product ?
 (a) Home Loans (b) Working capital finance
 (c) Corporate term loans (d) Infrastructure financing
 (e) Export Credit
108. Which of the following Statements is TRUE about political situation in Mali, where a military coup burst out recently ?
 (a) General elections were due there in March/April 2012 but did not take place
 (b) The country was under the control of US army since last 18 months
 (c) Army of the country was not happy as Amadou Toure was made President without elections for the next five years
 (d) Coup broke out in Mali when Amadou Toure, the Military Chief got seriously injured in a bomb blast
 (e) NATO and its associates had planned a coup there
109. In the summit of which of the following organizations/group of Nations it was decided that all members should enforce Budget Discipline ?
 (a) G-8 (b) OPEC
 (c) European Union (d) SAARC
 (e) G-20
110. As per newspaper reports, India is planning to use 'SEU' as fuel in its 700 MW nuclear reactors being developed in new plants. What is full form of 'SEU' as used here ?
 (a) Safe Electrical Units
 (b) Small Electrical Unite
 (c) Slightly Enriched Uranium
 (d) Sufficiently Enriched Units
 (e) Safely Enriched Uranium

GENERAL AWARENESS

101. A money deposited at a bank that cannot be withdrawn for a preset fixed period of time is known as a _____.
 (a) Term deposit (b) Checking Account
 (c) Savings Bank Deposit (d) No Frills Account
 (e) Current Deposit
102. A worldwide financial messaging network which exchanges messages between banks and financial institutions is known as _____.
 (a) CHAPS (b) SWIFT
 (c) NEFT (d) SFMS
 (e) CHIPS

111. Technological Advancement in the recent times has given a new dimension to banks, mainly to which one of the following aspects ?
- New Age Financial Derivatives
 - Service Delivery Mechanism
 - Any Banking
 - Any Type Banking
 - Multilevel Marketing
112. When there is a difference between all receipts and expenditure of the Govt. of India, both capital and revenue, it is called _____ .
- Revenue Deficit
 - Budgetary Deficit
 - Zero Budgeting
 - Trade Gap
 - Balance of payment problem
113. Which of the following is **NOT** a function of the Reserve Bank of India ?
- Fiscal Policy Functions
 - Exchange Control Functions
 - Issuance, Exchange and destruction of currency notes
 - Monetary Authority Functions
 - Supervisory and Control Functions
114. Which of the following is **NOT** required for opening a bank account ?
- Identity Proof
 - Address Proof
 - Recent Photographs
 - Domicile Certificate
 - None of these
115. The Golden Jubilee of Afro-Asian Rural Development organization was organized in which of the following places in March 2012 ?
- Dhaka
 - Tokyo
 - Cairo
 - Kuala Lumpur
 - New Delhi
116. What is the maximum deposit amount insured by DICGC ?
- ₹ 2,00,000 per depositor per bank
 - ₹ 2,00,000 per depositor across all banks
 - ₹ 1,00,000 per depositor per bank
 - ₹ 1,00,000 per depositor across all banks
 - None of these
117. The present Foreign Trade policy of India will continue till-
- December 2012
 - March 2013
 - March 2014
 - June 2013
 - December 2014
118. With reference to a cheque which of the following is the "drawee bank" ?
- The bank that collects the cheque
 - The payee's bank
 - The endorsee's bank
 - The endorser's bank
 - The bank upon which the cheque is drawn
119. In which of the following fund transfer mechanisms, can funds be moved from one bank to another and where the transaction is settled instantly without being bunched with any other transaction ?
- RTGS
 - NEFT
 - TT
 - EFT
 - MT
120. What was the reason owing to which Enrica Lexie, an Italian ship was detained by the Port Authorities in Kerala and was brought to Cochin port for inspection and search ?
- It was carrying objectionable material
 - It was involved in sea piracy
 - It was detained as the crew killed two Indian fishermen
 - The ship started sailing without making payments of iron ore it loaded
 - It was detained as it was dumping nuclear waste in deep sea
121. Which of the following agencies/organizations recently gave 'go-ahead' verdict to India's one of the most controversial project of inter linking rivers? (some of the rivers are international rivers)
- UN Food and Agriculture Organisation
 - World Meteorological Organisation
 - International Court of Justice
 - Central Water Commission
 - Supreme Court of India
122. Who among the following was the Captain of the Australian Team which played 4 Test matches against India in January 2012 and won all of them ?
- Ricky Ponting
 - Michael Clarke
 - Nathan Lyon
 - Stuart Clark
 - Andrew Symonds
123. The committee on review of National Small Saving Fund (NSSF) was headed by _____ .
- Dr. C. Rangarajan
 - Mr. U. K. Sinha
 - Dr. Y. V. Reddy
 - Mrs. Shyamala Gopinath
 - Dr. Usha Thorat
124. Banking Ombudsman Scheme is applicable to the business of _____ .
- All scheduled commercial banks excluding RRBs
 - All scheduled commercial banks including RRBs
 - Only Public Sector Banks
 - All Banking Companies
 - All scheduled banks except private banks
125. The 5th Asian Indoor Athletics Championship was organized in February 2012 in _____ .
- Bangladesh
 - India
 - Qatar
 - China
 - South Korea
126. Nationalization of banks aimed at all of the following except _____ .
- Provision of adequate credit for agriculture, SME and exports
 - Removal of control by a few capitalists
 - Provision of credit to big industries only
 - Access of banking to masses
 - Encouragement of a new class of entrepreneurs
127. Who among the following was the Chief Guest at the three-day Pravasi Bharatiya Divas function held in January 2012 ?
- Kamla Persad - Bissessar
 - Ram Baran Yadav
 - Lakshmi Mittal
 - Salman Rushdie
 - Benjamin Netanyahu

128. Which of the following banks is headed by a woman CEO _____.
- (a) Bank of Baroda (b) HDFC Bank
(c) Central Bank of India (d) Punjab National Bank
(e) ICICI Bank
129. As per revised RBI Guidelines, Provision on secured portion of loan accounts classified as Doubtful Assets for more than one year and upto 3 (three) years is to be made at the rate of _____.
- (a) 15% (b) 20%
(c) 40% (d) 25%
(e) 30%
130. As per the provisions in the Food Security Bill - 2011, per month how much food grain should be given to each person of the target group ?
- (a) 5 kg. (b) 7 kg.
(c) 9 kg. (d) 10 kg.
(e) 20 kg.
131. Which of the following acts in vogue in India is against the thinking of raising school fee as per demand of the market forces ?
- (a) Prevention of Corruption Act
(b) Child Labour (Prohibition & Regulation) Act
(c) Sharda Act
(d) Right to Education Act
(e) MG National Rural Employment Guarantee Act
132. Which of the following states has launched 'Panch Parmeshwar Yojana' under which panchayats are allowed to use the fund for developing infrastructure and basic amenities in villages ?
- (a) Uttar Pradesh (b) Maharashtra
(c) Gujarat (d) Madhya Pradesh
(e) Tamil Nadu
133. Base Rate is the rate below which no Bank can allow their lending to anyone. Who sets up this 'Base Rate' for Banks?
- (a) Individual Banks, Board
(b) Ministry of Commerce
(c) Ministry of Finance
(d) RBI
(e) Interest Rate Commission of India
134. National Table Tennis Championship was organized in January 2012 in _____.
- (a) Mumbai (b) Delhi
(c) Hyderabad (d) Lucknow
(e) Jaipur
135. Who among the following is the author of the book 'Nirbasan'?
- (a) Mahashweta Devi (b) Taslima Nasreen
(c) Sunil Gangopadhyay (d) Vikram Seth
(e) Kiran Desai
136. What is a Debit Card ?
- (a) It is a card issued by a Rating Agency
(b) It is a card which can be used for withdrawing cash or making payment even in the absence of any balance in the account
(c) It is a card which can be used for withdrawing cash or making payment if there is balance in the account
(d) It is a card which carries prepaid balance
(e) It is a card which can be used for making STD calls
137. Who among the following Indian Lawn Tennis player won a Doubles of Australian Open 2012 ?
- (a) Mahesh Bhupati (b) Kamlesh Mehta
(c) Leander Paes (d) Sania Mirza
(e) Achanta Sarath Kamal
138. 'Akula-11' Class 'K-152 Nerpa' was inducted in Indian Navy recently. These are _____.
- (a) Aircrafts (b) Radar System
(c) Submarines Missiles (d) Warship
(e) Submarines
139. Which of the following awards was conferred upon Late Mario De Miranda (Posthumously) in January 2012 ?
- (a) Padma Vibhushan (b) Bharat Ratna
(c) Kalidas Samman (d) Saraswati Samman
(e) Padmashri
140. Bad advances of a Bank are called _____.
- (a) Bad debt (b) Book debt
(c) Non Performing Asset (d) Out of order accounts
(e) Overdrawn accounts
141. Axis Bank is a _____.
- (a) Public Sector Bank (b) Private Sector Bank
(c) Co-operative Bank (d) Foreign Bank
(e) Gramin Bank
142. By increasing repo rate, the economy may observe the following effects _____.
- (a) Rate of interest on loans and advances will be costlier
(b) Industrial output would be affected to an extent
(c) Banks will increase rate of interest on deposits
(d) Industry houses may borrow money from foreign countries
(e) All of these
143. Increased interest rates, as is existing in the economy at present will _____.
- (a) Lead to higher GDP growth
(b) Lead to lower GDP growth
(c) Mean higher cost of raw materials
(d) Mean lower cost of raw materials
(e) Mean higher wage bill
144. Which of the following schemes is launched to provide pension to people in unorganized sectors in India ?
- (a) Swabhiman (b) Jeevan Dhara
(c) Jeevan Kalyan (d) ASHA
(e) Swavalamban
145. The 10th Basic Ministerial Meeting on Climate Change was organized in February 2012 in _____.
- (a) Tokyo (b) Beijing
(c) Manila (d) Moscow
(e) New Delhi
146. Finance Ministry has asked the Reserve Bank of India to allow common ATM's that will be owned and managed by non-banking entities hoping to cut transaction costs for banks. Such ATM's are known as _____.
- (a) Black Label ATM's
(b) off site ATM's
(c) on site ATM's or red ATM's
(d) third party ATM's
(e) white label ATM's

147. Which of the following schemes of the Govt. of India has provided electricity to 99000 villages and total 1.7 crore households uptill now ?
- Kutir Jyoti
 - Rajiv Gandhi Grameen Vidyutikaran Yojana
 - Bharat Nirman
 - PURA
 - SEWA
148. Ranbir Kapoor was awarded Best Actor Award in 57th Filmfare Award Function for his performance in _____.
- No One Killed Jessica
 - Stanley Ka Dabba
 - 7 Khoon Maaf
 - Rockstar
 - Zindagi Na Milegi Dobara
149. An ECS transaction gets bounced and you are unable to recover your money from your customer. Under which Act criminal action can be initiated ?
- Indian Penal Code
 - Negotiable Instruments Act
 - Criminal Procedure Code
 - Payment and Settlements Act
 - Indian Contract Act
150. Mr. Rajendra had filed a complaint with Banking Ombudsman but is not satisfied with the decision. What is the next option before him for getting his matter resolved ?
- Write to the CMD of the Bank.
 - File an appeal before the Finance Minister.
 - File an appeal before the Banking Ombudsman again.
 - File an appeal before the Dy. Governor RBI.
 - Simply close the matter as going to court involves time and money.
151. Fourth-generation mobile technology provides enhanced capabilities allowing the transfer of both _____ data, including full-motion video, high-speed Internet access, and videoconferencing.
- video data and information
 - voice and nonvoice
 - music and video
 - video and audio
 - None of these
152. _____ is a form of denial of service attack in which a hostile client repeatedly sends SYN packets to every port on the server using fake IP addresses.
- Cyborgaming crime
 - Memory shaving
 - Syn flooding
 - Software piracy
 - None of these
153. Which of these is a point-and-draw device ?
- mouse
 - scanner
 - printer
 - CD-ROM
 - Keyboard
154. The letter and number of the intersecting column and row is the _____.
- cell location
 - cell position
 - cell address
 - cell coordinates
 - cell contents
155. A set of rules for telling the computer what operations to perform is called a _____.
- procedural language
 - structures
 - natural language
 - command language
 - programming language
156. A detailed written description of the programming cycle and the program, along with the test results and a printout of the program is called _____.
- documentation
 - output
 - reporting
 - spec sheets
 - Directory
157. Forms that are used to organize business data into rows and columns are called _____.
- transaction sheets
 - registers
 - business forms
 - sheet-spreads
 - spreadsheets
158. In Power Point, the Header and Footer button can be found on the Insert tab in what group ?
- Illustrations group
 - Object group
 - Text group
 - Tables group
 - None of these
159. A(n) _____ is a set of programs designed to manage the resources of a computer, including starting the computer, managing programs, managing memory, and coordinating tasks between input and output devices.
- application suite
 - compiler
 - input/output system
 - interface
 - operating system (OS)
160. A typical slide in a slide presentation would not include _____.
- photo images charts, and graphs
 - graphs and clip art
 - clip art and audio clips
 - full-motion video
 - content templates

COMPUTER KNOWLEDGE

151. _____ allows users to upload files to an online site so they can be viewed and edited from another location.
- General-purpose applications
 - Microsoft Outlook
 - Web-hosted technology
 - Office Live
 - None of these
152. What feature adjusts the top and bottom margins so that the text is centered vertically on the printed page ?
- Vertical justifying
 - Vertical adjusting
 - Dual centering
 - Horizontal centering
 - Vertical centering
153. Which of these is **not** a means of personal communication on the Internet ?
- chat
 - instant messaging
 - instanotes
 - electronic mail
 - None of these
154. What is the overall term for creating, editing, formatting, storing, retrieving, and printing a text document ?
- Word processing
 - Spreadsheet design
 - Web design
 - Database management
 - Presentation generation

165. The PC productivity tool that manipulates data organized in rows and columns is called a _____.
- (a) spreadsheet
(b) word processing document
(c) presentation mechanism
(d) database record manager
(e) EDI creator
166. In the absence of parentheses, the order of operation is _____.
- (a) Exponentiation, addition or subtraction, multiplication or division
(b) Addition or subtraction, multiplication or division, exponentiation
(c) Multiplication or division, exponentiation, addition or subtraction
(d) Exponentiation, multiplication or division, addition or subtraction
(e) Addition or subtraction, exponentiation, Multiplication or division
167. To find the Paste Special option, you use the Clipboard group on the _____ tab of PowerPoint.
- (a) Design (b) Slide Show
(c) Page Layout (d) Insert
(e) Home
168. An _____ program is one that is ready to run and does not need to be altered in any way.
- (a) interpreter (b) high-level
(c) compiler (d) COBOL
(e) executable
169. Usually downloaded into folders that hold temporary Internet files, _____ are written to your computer's hard disk by some of the Web sites you visit.
- (a) anonymous files (b) behaviour files
(c) banner ads (d) large files
(e) cookies
170. What is the easiest way to change the phrase, revenues, profits, gross margin, to read revenues, profits, and gross margin?
- (a) Use the insert mode, position the cursor before the g in gross, then type the word and followed by a space
(b) Use the insert mode, position the cursor after the g in gross, then type the word and followed by a space
(c) Use the overtype mode, position the cursor before the g in gross, then type the word and followed by a space
(d) Use the overtype mode, position the cursor after the g in gross, then type the word and followed by a space
(e) None of these
171. A program, either talk or music, that is made available in digital format for automatic download over the Internet is called a _____.
- (a) wiki (b) broadcast
(c) vodcast (d) blog
(e) podcast
172. Which PowerPoint view displays each slide of the presentation as a thumbnail and is useful for rearranging slides?
- (a) Slide Sorter (b) Slide Show
(c) Slide Master (d) Notes Page
(e) Slide Design
173. Different components on the motherboard of a PC unit are linked together by sets of parallel electrical conducting lines. What are these lines called?
- (a) Conductors (b) Buses
(c) Connectors (d) Consecutives
(e) None of these
174. What is the name given to those applications that combine text, sound, graphics, motion video, and/ or animation?
- (a) motionware (b) anigraphics
(c) videoscapes (d) multimedia
(e) maxomedia
175. A USB communication device that supports data encryption for secure wireless communication for notebook users is called a _____.
- (a) USB wireless network adapter
(b) wireless switch
(c) wireless hub
(d) router
(e) None of these
176. A(n) _____ language reflects the way people think mathematically.
- (a) cross-platform programming
(b) 3GL business programming
(c) event-driven programming
(d) functional
(e) None of these
177. When entering text within a document, the Enter key is normally pressed at the end of every _____.
- (a) Line (b) Sentence
(c) Paragraph (d) word
(e) file
178. When a real-time telephone call between people is made over the Internet using computers, it is called _____.
- (a) a chat session (b) an e-mail
(c) an instant message (d) Internet telephony
(e) None of these.
179. Which of the following is the first step in sizing a window?
- (a) Point to the title bar
(b) Pull down the View menu to display the toolbar
(c) Point to any corner or border
(d) Pull down the View menu and change to large icons
(e) None of these
180. Which of the following software could assist someone who cannot use their hands for computer input?
- (a) Video conferencing (b) Speech recognition
(c) Audio digitizer (d) Synthesizer
(e) None of these
181. _____ a document means the file is transferred from another computer to your computer.
- (a) Uploading
(b) Really Simple Syndication (RSS)
(c) Accessing
(d) Downloading
(e) Upgrading
182. Which computer memory is used for storing programs and data currently being processed by the CPU?
- (a) Mass memory (b) Internal memory
(c) Non-volatile memory (d) PROM
(e) None of these

183. Computers that control processes accept data in a continuous _____.
- (a) data traffic pattern (b) data highway
(c) infinite loop (d) feedback loop
(e) slot
184. What refers to a set of characters of a particular design ?
- (a) keyface (b) formation
(c) calligraph (d) stencil
(e) typeface
185. _____ is used by public and private enterprises to publish and share financial information with each other and industry analysts across all computer platforms and the Internet.
- (a) Extensible Markup Language (EML)
(b) Extensible Business Reporting Language (XBRL)
(c) Enterprise Application Integration (EAI)
(d) Sales Force Automation (SFA) software
(e) None of these
186. Which part of the computer is used for calculating and comparing ?
- (a) ALU (b) Control unit
(c) Disk unit (d) Modem
(e) None of these
187. The method of Internet access that requires a phone line, but offers faster access speeds than dial-up is the _____ connection.
- (a) cable access
(b) satellite access
(c) fiber-optic service
(d) Digital Subscriber Line (DSL)
(e) modem
188. _____ software creates a mirror image of the entire hard disk, including the operating system, applications, files, and data.
- (a) Operating system (b) Backup software
(c) Utility programs (d) Driver imaging
(e) None of these
189. What is a URL?
- (a) a computer software program
(b) a type of programming object
(c) the address of a document or "page" on the World Wide Web
(d) an acronym for Unlimited Resources for Learning
(e) a piece of hardware
190. What is the significance of a faded (dimmed) command in a pull-down menu ?
- (a) The command is not currently accessible
(b) A dialog box appears if the command is selected
(c) A Help window appears if the command is selected
(d) There are no equivalent keystrokes for the particular command
(e) None of these
191. Your business has contracted with another company to have them host and run an application for your company over the Internet. The company providing this service to your business is called an _____.
- (a) Internet service provider
(b) Internet access provider
(c) Application service provider
(d) Application access provider
(e) Outsource agency
192. A(n) _____ allows you to access your e-mail from anywhere.
- (a) Forum (b) Webmail interface
(c) Message Board (d) Weblog
(e) None of these
193. Which of the following would you find on LinkedIn ?
- (a) Games (b) Connections
(c) Chat (d) Applications
(e) None of these
194. _____ is a technique that is used to send more than one call over a single line.
- (a) Digital transmission (b) Infrared transmission
(c) Digitizing (d) Streaming
(e) Multiplexing
195. The Search Companion can _____.
- (a) Locate all files containing a specified phrase
(b) Restrict its search to a specified set of folders
(c) Locate all files containing a specified phrase and restrict its search to a specified set of folders
(d) Cannot locate all files containing a specified phrase or restrict its search to a specified set of folders
(e) None of these
196. Which of the following **cannot** be part of an email address ?
- (a) Period (.) (b) At sign (@)
(c) Space () (d) Underscore (_)
(e) None of these
197. Which of the following must be contained in a URL ?
- (a) a protocol identifier
(b) the letters, www.
(c) the unique registered domain name
(d) www. and the unique registered domain name
(e) a protocol identifier, www. and the unique registered domain name
198. Which of the following information systems focuses on making manufacturing processes more efficient and of higher quality ?
- (a) Computer-aided manufacturing
(b) Computer-integrated manufacturing
(c) Computer-aided software engineering
(d) Computer-aided system engineering
(e) None of these
199. A mistake in an algorithm that causes incorrect results is called a _____.
- (a) logical error (b) syntax error
(c) procedural error (d) compiler error
(e) machine error
200. A device for changing the connection on a connector to a different configuration is-
- (a) a converter (b) a component
(c) an attachment (d) an adapter
(e) Voltmeter

ENGLISH LANGUAGE

DIRECTIONS (Qs. 201-215) : *Read the following passage carefully and answer the questions given below it. Certain words/phrases have been printed in bold to help you locate them while answering some of the questions.*

When times are hard, doomsayers are aplenty. The problem is that if you listen to them too carefully, you tend to overlook the most obvious signs of change. 2011 was a bad year. Can 2012 be any worse? Doomsday forecasts are the easiest to make these days. So let's try a contrarian's forecast instead.

Let's start with the global economy. We have seen a steady flow of good news from the US. The employment situation seems to be improving rapidly and consumer sentiment, reflected in retail expenditures on discretionary items like electronics and clothes, has picked up. If these trends sustain, the US might post better growth numbers for 2012 than the 1.5-1.8 percent being forecast currently.

Japan is likely to pull out of a recession in 2012 as post-earthquake reconstruction efforts gather momentum and the fiscal stimulus announced in 2011 begins to pay off. The consensus estimate for growth in Japan is a respectable 2 per cent for 2012.

The "hard-landing" scenario for China remains and will remain a **myth**. Growth might decelerate further from the 9 per cent that it expected to **clock** in 2011 but is unlikely to drop below 8-8.5 percent in 2012.

Europe is certainly in a spot of trouble. It is perhaps already in recession and for 2012 it is likely to post mildly negative growth. The risk of implosion has dwindled over the last few months - peripheral economies like Greece, Italy and Spain have new governments in place and have made progress towards genuine economic reform.

Even with some of these positive factors in place, we have to accept the fact that global growth in 2012 will be **tepid**. But there is a flipside to this. Softer growth means lower demand for commodities and this is likely to drive a correction in commodity prices. Lower commodity inflation will enable emerging market central banks to reverse their monetary stance. China, for instance, has already reversed its stance and has pared its reserve ratio twice. The RBI also seems poised for a reversal in its rate cycle as headline inflation seems well on its way to its target of 7 per cent for March 2012.

That said, oil might be an exception to the general trend in commodities. Rising geopolitical tensions, particularly the continuing face-off between Iran and the US, might lead to a spurt in prices. It might make sense for our oil companies to hedge this risk instead of buying oil in the spot market.

As inflation fears **abate** and emerging market central banks begin to cut rates, two things could happen. Lower commodity inflation would mean lower interest rates and better credit availability. This could set a floor to growth and slowly reverse the business cycle within these economies. Second, as the fear of untamed, runaway inflation in these economies abates, the global investor's comfort levels with their markets will increase.

Which of the **emerging** markets will outperform and who will get left behind? In an environment in which global growth is likely to be weak, economies like India that have a powerful domestic consumption dynamic should lead; those dependent

on exports should, *prima facie*, fall behind. Specifically for India, a fall in the exchange rate could not have come at a better time. It will help Indian exporters gain market share even if global trade remains depressed. More importantly, it could lead to massive import substitution that favours domestic producers.

Let's now focus on India and start with a caveat. It is important not to confuse a short-run cyclical dip with a permanent de-rating of its long-term structural potential. The arithmetic is simple. Our growth rate can be in the range of 7-10 per cent depending on policy action. Ten per cent if we get everything right, 7 per cent if we get it all wrong. Which policies and reforms are critical to taking us to our 10 per cent potential? In judging this, let's again be careful. Let's not go by the laundry list of reforms that FIIs like to wave: increase in foreign equity limits in foreign shareholding, greater voting rights for institutional shareholders in banks, FDI in retail, etc. These can have an impact only at the margin. We need not bend over backwards to appease the FIIs through these reforms - they will invest in our markets when momentum picks up and will be the first to exit when the momentum flags, reforms or not.

The reforms that we need are the ones that can actually raise out. Sustainable long-term growth rate. These have to come in areas like better targeting of subsidies, making projects in infrastructure viable so that they **draw** capital, raising the productivity of agriculture, improving healthcare and education, bringing the parallel economy under the tax net, implementing fundamental reforms in taxation like GST and the direct tax code and finally easing the **myriad** rules and regulations that make doing business in India such a nightmare. A number of these things do not require new legislation and can be done through executive order.

201. Which of the following is NOT TRUE according to the passage ?
- China's economic growth may decline in the year 2012 as compared to the year 2011
 - The European economy is not doing very well
 - Greece is on the verge of bringing about economic reforms
 - In the year 2012, Japan may post a positive growth and thus pull out of recession
 - All are true
202. Which of the following will possibly be a result of softer growth estimated for the year 2012 ?
- Prices of oil will not increase.
 - Credit availability would be lesser.
 - Commodity inflation would be lesser.
- Only (B)
 - Only (A) and (B)
 - Only (A) and (C)
 - Only (C)
 - All (A), (B) and (C)
203. Which of the following can be said about the present status of the US economy ?
- There is not much improvement in the economic scenario of the country from the year 2011
 - The growth in the economy of the country, in the year 2012, would definitely be lesser than 1.8 percent
 - The expenditure on clothes and electronic commodities, by consumers, is lesser than that in the year 2011
 - There is a chance that in 2012 the economy would do better than what has been forecast
 - The pace of change in the employment scenario of the country is very slow.

204. Which of the following is possibly the most appropriate title for the passage ?
- The Economic Disorder
 - Indian Economy Versus The European Economy
 - Global Trade
 - The Current Economic Scenario
 - Characteristics of The Indian Economy
205. According to the author, which of the following would characterize Indian growth scenario in 2012 ?
- Domestic producers will take a hit because of depressed global trade scenario.
 - On account of its high domestic consumption, India will lead.
 - Indian exporters will have a hard time in gaining market share.
- Only (B)
 - Only (A) and (B)
 - Only (B) and (C)
 - Only (A)
 - All (A), (B) and (C)
206. Why does the author not recommend taking up the reforms suggested by FII's ?
- These will bring about only minor growth
 - The reforms suggested will have no effect on the economy of our country, whereas will benefit the FII's significantly
 - The previous such recommendations had backfired
 - These reforms will be the sole reason for our country's economic downfall
 - The reforms suggested by them are not to be trusted as they will not bring about any positive growth in India
207. Which of the following is TRUE as per the scenario presented in the passage?
- The highest growth rate that India can expect is 7 percent
 - The fall in the exchange rate will prove beneficial to India
 - Increased FDI in retail as suggested by FIIs would benefit India tremendously
 - The reforms suggested by the author require new legislation in India
 - None is true
208. According to the author, which of the following reform/s is/ are needed to ensure long term growth in India?
- Improving healthcare and educational facilities.
 - Bringing about reforms in taxation.
 - Improving agricultural productivity.
- Only (B)
 - Only (A) and (B)
 - Only (B) and (C)
 - Only (A)
 - All (A), (B) and (C)

DIRECTIONS (Qs. 209-212) : Choose the word/group of words which is most similar in meaning to the word/group of words printed in bold as used in the passage.

209. **DRAW**
- entice
 - push
 - decoy
 - attract
 - persuade

210. **CLOCK**
- watch
 - achieve
 - time
 - second
 - regulate
211. **ABATE**
- rise
 - gear
 - hurl
 - lessen
 - retreat
212. **EMERGING**
- raising
 - developing
 - noticeable
 - conspicuous
 - uproaring

DIRECTIONS (Qs. 213-215) : Choose the word/group of words which is most opposite in meaning to the word/group of words printed in bold as used in the passage.

213. **MYRIAD**
- trivial
 - difficult
 - few
 - effortless
 - countless
214. **TEPID**
- moderate
 - high
 - warm
 - irregular
 - little
215. **MYTH**
- reality
 - belief
 - contrast
 - idealism
 - falsehood

DIRECTIONS (Qs. 216-220) : Rearrange the following six sentences (A), (B), (C), (D), (E) and (F) in the proper sequence to form a meaningful paragraph; then answer the questions given below them.

- If China is the world's factory, India has become the world's outsourcing centre - keeping in line with this image.
 - But India's future depends crucially on its ability to compete fully in the Creative Economy - not just in tech and software, but across design and entrepreneurship; arts, culture and entertainment; and the knowledge-based professions of medicine, finance and law.
 - While its creative assets outstrip those of other emerging competitors, India must address several challenges to increase its international competitiveness as the world is in the midst of a sweeping transformation.
 - This transformation is evident in the fact that the world is moving from an industrial economy to a Creative Economy that generates wealth by harnessing intellectual labour, intangible goods and human creative capabilities.
 - Its software industry is the world's second-largest, its tech outsourcing accounts for more than half of the \$ 300 billion global industry, according to a technology expert.
 - If the meeting of world leaders at Davos is any indication, India is rapidly becoming an economic 'rock star'.
216. Which of the following should be the SIXTH (LAST) sentence after the rearrangement ?
- A
 - B
 - C
 - D
 - E

217. Which of the following should be the THIRD sentence after the rearrangement ?
 (a) A (b) B
 (c) C (d) D
 (e) E
218. Which of the following should be the FIFTH sentence after the rearrangement ?
 (a) A (b) B
 (c) C (d) F
 (e) E
219. Which of the following should be the FIRST sentence after the rearrangement ?
 (a) F (b) B
 (c) C (d) A
 (e) E
220. Which of the following should be the SECOND sentence after the rearrangement ?
 (a) A (b) B
 (c) C (d) D
 (e) F
224. Medical teachers said that the management had continued to remain to their cause leading to the stretching of their strike.
 (A) unmoved (B) lethargic
 (C) unconcerned (D) apathetic
 (E) indifferent (F) bored
 (a) (B) and (C) (b) (C) and (F)
 (c) (A) and (E) (d) (A) and (D)
 (e) (D) and (E)
225. The parents had approached the high court to the government order after their children, who passed UKG, were denied admission by a school.
 (A) void (B) quash
 (C) annual (D) stay
 (E) lift (F) post
 (a) (A) and (D) (b) (B) and (C)
 (c) (C) and (E) (d) (E) and (F)
 (e) (C) and (D)

DIRECTIONS (Qs. 221-225) : *The following questions consist of a single sentence with one blank only. You are given six words denoted by A, B, C, D, E & F as answer choices and from the six choices you have to pick two correct answers, either of which will make the sentence meaningfully complete.*

221. _____ before the clock struck 8 on Saturday night, India Gate was swamped with people wearing black tee-shirts and holding candles.
 (A) Minutes (B) Time
 (C) Later (D) Quickly
 (E) Since (F) Seconds
 (a) (B) and (E) (b) (A) and (C)
 (c) (A) and (F) (d) (B) and (D)
 (e) (C) and (E)
222. The Stales should take steps to the process of teachers" appointments as the Centre has already sanctioned six lakh posts.
 (A) fasten (B) move
 (C) hasten (D) speed
 (E) early (F) quicken
 (a) (D) and (F) (b) (A) and (C)
 (c) (C) and (F) (d) (D) and (E)
 (e) (B) and (D)
223. A senior citizen's son threatened her every day and physically harmed her, forcing her to transfer her property to him.
 (A) superficially (B) mistakenly
 (C) allegedly (D) miserably
 (E) doubtfully (F) purportedly
 (a) (C) and (F) (b) (A) and (E)
 (c) (C) and (E) (d) (D) and (F)
 (e) (A) and (C)

DIRECTIONS (Qs. 226-235) : *Read each sentence to find out whether there is any grammatical error or idiomatic error in it. The error, if any, will be in one part of the sentence. The letter of that part is the answer. If there is 'No error', the answer is '(e)'. (ignore errors of punctuation, if any).*

226. The Government has asked individuals /
 (a)
with income of over 110 lakhs to /
 (b)
electronic file tax returns for the year 2011 -12, /
 (c)
something which was optional till last year. / No error
 (d) (e)
227. The power tariff had already / been increased twice in /
 (a) (b)
the last 15 months and the Electricity Board had also /
 (c)
levied additional monthly charges to consumers.
 (d)
No error
 (e)
228. Despite of curfew / in some areas, minor /
 (a) (b)
communal incidents were reported /
 (c)
from different areas of the walled city. / No error
 (d) (e)

229. This comes / at a time / when fund allocation /
(a) (b) (c)
is been doubled. / No error
(d) / (e)
230. As the prison will get /
(a)
an official telephone facility soon, the prisoners /
(b)
wont have to make calls in discreet manner
(c)
through smuggled mobile phones. / No error
(d) / (e)
231. The area was plunged into / darkness mid a wave of /
(a) (b)
cheering and shouting / slogans like 'Save The Earth'. /
(c) (d)
No error
(e)
232. The poll contestants approached /
(a)
the commission complaining that the hoardings /
(b)
violated the code of conduct /
(c)
and influenced public perception. / No error
(d) / (e)
233. The country has / adequate laws but problems /
(a) (b)
arise when these are not /
(c)
implemented in letter and spirit. / No error
(d) / (e)
234. The Management feels that /
(a)
the employees of the organisation are /
(b)
non-productive, and do not want / to work hard. /
(c) (d)
No error
(e)
235. As far the issue of land encroachment /
(a)
in villages is concerned, people will /
(b)
have to make a start from their villages by /
(c)
sensitising and educating the villagers about this issue.
(d)
No error
(e)
-
- DIRECTIONS (Qs. 236-240) : Which of the phrases (a), (b), (c) and (d) given below each sentence should replace the word/ phrase printed in bold in the sentence to make it grammatically correct? If the sentence is correct as it is given and no correction is required, mark (e) as the answer.**
-
236. US secretary of state made it clear that time **running out** for diplomacy over Iran's nuclear programme and said that talks aimed at preventing Tehran from acquiring a nuclear weapon would resume in April.
(a) runs out (b) was running out
(c) ran out (d) run
(e) No correction required
237. While the war of the generals **rage on**, somewhere in small town India, wonderful things are happening, quietly and minus fanfare.
(a) rage (b) raging
(c) rages on (d) raged on
(e) No correction required
238. According to WWF, the small island nation of Samoa was **the first in switch off** its lights for Earth Hour.
(a) first to switch of (b) the first to switch off
(c) the first of switch off (d) first in switch of
(e) No correction required
239. The campaign is significant **because not just** the youths are directly appealing to the world but because their efforts challenge the chimera of normalcy in the area.
(a) not just because (b) just not because
(c) not just (d) because just
(e) No correction required
240. The doctor's association has threatened to go on indefinite strike **support of** their teachers.
(a) on supporting to (b) to supporting
(c) for support (d) in support of
(e) No correction required

DIRECTIONS (Qs. 241-250) : *In the following passage there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words/phrases are suggested, one of which fits the blank appropriately. Find out the appropriate word/phrase in each case.*

Greenhouse gases are only (241) of the story when it comes to global warming. Changes to one part of the climate system can (242) additional changes to the way the planet absorbs or reflects energy. These secondary changes are (243) climate feedback's, and they could more than double the amount of warming caused by carbon dioxide alone. The primary feedback are (244) to snow and ice, water vapour, clouds, and the carbon cycle.

The most well (245) feedback comes from melting snow and ice in the Northern Hemisphere. Warming temperatures are already (246) a growing percentage of Arctic sea ice, exposing dark ocean water during the (247) sunlight of summer. Snow cover on land is also (248) in many areas. In the (249) of snow and ice, these areas go from having bright, sunlight-reflecting surfaces that cool the planet to having dark, sunlight-absorbing surfaces that (250) more energy into the Earth system and cause more warming.

241. (a) whole (b) part
(c) material (d) issue
(e) most
242. (a) raise (b) brings
(c) refer (d) stop
(e) cause

243. (a) sensed (b) called
(c) nothing (d) but
(e) term
244. (a) due (b) results
(c) reason (d) those
(e) because
245. (a) done (b) known
(c) ruled (d) bestowed
(e) said
246. (a) mastering (b) sending
(c) melting (d) calming
(e) increasing
247. (a) make-shift (b) ceasing
(c) troubled (d) perpetual
(e) absent
248. (a) dwindling (b) manufactured
(c) descending (d) generating
(e) supplied
249. (a) progress (b) reduced
(c) existence (d) midst
(e) absence
250. (a) repel (b) waft
(c) monitor (d) bring
(e) access

Descriptive Test

Time : 60 min.**Max. Marks : 50**

1. **Write a letter on any one of the following topics :** (15 Marks)
 - (a) Write a letter to your brother/sister explaining the significance of Census in every 10 years.
 - (b) Write a letter to the appropriate authority stating inadequate educational facility in your area.
 - (c) Write a letter to the editor of a newspaper sharing the significant role of a common citizen action to influence development in your area.
2. **Write an article of 250 words on any of the following topic :** (20 Marks)
 - (a) The growth of Banks in India
 - (b) The green initiative of big business houses
 - (c) Micro-finance in India
3. **Write a precise of the following passage and also give a suitable title to it.** (15 Marks)

Even as the debate rages on whether poverty measurement in the country is accurate, a recent report on nutritional intake of individuals has come up with a chilling conclusion: two thirds of the country's population is eating less than what is required.

Even more worrying is that this trend continues despite a healthy economic growth rate over several years, and despite several mega programmes of nutrition delivery to children. Experts believe that this can only indicate widespread hunger and malnutrition, consequences of rampant poverty. Nutritional intake is measured in terms of calorific value of food consumed.

This has shockingly declined from 2,153 Kcal per person per day in 1993-94 to 2020 in 2009-10 in rural areas and from 2,071 to 1,946 Kcal in urban areas according to the report of the National Sample Survey Organisation (NSSO), based on its 66th survey round. Even between 2004-05 and 2009-10, calorie intake per person per day dipped from 2,047 to 2,020 in rural areas and from 2,020 to 1946 in urban areas. This may raise questions about reported decline in poverty as claimed by the Planning Commission.

The Planning Commission had adopted 2,400 Kcal (rural) and 2,100 Kcal (urban) as the minimum daily requirement norm.

What about protein consumption, which is higher in affluent societies because more meat, eggs, fish and milk is consumed? According to the NSSO report, protein consumption too has fallen from 60.2g to 55g per person per day in rural areas and from 57.2g to 53.5g in the urban areas between 1993-94 and 2009-10.

The decline is across the board, but is sharpest in rural areas of Rajasthan, Haryana, UP and Punjab — where intake has fallen by 9-12g per person per day.

Fat consumption has risen by about 7g in rural and 6g in urban areas over this 16-year period in all major states. Average daily fat consumption per person was 38g in rural areas and about 48g in urban areas. These are averages over the whole population.

In reality, the situation is much more dire for the poor. About 90% of the poorest tenth of the population in both urban and rural areas consume food that gives them less than just 2,160 Kcal. Average calorie intake among the poorest tenth of the population is just 1,619 Kcal in rural areas and 1,584 Kcal in urban areas, reveals the NSSO report. The richest 10% of the population consumes 2,922 Kcal in rural areas and 2,855 Kcal in urban on an average.

Solution of Descriptive Test

LETTERWRITING

1. (a) Letter to brother

5/11, JANAK PURI
NEW DELHI-110058
18 January, 2013

Ramesh
DIT Hostel, Block 2
Dehradun

Sub.: Significance of Census in every 10 years

Dear brother,

Hope this letter finds you in the best of health. Today, I am writing you this letter to discuss about the significance of Census in every 10 years. However, before discussing the significance, I would like to give you a brief idea about what census means. A census in simple terms is the procedure of systematically acquiring and recording information about the members of a given population. The term is used mostly in connection with national population and housing censuses.

Census data is commonly used for research, business marketing, and planning, as well as a baseline for sampling surveys. Census data offer a unique insight into small areas and small demographic groups which sample data would be unable to capture with precision.

It is majorly because of these census data that the government is able to formulate and implement policies for national welfare. Over the years, the government has been able to overcome ruinous problems like population, lack of basic amenities due to the collection of census only.

Moreover, the census also gives an insight to the success of policies that have been implemented by the government. The new policy/program started by government of providing Unique Identity (UID) or as we popularly know it as AADHAR card has been a success to a large extend because of census data.

Census also is an important tool in measuring the development of the country in economic terms. It gives a picture about how a particular nation has experienced growth as well as development over the years.

In addition to this, census also has an important role in providing basic amenities like for schooling and welfare, roadways, transport etc. It is also possible for central government to allocate funding on the basis of census data.

In a nutshell, census is a report card of a nation reflecting its performance over years. Therefore, I would suggest you to always provide with a true data about you, your family, income etc whenever being asked for.

Best Regards,

Yukti

1. (b) Letter to Education Minister

144/13 Street no.-1,
Tughlakabad Extention
New Delhi -110019
28 Jan. 2013

The Education Minister
Govt. of Delhi
602, Delhi Secretariate
New Delhi-110002

Sub.: Inadequate educational facility in our area

Sir,

I write to you to express my concern about inadequate educational facility in our area. Education as we all understand is an important aspect of the development of an individual. However, both students and teachers are suffering due to lack of facilities.

The facilities lacking are infrastructure, teachers and administration. Due to this, adverse impact is observed on students and teachers as well. The lack of fine physical structure includes decaying environmental conditions such as peeling paint, crumbling plaster, non functioning toilets, poor lighting, and inadequate ventilation in classrooms. The students do not have the spirit to come to the school as the atmosphere is depressing and has affected the health of students as well. Moreover, a dip is observed in the academic performance of the students because of such appalling infrastructure.

The teachers too are not able to work efficiently in these conditions. The inadequate facilities have an adverse impact on teacher morale, sense of personal safety, feelings of effectiveness in the classroom. Absenteeism is observed not just among students but teachers as well.

Due to lack of accurate administration there are overcrowded classrooms. As a result, students find themselves trying to learn while jammed into spaces such as classrooms, libraries, laboratories and even lunch rooms.

In totality the entire teaching learning process has failed to achieve its goal.

Therefore, I request you to look in the matter and provide support that shall enhance the educational set up and thereby positively shaping the lives of students and teachers as well.

Thanking you

Best regards,

Ram Singh

1. (c)
144/13 sector-1,
Pushp Vihar,
New Delhi - 110017
23 Jan, 2013

The Editor
The Hindustan times
18, KG Marg, New Delhi

Sub.: Role of common citizen to influence development in their area

Dear Editor,

I write to you share the significant role of a common citizen action to influence development in our area. Our area lacks important facilities like lack of proper parking space, playgrounds for children, recreational sports etc. Due to this, the residents of our area are facing inconvenience on daily basis.

I would urge you to publish the contact details of important people in our area. Through these details we shall know whom to approach to express our concerns. Moreover, we shall also be able to get matters resolved in such a way that the basic facilities are provided to all.

Moreover, I also urge you to write about the basic rights and duties of citizens so that people become aware of the same. The awareness about these shall not only help in the development of an individual but also nation at large.

Thanking you

Yours sincerely
Mahesh Kumar with all citizen of Pushp Vihar colony

ARTICLE WRITING

2. (a)

The Growth of Banks in India

Banks today is one of the most trusted institutions and a leading sector of customer satisfaction. The growth of Banks in India can be understood under three categories—

(1) Pre-Independence

(2) Post independence

(3) Current period & Role of Technology

(1) Pre-Independence : Banking in India in the modern sense originated in the last decades of the 18th century. The first banks were 'The General Bank of India' which started in 1786, and Bank of Hindustan, which started in 1770. The oldest bank still in existence in India is the State Bank of India, which originated in the Bank of Calcutta in June 1806.

(2) Post-Independence : The major steps to regulate banking included:

The Reserve Bank of India, India's central banking authority, was established in April 1935, but was nationalized on January 1, 1949 under the terms of the Reserve Bank of India (Transfer to Public Ownership) Act, 1948.

The policy of nationalisation of Banks brought all banks under the supervision of RBI. This allowed the customers to have faith in banks.

(3) Current period & Role of Technology : By 2010, banking in India was generally fairly mature in terms of supply, product range and reach—even though reach in rural India still remains a challenge for the private sector banks. In terms of quality of assets and capital adequacy, Indian banks are considered to have transparent balance sheets. The Reserve Bank of India is an autonomous body, with minimal pressure from the government.

Adoption of computers in banking sector :

The IT revolution had a great impact in the Indian banking system. The use of computers had led to introduction of online banking in India.

With the discussion above, it is very clear that Banking sector has grown into leaps and bounds in terms of investment and contribution to the economy along with providing satisfaction to the customers.

2. (b)

The Green initiative of big business houses

The phrase 'Going Green' has a great demand in the current scenario and a hot topic of discussion, wherever it is a matter of green technologies or the enterprises that are build with such a motto that gives a clear definition of the concern for the environment.

At one point of time there was a debate about the business scope and investment opportunities that comes from green project. From the organizational and business management context going green also comes as a means, which is addressed in the format of the strategic management process for firms in the competitive environment, and their corporate social responsibilities are positive developments and a good measure for a cause.

Since the go green movement began, companies held the power to change their policies and begin a path towards environmentally friendly business practices. Many companies have changed their policies and managed to even save money while doing so.

Bank of America adopted several company policies, reducing its paper waste by 32% despite growth in their customer base. Bank of America also created an internal recycling program that recycles 30,000 tons of paper each year, which saves about 200,000 trees each year.

The trend towards going green is extending beyond the most obvious polluters, and reaching companies ranging from big firms to technology mainstays.

Hence, it is very clear that the role played by Big business houses in go green project is worth appreciating. Moreover, it has been these big business houses that have provided a great support and platform for the go green project.

2. (c)

Micro-finance in India

To understand the concept of Micro-finance, the history about it should be known. Tracing the history of micro-finance in India, it is known that traditionally, banks have not provided financial services, such as loans, to clients with little or no cash income. Banks incur substantial costs to manage a client account, regardless of how small the sums of money involved. Therefore, small entrepreneurs face immense difficulty in getting loans.

Literally speaking, micro-finance services are the financial services aimed towards the development of poor. These services span across credit, savings, insurance, fund transfers etc and are basically pointed towards making money available to the poor for their emancipation.

The poor in India basically consists of farmers, weavers and other small businessmen who form the very basis of our survival due to their contribution to the economy. However, these people are badly hit due to the non-availability of funds which, in the long term, does affect the economy. Moreover, private lenders have been long known to exploit the poor for their own good. So, there is a need to make credit facilities available to them at nominal interest rates to ensure their development.

In India, micro-finance programs typically have at least three common characteristics: women centricity, non-profit approach and rural focus. Studies have shown that micro-finance help the poor to increase income through investments in agriculture and small businesses and enables the poor, especially women. Till now, its success and spread in India has been limited to the South Indian states. Some of the microfinance institutions (MFIs) financed by banks or acting as their intermediaries or partners appear to be focusing on relatively better banked areas. Micro-finance institutions are trying to reach out to the poor, resulting in multiple lending and overburdening of rural households.

Recently, micro-finance has come under fire in the state of Andhra Pradesh due to allegations of MFIs using coercive recollection practices and charging heavy interest rates. These charges resulted in the state government's passing of the Andhra Pradesh Micro-finance Ordinance on October 15, 2010. The Ordinance requires MFIs to register with the state government

As such, to improve the situation, the micro-finance institutions will have to look towards innovative methods to increase the reach of micro credit.

PRECISE WRITING

3.

The reality of healthy economic growth rate

A recent report on nutritional intake of individuals has come up with a shocking conclusion that two thirds of the country's population is eating less than what is required. This report has been a contradiction to the claims made about healthy economic growth rate over several years.

In addition this has also shown a failure of various programmes carried out by government about the importance of nutrition delivery to children.

This catastrophic situation is likely to create widespread hunger and malnutrition.

Answers & Explanations

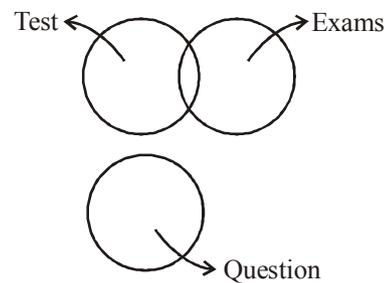
REASONING ABILITY

(1-4):

Input :	84	why	sit	14	32	not	best	ink	feet	51	27	vain	68	92
Step I :	14	84	why	sit	32	not	ink	feet	51	27	vain	68	92	best
Step II :	27	14	84	why	sit	32	not	ink	51	vain	68	92	best	feet
Step III :	32	27	14	84	why	sit	not	51	vain	68	92	best	feet	ink
Step IV :	51	32	27	14	84	why	sit	vain	68	92	best	feet	ink	not
Step V :	68	51	32	27	14	84	why	vain	92	best	feet	ink	not	sit
Step VI :	84	68	51	32	27	14	why	92	best	feet	ink	not	sit	vain
Step VII :	92	84	68	51	32	27	14	best	feet	ink	not	sit	vain	why

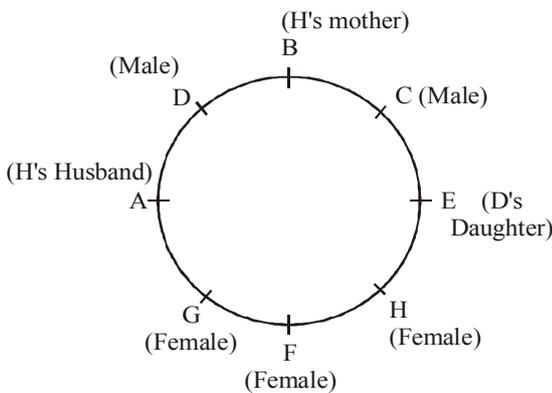
1. (e) There is no such step.
2. (d) The word 'best' is at the fifth position from the right in Step V.
3. (b) There are three elements - 27, 14 and best - between 'feet' and '32' in the last step of the output.
4. (c) The word 'why' is sixth from the left and ninth from the right in the Step IV.

OR



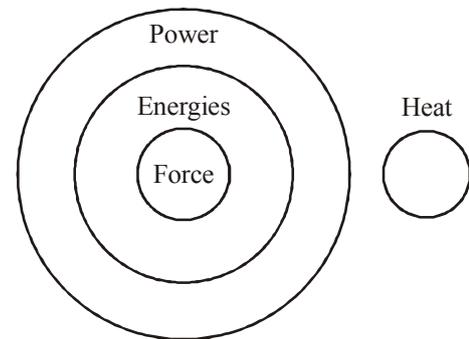
Conclusion I : False
Conclusion II : False

5-11.



5. (d) A's wife is H. H's mother is B. Therefore, B is the mother-in-law of A, A is second to the right of B.
6. (c) E is the daughter of D.
7. (b) A is the father of F and G. G is the mother of C. Therefore, C is the grandchild of A. A is third to the right of C.
8. (a) D is brother-in-law of A. A is father of F and G. Therefore, D is material uncle of G. There is only one person between G and D in clockwise direction.
9. (b) Except C, all others are females.
10. (e) B is the mother of H. C is the nephew of E, A is the husband of H, A is third to the left of H, Both the neighbours of C are females, F and G are daughters of H.
11. (a) B sits to the immediate left of C. B is grandmother of F.

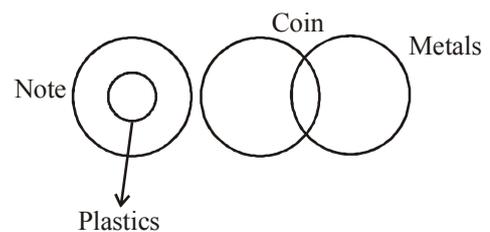
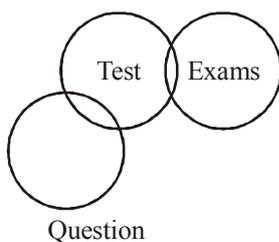
13-14.



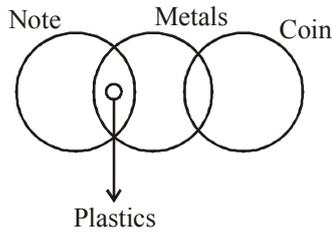
13. (b) **Conclusion I : False**
Conclusion II : True
14. (a) **Conclusion I : True**
Conclusion II : False

15-16.

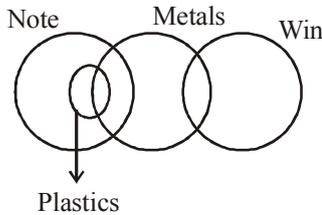
12. (d)



OR

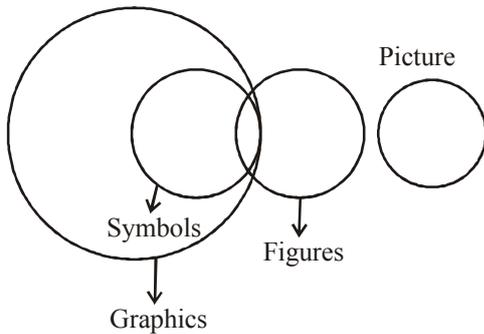


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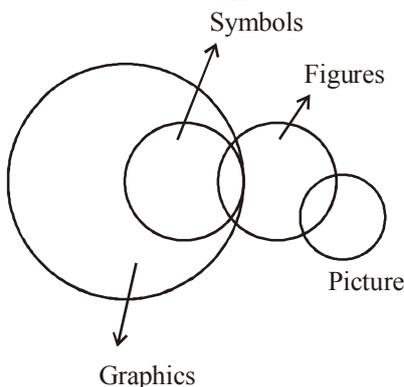


15. (e) **Conclusion I : True**
Conclusion II: True
 16. (d) **Conclusion I : False**
Conclusion II : False

17. (e)

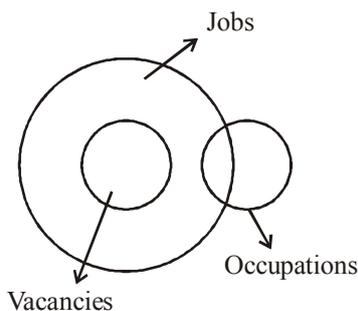


OR

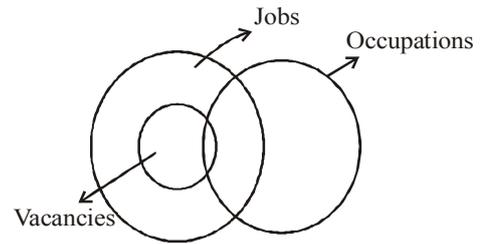


Conclusion I : True
Conclusion II : True

18. (d)



OR



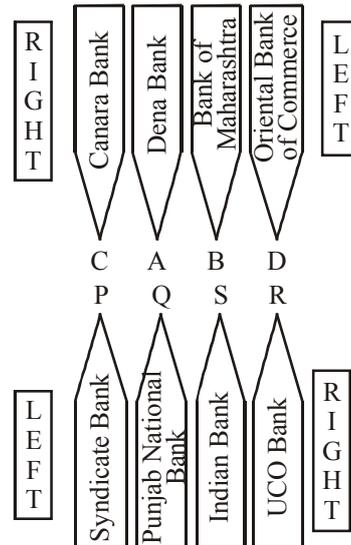
Conclusion I : False
Conclusion II : False

19-21.

B, D, F > C > A, E
 B > D > F > C > A, E
 B > D > F > C > E > A
 Score of F = 81
 Score of E = 62

19. (a) C scored more than 62 and less than 81.
 $62 < 70 < 81$
 20. (e) D's score was more than 81.
 B scored the maximum marks.
 Three people, B, D and F scored more than C.
 B scored more than 81 marks.
 21. (c) Score of F = 81
 Score of B = $81 + 13 = 94$
 Therefore, score of D = more than 81 and less than 94
 $81 < 89 < 94$

22 - 29.



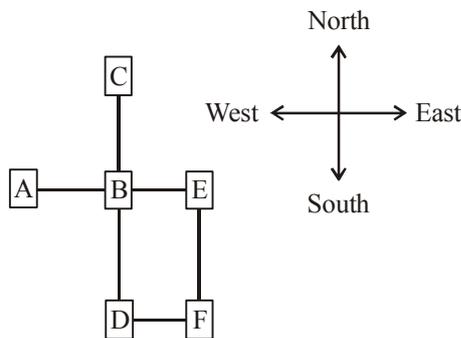
22. (b) The person from Punjab National Bank, Q faces A. B is from Bank of Maharashtra and he is a immediate neighbour of A. A faces of person who sits second to the left of R. A is from Dena Bank. A sits third from the left and second from the right.
 23. (e) S is seated between R and Q, the person from Punjab National Bank.
 24. (d) Persons at the extreme ends : C from Canara Bank; D from Oriental Bank of Commerce; P from Syndicate Bank; R from UCO Bank.
 25. (a) S from Indian Bank faces B from Bank of Maharashtra.
 26. (d) P faces the immediate neighbour of A from Dena Bank. B faces the immediate neighbour of Q from Punjab National Bank. Similarly, D faces immediate neighbour of S from Indian Bank.
 27. (d) Except Q, all others are seated at the extreme ends of

the lines.

- 28. (c) P is from Syndicate Bank.
- 29. (e) C is from Canara Bank.
- 30. (e) From statements I, II and III

Floor No.	Person
6	P
5	T
4	R
3	S
2	Q
1	V

- 31. (b) From statements I and III
 1 2 3 4 5 6
 A S E
 A N S W E R
- 32. (b) From statements I and III



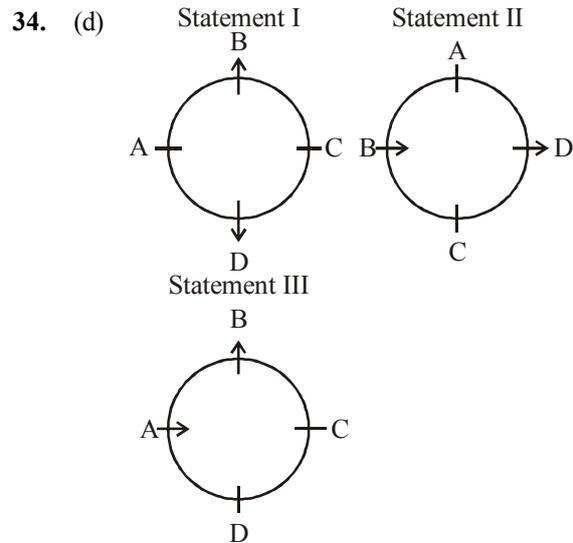
- 33. (e) **From Statements I and II**
 one of its kind → zo pi ko fe
 in kind and cash → ga to ru ko
its point for origin → ba je fe mi
 make a point clear → yu si mi de

From statements I and III.

- one of its kind → zo pi ko fe
- in kind and cash → ga to ru ko
- make money and cash → to mi ru hy
- money of various kind → qu ko zo hy

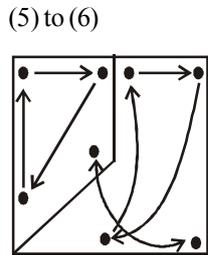
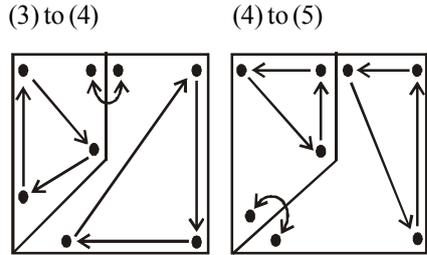
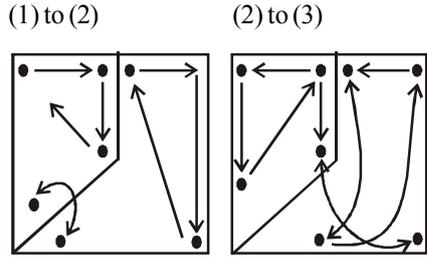
From statements I, II and III

- one of its kind → zo pi ko fe
- in kind and cash → ga to ru ko
- its point for origin → ba le fe mi
- make a point clear → yu si mi de
- make money and cash → to mi ru hy
- money of various kind → qu ko zo hy



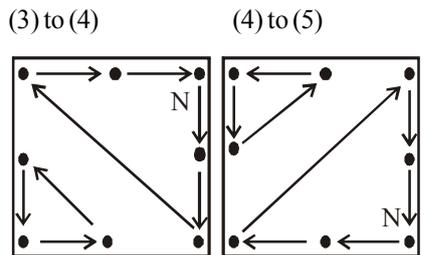
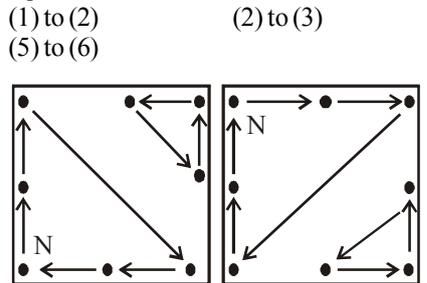
- 35. (b) It is clear from the statement that a farm's areas for organic and chemical farming are different.
- 36. (c) There is a perception among small brands that sale in a supermarket is higher than that of small grocery stores.
- 37. (e) The statement clearly implies that smaller brands are currently making substantial losses in their businesses. Consider the term "troubled waters".
- 38. (b) Statement (C) represents a disadvantage of the small grocery stores over the Supermarkets from the perspective of a smaller brand. Small grocery stores do not help in distribution of any brand.
- 39. (c) Statement (D) represents a reason for the shift from local grocery stores of supermarkets by the smaller brands.
- 40. (a) Statement (A) will prove that step taken by the smaller brands may not necessarily be correct.
- 41. (d) In the subsequent figures two and three designs are inverted alternately. From problems Figure (1) to (2) the first and the second designs from the top interchange positions and the lowermost design moves to the middle position. From problem Figure (2) and (3) the lowermost design moves to the top and the second design from the top moves to the lowermost position while the third and the fourth designs interchange positions. From problem Figure (3) to (4) the top most and the lowermost designs interchange positions and the fourth design moves to the second position. From Problem Figure (4) to (5) the topmost design moves to the fourth position, the lowermost design moves to the topmost position while the second and the third designs interchange positions. Therefore, from problem Figure (5) to Answer Figure the third and the fourth designs would interchange positions and would be inverted, the lowermost design would move to the top position and the second design from the top would move to the lowermost position.

42. (a) The following changes occur in the subsequent figures:



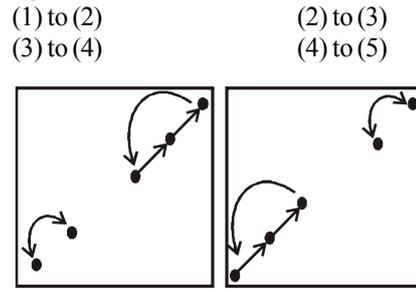
43. (d) From problem Figure (1) to (2) and from problem Figure (5) to Answer Figure the smaller square with four designs moves two steps in anticlockwise direction and the designs in each row interchange positions. The other three designs move two steps in clockwise direction.

44. (c) The following changes occur in the subsequent figures:

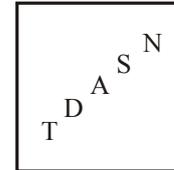


45. (b) From problem Figure (1) to (2) the plane of designs rotates through 90° clockwise and the second and the fifth designs interchange positions. Similarly, the third and the fourth designs interchange positions. Similar changes occur from Problem Figure (3) to (4) and from problem figure (5) to Answer Figure.

46. (d) The following changes occur in the subsequent figures:



In Figure (4) the arrangement of designs would be as follows:)



- 47. (e) The line segment with cross rotates respectively through 45°, 90°, 135°, 180° ... in clockwise direction.
- 48. (d) In each subsequent figure the designs move in clockwise direction and the number of designs at a particular position is fixed. Again, a new design appears at the lower right side. In figure (4), there should be design (L) in the place of circle at the lower right side.
- 49. (e) In the subsequent figures respectively one, two, three, four ..., curves are inverted in a set order. In Figure (5) five curves have been inverted.
- 50. (a) In the first step the outer part of upper design moves inside the lower design and new designs appear at the upper and lower positions. In the second step, the outer part of lower design moves inside the upper design and new designs appear at both the upper and lower positions. In Figure (1) there should be another design at the lower side.

QUANTITATIVE APTITUDE

- 51. (d) $4003 \times 77 - 21015 = ? \times 116$
 $\Rightarrow 308231 - 21015 = ? \times 116 \Rightarrow 287216 = ? \times 116$
 $\Rightarrow ? = \frac{287216}{116} = 2476$
- 52. (a) $[(5\sqrt{7} + \sqrt{7}) \times (4\sqrt{7} + 8\sqrt{7})] - (19)^2 = ?$
 $\Rightarrow (6\sqrt{7} \times 12\sqrt{7}) - (361) = ?$
 $\Rightarrow 72 \times \sqrt{7} \times \sqrt{7} - 361 = ?$
 $\therefore ? = 504 - 361 = 143$
- 53. (b) $(4444 \div 40) + (645 \div 25) + (3991 \div 26) = ?$
 $\Rightarrow ? = (111.1) + (25.8) + (153.5) \Rightarrow ? = 290.4$
- 54. (e) $\sqrt{33124} \times \sqrt{2601} - (83)^2 = (?)^2 (37)^2$
 $\Rightarrow (?)^2 = \sqrt{33124} \times \sqrt{2601} - (83)^2 - (37)^2$
 $\Rightarrow (?)^2 = 182 \times 51 - 6889 - 1369$
 $\Rightarrow (?)^2 = 9282 - 6889 - 1369$

$\Rightarrow (?)^2 = 1024$

$\therefore ? = \sqrt{1024} = 32$

55. (b) $5\frac{17}{37} \times 4\frac{51}{52} \times 11\frac{1}{7} + 2\frac{3}{4} = ?$

$\Rightarrow \left(\frac{202}{37} \times \frac{259}{52} \times \frac{78}{7}\right) + \left(\frac{11}{4}\right) = ?$

$\Rightarrow 303 + \frac{11}{4} = ?$

$\therefore ? = \frac{1223}{4} = 305.75$

56. (c) $8787 \div 343 \times \sqrt{50} = ?$

$\Rightarrow 25 \times 7 = ?$

$\therefore ? = 175 \approx 180$

57. (b) $\sqrt[3]{54821} \times (303 \div 8) = (?)^2$

$\Rightarrow 38 \times 37.5 (?)^2$

$? = \sqrt{38 \times 38}$

$? = 38$

58. (c) $\frac{5}{8}$ of 4011.33 + $\frac{7}{10}$ of 3411.22 = ?

$\Rightarrow \frac{5}{8} \times 4010 + \frac{7}{10} \times 3410 \Rightarrow 2506 + 2387$

$\Rightarrow 4893 \approx 4890$

59. (e) 23% of 6783 + 57% of 8431 = ?

$\Rightarrow ? = 1559 + 4805$

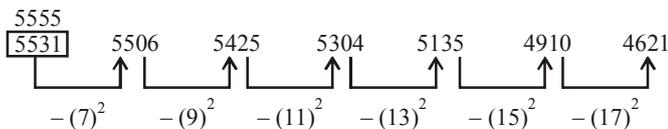
$\therefore ? = 6364 \approx 6360$

60. (a) $335.01 \times 244.99 \div 55$

$\Rightarrow ? = \frac{335 \times 245}{55}$

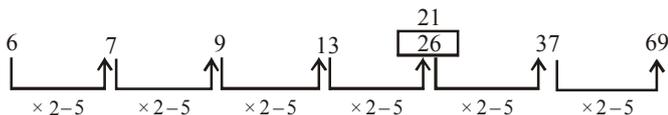
$\therefore ? = 1492 \approx 1490$

61. (a) The given number series is based on the following pattern:



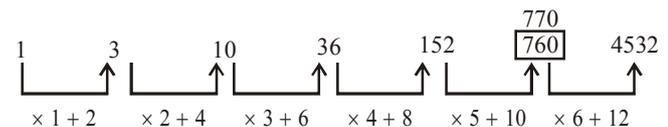
Hence, the number 5531 is wrong and it should be replaced by 5555.

62. (b) The given number series is based on the following pattern:



Hence, the number 26 is wrong and it should be replaced by 21.

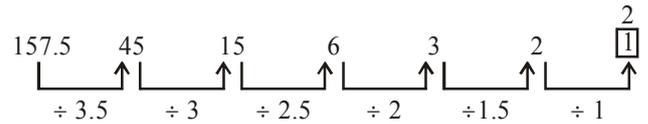
63. (d) The given number series is based on the following pattern:



Hence, the number 760 is wrong and it should be replaced by 770.

64. (e) The given series is $\times 0.5 + 0.5, \times 1 + 1, \times 1.5 + 1.5, \times 2 + 2, \times 2.5 + 2.5, \times 3 + 3$

65. (a) The given number series is based on the following pattern:



Hence the number 1 is wrong and it should be replaced by 2.

66-70.

Vehicle	Day 1			Day 2		
	Time in hr	Distance in km	Speed in km/hr	Time in hr	Distance in km	Speed in km/hr
A	16	832	52	16	864	54
B	12	516	43	18	774	43
C	11	693	63	18	810	45
D	12	552	46	15	765	51
E	16	935	58.4	14	546	39
F	19	703	37	12	636	53

66. (d) Vehicle B.

67. (c) Speed of vehicle A on day 1 = 52 km/hr
Speed of vehicle C on day 1 = 63 km/hr
Difference = 63 - 52 = 11 km/hr

68. (e) Speed of vehicle can day 2 = 45 km/hr

$\Rightarrow \left(45 \times \frac{5}{18}\right) \text{ m/sec} = 12.5 \text{ m/sec}$

69. (e) Percentage

$= \frac{\text{Distance travelled by vehicle F on day 2}}{\text{Distance travelled by vehicle F on day 1}} \times 100$

$= \frac{636}{703} \times 100 \approx \frac{630}{700} \times 100 \approx 90\%$

70. (b) Speed of vehicle D on day 2 = 51
Speed of vehicle E on day 2 = 39

Required ratio = $\frac{51}{39} = \frac{17}{13}$ or 17:13

71. (a) Article purchased = ₹ 78350

Marked price = ₹ $\left(78350 \times \frac{130}{100}\right) = ₹ 101855$

After Discount Price of Article

$= ₹ \left(101855 \times \frac{80}{100}\right) = ₹ 81484$

$$\text{Profit Percentage} = \frac{\text{Profit}}{\text{Cost Price}} \times 100$$

$$\Rightarrow \frac{81484 - 78350}{81484} \times 100 = 3.8 \approx 4\%$$

72. (e) 9, 15, 27
 $9 - x, 15 - x, 27 - x$

$$\frac{15 - x}{9 - x} = \frac{27 - x}{15 - x}$$

$$\Rightarrow (15 - x)^2 = (27 - x)(9 - x)$$

$$\Rightarrow 225 + x^2 - 30x = 243 - 9x - 27x + x^2$$

$$\Rightarrow -30x + 9x + 27x = 243 - 225$$

$$\Rightarrow 6x = 18 \Rightarrow x = 3$$

73. (b) Required difference = $P \left(\frac{R}{100} \right)^2$

$$= 7300 \times \left(\frac{6}{100} \right)^2 = ₹ 26.28$$

74. (e) Let the numbers are $x, x + 1, x + 2$
 sum of three consecutive numbers = 2262
 $x + x + 1 + x + 2 = 2262$
 $3x + 3 = 2262$
 $3x = 2259$
 $x = 753$
 Number are 753, 754, 755
 $\therefore 41\%$ of 755 = 309.55

75. (d) No. of vowels in the word THERAPY = 2 i.e. E and A
 In such cases we treat the group of two vowels as one entity or one letter because they are supposed to always come together. Thus, the problem reduces to arranging 6 letters i.e. T, H, R, P, Y and EA in 6 vacant places.
 No. of ways 6 letters can be arranged in 6 places = $6!$
 $= 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$
 But the vowels can be arranged themselves in 2 different ways by interchanging their position. Hence, each of the above 720 arrangements can be written in 2 ways.
 \therefore Required no. of total arrangements when two vowels are together = $720 \times 2 = 1440$
 Total no. of arrangements of THERAPY = $7!$
 $= 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 5040$
 No. of arrangement when vowels do not come together = $5040 - 1440 = 3600$

76-80.

	Total number of Mobiles Sold	Total Number of Mobiles Sold of Company A	Total Number of Mobiles Sold of Company B
July	7650	4080	3570
August	9900	4400	5500
September	11250	6750	4500
October	3600	2100	1500
November	5400	2520	2880
December	7200	3150	4050

76. (c) Number of mobiles sold of company B in July = 3570
 Number of mobiles sold of company B in December = 4050

Required Ratio = $3570 : 4050 = 119 : 135$

77. (c) Total mobiles sold by company A during November = 2520
 Total mobiles sold by this company at discount = 35% of 2520 = 882
 Total mobiles sold by company A without discount = $2520 - 882 = 1638$
78. (d) Mobile phones sold of company B during October = 1500
 Total profit earned on the mobile phones = $₹(433 \times 1500) = ₹ 6,49,500$
79. (e) Number of mobile phones sold of company A during July = 4080
 Number of mobile phones sold by company A during December = 3150

Required percentage = $\frac{4080}{3150} \times 100 = 129.5 \approx 130\%$

80. (a) Mobile phones sold of company B during August = 5500
 Mobile phones sold of company B during September = 4500
 Total number of mobile phones = $5500 + 4500 = 10,000$
81. (c) Area of customer transaction room = $23m \times 29m = 667 \text{ sq.m}$
 Area of branch manager room = $13m \times 17m = 221 \text{ sq. m}$
 Area of Pantry room = $14m \times 13m = 182 \text{ sq. m}$
 Area of Server room = $21m \times 13m = 273 \text{ sq. m}$
 Area of locker room = $29m \times 21m = 609 \text{ sq. m}$
 Total cost of wooden flooring = $₹ [(170 \times (667 + 221))] = ₹ (888 \times 170)$
 Total cost of marble flooring = $₹ [(190 \times (182 + 273 + 609))] = ₹ (190 \times 1064)$
 Required Ratio = $888 \times 170 : 1064 \times 190 = 1887 : 2527$

82. (c) Area of 4 walls and ceiling of branch managers room = $2(lh + bh) + lb = 2[17 \times 12 + 13 \times 12] + 13 \times 17 = 941 \text{ sq. m}$
 Total cost of renovatin = $₹ 190 \times 941 = ₹ 178790$
83. (e) Total area of bank is 2000 sq. m
 Total area of bank to be renovated = 1952 sq. m
 Remaining Area = $2000 - 1952 = 48 \text{ sq. m}$
 Total cost Remaining Area to be carpeted at the rate of ₹ 110/sq. meter = $₹(48 \times 110) = ₹ 5280$

84. (b) percentage area of bank not to be renovated

$$\Rightarrow \frac{\text{Area bank not be renovated}}{\text{Total area of bank}} \Rightarrow \frac{48}{2000} \times 100 = 2.4\%$$

85. (a) Total cost of hall of customer transaction = $₹(170 \times 667) = ₹ 113,390$
 Total cost of Locker area = $₹(190 \times 609) = ₹ 115710$
 Total cost of customer transaction hall + locker area = $₹(113390 + 115710) = ₹ 229100$

86. (a) Let amount of B = ₹ x

B's Share without error = $\frac{\text{B's ratio}}{\text{Total ratio}} \times \text{Total Amount}$

$$x = \frac{3}{9} \times \text{Total Amount} \quad \dots(1)$$

B's share after error = $\frac{\text{B's new ratio}}{\text{Total new ratio}} \times \text{Total Amount}$

$$x - 40 = \frac{2}{14} \times \text{Total Amount} \quad \dots(2)$$

From equation (1) and (2)

$$3x = 7(x-40)$$

$$3x - 7x = -280$$

$$\therefore x = 70$$

$$\text{Total Amount} = 7(70 - 40) = ₹ 210$$

87. (c) By options
 (a) Either 12 or 13
 then ice-creams should not be given atleast 9. This can be rejected.
 (b) Either 11 or 12
 Ice-cream should be atleast 9. By this combination ice cream gets less than 9.
 (c) Either 10 or 11
 By giving cookies 10 or 11, we get all the possible condition fulfilled.
 (d) and (e), the ice-cream distribution can be more than cookies which violates our condition.
 \therefore option (c) is the write answer.

88. (c) ₹[(x for first 5 km) + 13 × remaining kms] = Total pay
 $₹x + ₹ 13 \times 182 = ₹ 2402$
 $x + 2366 = 2402$
 $x = ₹ 36$

89. (a) Let the even consecutive numbers are $2n-2, 2n, 2n+2$
 $(2n-2) \times (2n) \times (2n+2) = 4032 \dots(1)$
 Product of 1st even number third even number = 252
 Putting this in equation $\dots(1)$
 $252 \times 2n = 4032 \Rightarrow n = 8$
 Numbers are 14, 16, 18
 Five times of 2nd number is $5 \times 16 = 80$

90. (a) Let the 4 members are x_1, x_2, x_3 , daughter
 Sum of 4 members five years ago
 $= x_1 + x_2 + x_3 + \text{daughter} = 94$
 After 5 years,
 $x_1 + x_2 + x_3 + \text{daughter} = 114 \dots(1)$
 daughter + daughter in law = 92
 Daughter = 92 - daughter in law
 Put this eqn. $\dots(1)$
 $x_1 + x_2 + x_3 + 92 - \text{Daughter in law} = 114$
 $x_1 + x_2 + x_3 = 22 + \text{Daughter in law}$
 So, the required difference is 22 years.

91. (d) No. of ways of getting 2 white balls = ${}^{13}C_2$
 No. of ways of getting 2 black balls = 7C_2
 Probability of getting 2 same colour ball

$$= \frac{\text{Probability of 2 white balls or Probability of 2 Black balls}}{\text{Total number of balls drawn}}$$

$$\Rightarrow \frac{{}^{13}C_2 + {}^7C_2}{{}^{20}C_2} \Rightarrow \frac{\frac{13!}{2! \times 11!} + \frac{7!}{2! \times 5!}}{\frac{20!}{18! \times 2!}}$$

$$\Rightarrow \frac{\frac{13 \times 12 \times 11!}{2 \times 11!} + \frac{7 \times 6 \times 5!}{2 \times 5!}}{\frac{20 \times 19 \times 18!}{18! \times 2!}} = \frac{13 \times 12 + 7 \times 6}{20 \times 19}$$

$$\Rightarrow \frac{198}{380} = \frac{99}{190}$$

92. (b) Marks is subject B = 56% of 150 = 84

Total marks obtained = 54 % of Total marks

$$= \frac{54}{100} \times 450 \quad [\because \text{Maximum marks in each subject is 150}]$$

$$= 243$$

Total marks obtained = A + B + C

$$243 = 73 + 84 + X$$

$$X = 86$$

93. (d) Area of square = 1444 sq. meters

$$\text{Side of square} = \sqrt{1444} = 38 m$$

$$\text{Breadth of Rectangle} = \frac{1}{4} \times \text{side of square}$$

$$\Rightarrow \frac{1}{4} \times 38 = 9.5 m$$

Length of Rectangle $\Rightarrow 3 \times \text{breadth}$

$$\Rightarrow 3 \times 9.5 \Rightarrow 28.5 m$$

Area of Rectangle = 270.75 sq. m

Difference in area = 1444 - 270.75

$$\Rightarrow 1173.25 \text{ sq. mtr}$$

94. (e) A and B ratio is 4 : 7

$$\Rightarrow 4x + 7x = 73689$$

$$\Rightarrow 11x = 73689$$

$$\Rightarrow x = 6699$$

Share of A = ₹ 26796

Share of B = ₹ 46893

Difference = twice of share B - thrice of share A

$$= 2 \times 46893 - 3 \times 26796 = ₹ 13398$$

95. (d) $A + B$ 1 day's work = $\frac{1}{20} \dots(1)$

$$B + C \quad 1 \text{ day's work} = \frac{1}{30} \dots(2)$$

$$C + A \quad 1 \text{ day's work} = \frac{1}{40} \dots(3)$$

Adding eqn. (1), (2) and (3)

$$2(A + B + C) = \frac{1}{20} + \frac{1}{30} + \frac{1}{40}$$

$$2(A + B + C) = \frac{6 + 4 + 3}{120}$$

$$\Rightarrow A + B + C \quad 1 \text{ day work together} = \frac{13}{240}$$

A' Alone 1 day's work = (A + B + C) 12 day's work - (B + C) 1 day's work

$$A = \frac{13}{240} - \frac{1}{30} \Rightarrow \frac{13 - 8}{240} = \frac{5}{240}$$

Number of days taken by A = $\frac{240}{5}$ days

C' Alone 1 day's work = (A + B + C) 12 day's work - (A + B) 1 day's work

$$\Rightarrow \frac{13}{240} - \frac{1}{20} \Rightarrow \frac{13 - 12}{240} = \frac{1}{240}$$

Number of days taken by C = $\frac{240}{1}$ days

ENGLISH LANGUAGE

Required Ratio $\frac{240}{5} : \frac{240}{1}$

$\Rightarrow 1 : 5$

96. (d) Percentage increase = $\frac{2010 - 2009}{2009} \times 100$

= $\frac{700 - 550}{550} \times 100 = 27.2 \approx 27\%$

97. (b) Percent of production = $\frac{400}{550} \times 100 = 72.72 \approx 73\%$

98. (c)

Year	Production of B
2006	600
2007	700
2008	800
2009	600
2010	650
2011	700

= $\frac{600 + 700 + 800 + 600 + 650 + 700}{6} = 675$

99. (e) Total production of company A = 4050

Total sales of company A = 2750

Required ratio $\Rightarrow 4050 : 2750 = 81 : 55$

100. (c) Required ratio = production of B in the year 2006 :

Production of B in the year 2008

$\Rightarrow 600 : 800 \Rightarrow 3 : 4$

GENERAL AWARENESS

- | | | | |
|----------|----------|----------|----------|
| 101. (a) | 102. (b) | 103. (b) | 104. (a) |
| 105. (e) | 106. (d) | 107. (b) | 108. (c) |
| 109. (e) | 110. (c) | 111. (b) | 112. (a) |
| 113. (a) | 114. (d) | 115. (c) | 116. (d) |
| 117. (b) | 118. (e) | 119. (a) | 120. (c) |
| 121. (e) | 122. (d) | 123. (d) | 124. (b) |
| 125. (d) | 126. (b) | 127. (a) | 128. (e) |
| 129. (e) | 130. (e) | 131. (d) | 132. (a) |
| 133. (d) | 134. (c) | 135. (b) | 136. (c) |
| 137. (a) | 138. (d) | 139. (a) | 140. (c) |
| 141. (b) | 142. (c) | 143. (a) | 144. (e) |
| 145. (d) | 146. (e) | 147. (b) | 148. (d) |
| 149. (c) | 150. (d) | | |

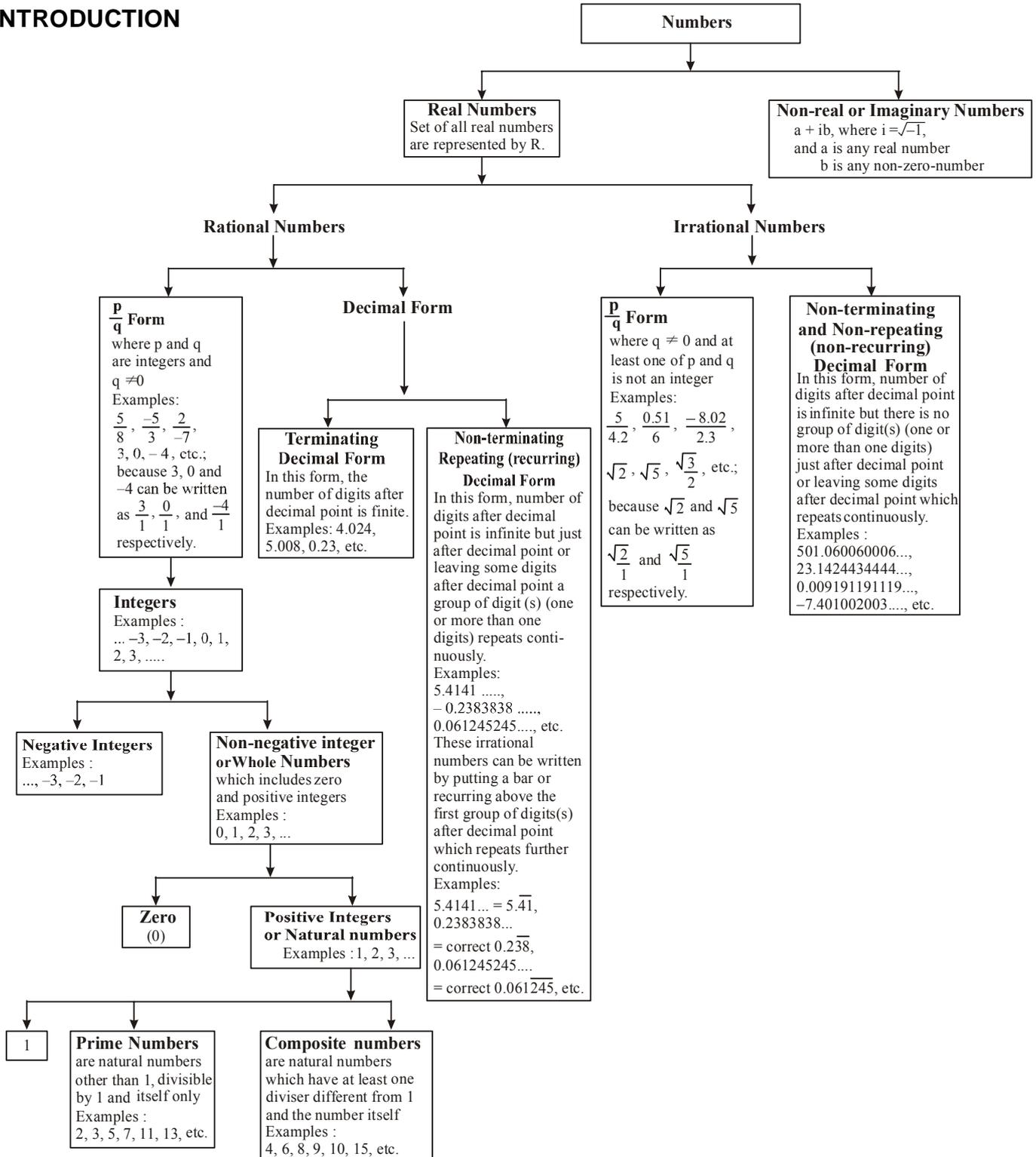
COMPUTER KNOWLEDGE

- | | | | |
|----------|----------|----------|----------|
| 151. (b) | 152. (a) | 153. (c) | 154. (a) |
| 155. (b) | 156. (a) | 157. (a) | 158. (c) |
| 159. (e) | 160. (a) | 161. (e) | 162. (c) |
| 163. (c) | 164. (c) | 165. (a) | 166. (d) |
| 167. (e) | 168. (e) | 169. (e) | 170. (a) |
| 171. (d) | 172. (a) | 173. (b) | 174. (d) |
| 175. (a) | 176. (d) | 177. (b) | 178. (d) |
| 179. (a) | 180. (b) | 181. (d) | 182. (e) |
| 183. (c) | 184. (c) | 185. (b) | 186. (a) |
| 187. (e) | 188. (b) | 189. (c) | 190. (d) |
| 191. (e) | 192. (b) | 193. (b) | 194. (e) |
| 195. (a) | 196. (c) | 197. (d) | 198. (a) |
| 199. (b) | 200. (d) | | |

201. (e) All are true.
202. (c) Only (A) and (C).
203. (d) There is a chance that in 2012 the economy would be better than what has been forecast.
204. (d) The current Economic Scenario.
205. (a) Only (B).
206. (a) These will bring about only minor growth.
207. (e) None is true.
208. (e) All (A), (B) and (C).
209. (a) The meaning of word Draw (verb) as used in the passage is : Influence.
Hence, the words Draw and Entice are synonymous.
210. (a) The meaning of clock (noun) as used in the passage is : time keeping device.
Hence, the words Clock and Watch are synonymous.
211. (d) The meaning of Abate (verb) as used in the passage is : to become less.
Hence, the words Abate and Lessen are synonymous.
212. (b) The meaning of emerging (verb) as used in the passage is : come into sight.
Hence, the words Emerging and Developing are synonymous.
213. (c) The meaning of Myraid (adjective) as used in the passage is : numerous.
Hence, the words myraid and few are antonymous.
214. (a) The meaning of Tepid (Adjective) as used in the passage is warm.
Hence, the words tepid and moderate are antonymous.
215. (a) The meaning of Myth as used in the passage is : fictional.
- 216-220. F A E B C D
216. (d) D
217. (e) E
218. (c) C
219. (a) F
220. (a) A
221. (a)
222. (b)
223. (c)
224. (b)
225. (c)
226. (e) No error
227. (d) Here, levied additional monthly charges on consumers is used.
228. (a) Here, Despite curfew is used.
229. (d) Here, Has been doubled is used.
230. (a)
231. (b)
232. (c)
233. (c) Here, arise when they are not is used.
234. (e) No error
235. (b)
236. (a) runs out.
237. (c) rages on.
238. (b) the first to switch off.
239. (a) not just because.
240. (d) in support of.
241. (b)
242. (e)
243. (b)
244. (a)
245. (b)
246. (c)
247. (d)
248. (a)
249. (e)
250. (d)

Number System & Simplification

INTRODUCTION





REMEMBER

- ★ The ten symbols 0, 1, 2, 3, 4, 5, 6, 7, 8, 9 are called digits.
- ★ 1 is neither prime nor composite.
- ★ 1 is an odd integer.
- ★ 0 is neither positive nor negative.
- ★ 0 is an even integer.
- ★ 2 is prime & even both.
- ★ All prime numbers (except 2) are odd.

Natural Numbers :

These are the numbers (1, 2, 3, etc.) that are used for counting. It is denoted by N.
There are infinite natural numbers and the smallest natural number is one (1).

Even numbers :

Natural numbers which are divisible by 2 are even numbers. It is denoted by E.
 $E = 2, 4, 6, 8, \dots$
Smallest even number is 2. There is no largest even number.

Odd numbers :

Natural numbers which are not divisible by 2 are odd numbers. It is denoted by O.
 $O = 1, 3, 5, 7, \dots$
Smallest odd number is 1.
There is no largest odd number.

↗ Based on divisibility, there could be two types of natural numbers : Prime and Composite.

Prime Numbers :

Natural numbers which have exactly two factors, i.e., 1 and the number itself are called prime numbers.
The lowest prime number is 2.
2 is also the only even prime number.

Composite Numbers :

It is a natural number that has atleast one divisor different from unity and itself.
Every composite number can be factorised into its prime factors.
For Example : $24 = 2 \times 2 \times 2 \times 3$. Hence, 24 is a composite number.
The smallest composite number is 4.

Twin-prime Numbers:

Pairs of such prime numbers whose difference is 2.

Example : 3 and 5, 11 and 13, 17 and 19.

How to check whether a given number is prime or not ?

- Steps : (i) Find approximate square root of the given number.
(ii) Divide the given number by every prime number less than the approximate square root.
(iii) If the given number is exactly divisible by atleast one of the prime numbers, the number is a composite number otherwise a prime number.

Example : Is 401 a prime number?

Sol. Approximate square root of 401 is 20.

Prime numbers less than 20 are 2, 3, 5, 7, 11, 13, 17 and 19
401 is not divisible by 2, 3, 5, 7, 11, 13, 17 or 19.
 \therefore 401 is a prime number.

(Hint : Next prime number after 19 and 23, which is greater than 20, so we need not check further.)

Co-prime Numbers : Co-prime numbers are those numbers which are prime to each other i.e., they don't have any common factor other than 1.

Since these numbers do not have any common factor, their HCF is 1 and their LCM is equal to product of the numbers.

Note : Co-prime numbers can be prime or composite numbers. Any two prime numbers are always co-prime numbers.

Example 1 : 3 and 5 : Both numbers are prime numbers.

Example 2 : 8 and 15 : Both numbers are composite numbers but they are prime to each other i.e., they don't have any common factor.

Face value and Place value :

Face Value is absolute value of a digit in a number.

Place Value (or Local Value) is value of a digit in relation to its position in the number.

Example : Face value and Place value of 9 in 14921 is 9 and 900 respectively.

Whole Numbers :

The natural numbers along with zero (0), form the system of whole numbers.

It is denoted by W.

There is no largest whole number and

The smallest whole number is 0.

Integers :

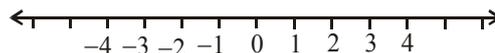
The number system consisting of natural numbers, their negative and zero is called integers.

It is denoted by Z or I.

The smallest and the largest integers cannot be determined.

The Number Line :

The number line is a straight line between negative infinity on the left to positive infinity on the right.



Rational numbers : Any number that can be put in the form

of $\frac{p}{q}$, where p and q are integers and $q \neq 0$, is called a

rational number.

- It is denoted by Q.
- Every integer is a rational number.

- Zero (0) is also a rational number. The smallest and largest rational numbers cannot be determined. Every fraction (and decimal fraction) is a rational number.

$$Q = \frac{p \text{ (Numerator)}}{q \text{ (Denominator)}}$$

 **REMEMBER**

- ★ If x and y are two rational numbers, then $\frac{x+y}{2}$ is also a rational number and its value lies between the given two rational numbers x and y .
- ★ An infinite number of rational numbers can be determined between any two rational numbers.

EXAMPLE 1. Find three rational numbers between 3 and 5.

Sol. 1st rational number = $\frac{3+5}{2} = \frac{8}{2} = 4$

2nd rational number (i.e., between 3 and 4)

$$= \frac{3+4}{2} = \frac{7}{2}$$

3rd rational number (i.e., between 4 and 5)

$$= \frac{4+5}{2} = \frac{9}{2}$$

Irrational numbers : The numbers which are not rational or which cannot be put in the form of $\frac{p}{q}$, where p and q are integers and $q \neq 0$, is called irrational number.

It is denoted by Q' or Q^c .

$\sqrt{2}, \sqrt{3}, \sqrt{5}, 2 + \sqrt{3}, 3 - \sqrt{5}, 3\sqrt{3}$ are irrational numbers.

NOTE :

(i) Every positive irrational number has a negative irrational number corresponding to it.

(ii) $\sqrt{2} + \sqrt{3} \neq \sqrt{5}$

$$\sqrt{5} - \sqrt{3} \neq \sqrt{2}$$

$$\sqrt{3} \times \sqrt{2} = \sqrt{3 \times 2} = \sqrt{6}$$

$$\sqrt{6} \div \sqrt{2} = \sqrt{\frac{6}{2}} = \sqrt{3}$$

(iii) Some times, product of two irrational numbers is a rational number.

For example : $\sqrt{2} \times \sqrt{2} = \sqrt{2 \times 2} = 2$

$$(2 + \sqrt{3}) \times (2 - \sqrt{3}) = (2)^2 - (\sqrt{3})^2 = 4 - 3 = 1$$

(iv) π is an irrational number. π : approximately equal

$$\text{to } \frac{22}{7} \text{ or } 3.14.$$

Real Numbers :

All numbers that can be represented on the number line are called real numbers.

It is denoted by R .

R^+ : denotes the set of all positive real numbers and

R^- : denotes the set of negative real numbers.

Both rational and irrational numbers can be represented in number line.

Every real number is either rational or irrational.

EXAMPLE 2. Find an irrational number between $\frac{1}{7}$ and $\frac{2}{7}$.

Sol. We find by dividing, $\frac{1}{7} = 0.\overline{142857}$ and $\frac{2}{7} = 0.\overline{285714}$.

To find an irrational number between $\frac{1}{7}$ and $\frac{2}{7}$, we find a number which is non-terminating non-recurring lying between them.

So, 0.1501500150000... is an irrational number between $\frac{1}{7}$

and $\frac{2}{7}$.

FRACTIONS

A fraction is a quantity which expresses a part of the whole.

$\text{Fraction} = \frac{\text{Numerator}}{\text{Denominator}}$

EXAMPLE 3. Write a fraction whose numerator is $2^2 + 1$ and denominator is $3^2 - 1$.

Sol. Numerator = $2^2 + 1 = 4 + 1 = 5$

Denominator = $3^2 - 1 = 9 - 1 = 8$

$$\therefore \text{Fraction} = \frac{\text{Numerator}}{\text{Denominator}} = \frac{5}{8}$$

TYPES OF FRACTIONS :

1. **Proper fraction :** If numerator is less than its denominator, then it is a proper fraction.

For example : $\frac{2}{5}, \frac{6}{18}$

2. **Improper fraction :** If numerator is greater than or equal to its denominator, then it is a improper fraction.

For example : $\frac{5}{2}, \frac{18}{7}, \frac{13}{13}$

NOTE : If in a fraction, its numerator and denominator are of equal value then fraction is equal to unity i.e. 1.

- 3. Mixed fraction :** It consists of an integer and a proper fraction.

For example : $1\frac{1}{2}, 3\frac{2}{3}, 7\frac{5}{9}$

NOTE : Mixed fraction can always be changed into improper fraction and vice versa.

For example : $7\frac{5}{9} = \frac{7 \times 9 + 5}{9} = \frac{63 + 5}{9} = \frac{68}{9}$

and $\frac{19}{2} = \frac{9 \times 2 + 1}{2} = 9 + \frac{1}{2} = 9\frac{1}{2}$

- 4. Equivalent fractions or Equal fractions :** Fractions with same value.

For example : $\frac{2}{3}, \frac{4}{6}, \frac{6}{9}, \frac{8}{12} \left(= \frac{2}{3} \right)$.

NOTE : Value of fraction is not changed by multiplying or dividing both the numerator or denominator by the same number.

For example :

$$(i) \frac{2}{5} = \frac{2 \times 5}{5 \times 5} = \frac{10}{25} \quad \text{So, } \frac{2}{5} = \frac{10}{25}$$

$$(ii) \frac{36}{16} = \frac{36 \div 4}{16 \div 4} = \frac{9}{4} \quad \text{So, } \frac{36}{16} = \frac{9}{4}$$

- 5. Like fractions:** Fractions with same denominators.

For example : $\frac{2}{7}, \frac{3}{7}, \frac{9}{7}, \frac{11}{7}$

- 6. Unlike fractions :** Fractions with different denominators.

For example : $\frac{2}{5}, \frac{4}{7}, \frac{9}{8}, \frac{9}{2}$

NOTE : Unlike fractions can be converted into like fractions.

For example : $\frac{3}{5}$ and $\frac{4}{7}$

$$\frac{3}{5} \times \frac{7}{7} = \frac{21}{35} \quad \text{and} \quad \frac{4}{7} \times \frac{5}{5} = \frac{20}{35}$$

- 7. Simple fraction :** Numerator and denominator are integers.

For example : $\frac{3}{7}$ and $\frac{2}{5}$.

- 8. Complex fraction :** Numerator or denominator or both are fractional numbers.

For example : $\frac{2}{\frac{5}{7}}, \frac{2\frac{1}{3}}{5\frac{2}{3}}, 2 + \frac{1 + \frac{2}{7}}{3}$

- 9. Decimal fraction :** Denominator with the powers of 10.

For example : $\frac{2}{10} = (0.2), \frac{9}{100} = (0.09)$

- 10. Comparison of Fractions**

Comparison of two fraction can be easily understand by the following example:

To compare two fraction $\frac{3}{5}$ and $\frac{7}{9}$, multiply each fraction by the LCM (45) of their denominators 5 and 9.

$$\frac{3}{5} \times 45 = 3 \times 9 = 27$$

$$\frac{7}{9} \times 45 = 7 \times 5 = 35$$

Since $27 < 35$

$$\therefore \frac{3}{5} < \frac{7}{9}$$

SHORT CUT METHOD

$$\frac{3}{5} \begin{array}{l} \swarrow \searrow \\ \searrow \swarrow \end{array} \frac{7}{9}$$

$27 < 35$

[Write the each product on their numerator side]

$$\therefore \frac{3}{5} < \frac{7}{9}$$

EXAMPLE  **4. Write 2.73 as a fraction.**

Sol. $2.73 = \frac{273}{100}$

EXAMPLE  **5. Express $\frac{2}{5}$ as a decimal fraction.**

Sol. $\frac{2}{5} = \frac{2 \times 2}{5 \times 2} = \frac{4}{10}$

EXAMPLE  **6. After doing $\frac{3}{5}$ of the Biology homework on Monday night, Sanjay did $\frac{1}{3}$ of the remaining homework on Tuesday night. What fraction of the original homework would Sanjay have to do on Wednesday night to complete the Biology assignment ?**

(a) $\frac{1}{15}$

(b) $\frac{2}{15}$

(c) $\frac{4}{15}$

(d) $\frac{2}{5}$

Sol. (c) Remaining homework on Monday night

$$= 1 - \frac{3}{5} = \frac{2}{5}$$

Work done on Tuesday night

$$= \frac{1}{3} \text{ of } \frac{2}{5} = \frac{2}{15}$$

Remaining homework to complete the biology

$$\text{assignment} = \frac{2}{5} - \frac{2}{15} = \frac{6-2}{15} = \frac{4}{15}$$

ADDITION OF MIXED FRACTIONS

You can easily understand the addition of mixed fractions by the following example:

$$1\frac{3}{5} + 1\frac{8}{9} + 2\frac{4}{9} = \frac{8}{5} + \frac{17}{9} + \frac{14}{9}$$

$$= \frac{72 + 85 + 126}{45} = \frac{283}{45} = 6\frac{23}{45}$$

SHORT CUT METHOD

$$1\frac{3}{5} + 1\frac{8}{9} + 2\frac{4}{9} = (1+1+2) + \left(\frac{3}{5} + \frac{8}{9} + \frac{4}{9}\right)$$

$$= 4 + \frac{27 + 40 + 36}{45}$$

$$= 4 + \frac{103}{45} = 4 + 2\frac{13}{45} = 6\frac{13}{45}$$

Rounding off (Approximation) of Decimals :

There are some decimals in which numbers are found upto large number of decimal places.

For example : 3.4578, 21.358940789.

But many times we require decimal numbers upto a certain number of decimal places. Therefore,

If the digit of the decimal place is five or more than five, then the digit in the preceding decimal place is increased by one and if the digit in the last place is less than five, then the digit in the precedence place remains unchanged.

EXAMPLE 7.

- (a) Write 21.3751 upto two places of decimal.
- (b) Write 3.27645 upto three places of decimal.

Sol. (a) 21.3751 = 21.38
 (b) 3.27645 = 3.276

CONVERSION OF RATIONAL NUMBER OF THE FORM NON-TERMINATING RECURRING DECIMAL INTO THE RATIONAL NUMBER OF

THE FORM $\frac{p}{q}$

First write the non-terminating repeating decimal number in recurring form i.e., write

64.20132132132..... as $64.\overline{20132}$

Then using formula given below we find the required $\frac{p}{q}$ form of the given number.

Rational number in the form $\frac{p}{q}$

$$= \frac{\left[\begin{array}{l} \text{Complete number neglecting} \\ \text{the decimal and bar over} \\ \text{repeating digit (s)} \end{array} \right] - \left[\begin{array}{l} \text{Non-recurring part of} \\ \text{the number neglecting} \\ \text{the decimal} \end{array} \right]}{m \text{ times } 9 \text{ followed by } n \text{ times } 0}$$

where m = number of recurring digits in decimal part
 and n = number of non-recurring digits in decimals part

$$\text{Thus, } \frac{p}{q} \text{ form of } 64.\overline{20132} = \frac{6420132 - 6420}{99900}$$

$$= \frac{6413712}{99900} = \frac{534476}{8325}$$

In short; $0.\overline{a} = \frac{a}{9}, 0.\overline{ab} = \frac{ab}{99}, 0.\overline{abc} = \frac{abc}{999}$ etc. and

$$0.\overline{a\overline{b}} = \frac{ab - a}{90}, 0.\overline{abc\overline{d}} = \frac{abcd - a}{990}, 0.\overline{abc\overline{de}} = \frac{abcde - abc}{900},$$

$$0.\overline{abcd\overline{e}} = \frac{abcd - ab}{9900}, ab.\overline{cde} = \frac{abcde - abc}{990}, \text{ etc.}$$

EXAMPLE 8. Convert $2.\overline{45102}$ in the $\frac{p}{q}$ form of rational number.

$$\text{Sol. Required } \frac{p}{q} \text{ form} = \frac{246102 - 2}{99999} = \frac{246100}{99999}$$

EXAMPLE 9. Convert $0.1\overline{673206}$ in the $\frac{p}{q}$ form of rational number.

$$\text{Sol. Required } \frac{p}{q} \text{ form} = \frac{1673206 - 167}{9999000} = \frac{1673039}{9999000}$$

EXAMPLE 10. Convert $31.0\overline{26415555} \dots$ into $\frac{p}{q}$ form of rational number.

Sol. First write 31.026415555... as $31.0\overline{26415}$

$$\begin{aligned} \text{Now required } \frac{p}{q} \text{ form} &= \frac{31026415 - 3102641}{900000} = \frac{27923774}{900000} \\ &= \frac{13961887}{450000} \end{aligned}$$

PROPERTIES OF OPERATIONS :

The following properties of addition, subtraction and multiplication are valid for real numbers a , b and c .

- (a) Commutative property of addition :
 $a + b = b + a$
- (b) Associative property of addition :
 $(a + b) + c = a + (b + c)$
- (c) Commutative property of multiplication:
 $a \times b = b \times a$
- (d) Associative property of multiplication :
 $(a \times b) \times c = a \times (b \times c)$
- (e) Distributive property of multiplication with respect to addition :
 $(a + b) \times c = a \times c + b \times c$

DIVISIBILITY RULES**Divisibility by 2 :**

A number is divisible by 2 if its unit's digit is even or 0.

Divisibility by 3 :

A number is divisible by 3 if the sum of its digits are divisible by 3.

Divisibility by 4 :

A number is divisible by 4 if the last 2 digits are divisible by 4, or if the last two digits are 0's.

Divisibility by 5 :

A number is divisible by 5 if its unit's digit is 5 or 0.

Divisibility by 6 :

A number is divisible by 6 if it is simultaneously divisible by 2 and 3.

Divisibility by 7 :

A number is divisible by 7 if unit's place digit is multiplied by 2 and subtracted from the remaining digits and the number obtained is divisible by 7.

For example,

$$1680 \boxed{7} = 1680 - 7 \times 2 = 1666$$

It is difficult to decide whether 1666 is divisible by 7 or not. In such cases, we continue the process again and again till it become easy to decide whether the number is divisible by 7 or not.

$$166 \boxed{6} \longrightarrow 166 - 6 \times 2 = 154$$

$$\text{Again } 15 \boxed{4} \longrightarrow 15 - 4 \times 2 = 7, \text{ divisible by } 7$$

Hence 16807 is divisible by 7.

Divisibility by 8 :

A number is divisible by 8 if the last 3 digits of the number are divisible by 8, or if the last three digits of a number are zeros.

Divisibility by 9 :

A number is divisible by 9 if the sum of its digits is divisible by 9.

Divisibility by 10 :

A number is divisible by 10 if its unit's digit is 0.

Divisibility by 11 :

A number is divisible by 11 if the sum of digits at odd and even places are equal or differ by a number divisible by 11.

Divisibility by 12 :

A number is divisible by 12 if the number is divisible by both 4 and 3.

Divisibility by 13 :

A number is divisible by 13 if its unit's place digit is multiplied by 4 and added to the remaining digits and the number obtained is divisible by 13.

For example,

$$219 \boxed{7} \longrightarrow 219 + 7 \times 4 = 247$$

$$\text{Again } 24 \boxed{7} \longrightarrow 24 + 7 \times 4 = 52, \text{ divisible by } 13.$$

Hence 2197 is divisible by 13.

Divisibility by 14 :

A number is divisible by 14 if the number is divisible by both 2 and 7.

Divisibility by 15 :

A number is divisible by 15 if the number is divisible by both 3 and 5.

Divisibility by 16 :

A number is divisible by 16 if its last 4 digits is divisible by 16 or if the last four digits are zeros.

Divisibility by 17 :

A number is divisible by 17 if its unit's place digit is multiplied by 5 and subtracted from the remaining digits and the number obtained is divisible by 17.

For example,

$$491 \boxed{3} \longrightarrow 491 - 3 \times 5 = 476$$

$$\text{Again, } 47 \boxed{6} \longrightarrow 47 - 6 \times 8 = 17, \text{ divisible by } 17.$$

Hence 4913 is divisible by 17.

Divisibility by 18 :

A number is divisible by 18 if the number is divisible by both 2 and 9.

Divisibility by 19 :

A number is divisible by 19 if its unit's place digit is multiplied by 2 and added to the remaining digits and the number obtained is divisible by 19.

For example,

$$4873 \overline{)7} \longrightarrow 4873 + 7 \times 2 = 4887$$

$$488 \overline{)7} \longrightarrow 488 + 7 \times 2 = 502$$

$$50 \overline{)2} \longrightarrow 50 + 2 \times 2 = 54 \text{ not divisible by 19.}$$

Hence 48737 is not divisible by 19.

Properties of Divisibility

- (i) The product of 3 consecutive natural numbers is divisible by 6.
- (ii) The product of 3 consecutive natural numbers, the first of which is even, is divisible by 24.
- (iii) Difference between any number and the number obtained by writing the digits in reverse order is divisible by 9.
- (iv) Any number written in the form $(10^n - 1)$ is divisible by 3 and 9.
- (v) Any six-digits, twelve-digits, eighteen-digits or any such number with number of digits equal to multiple of 6, is divisible by each of 7, 11 and 13 if all of its digits are same. For example 666666, 888888, 333333333333 are all divisible by 7, 11 and 13.
- (vi) Any number in the form abcabc (a, b, c are three different digits) is divisible by 1001.
- (vii) (a) $(a^n - b^n)$ is divisible both by $(a + b)$ and $(a - b)$, when n is even.
(b) $(a^n - b^n)$ is divisible only by $(a - b)$, when n is odd.

EXAMPLE 11. Without actual division, find which of the following numbers are divisible by 2, 3, 4, 5, 7, 9, 10, 11 :

- (i) 36324 (ii) 2211
- (iii) 87120 (iv) 32625

Sol. (i) 36324

It is divisible by 2 because 4 (unit's digit) is divisible by 2. It is divisible by 3 because $3 + 6 + 3 + 2 + 4 = 18$ is divisible by 3. It is divisible by 4 because 24 is divisible by 4.

It is not divisible by 5.

It is not divisible by 7.

It is divisible by 9 because $3 + 6 + 3 + 2 + 4 = 18$ is divisible by 9.

It is not divisible by 10.

It is not divisible by 11.

(ii) 2211

It is not divisible by 2.

It is divisible by 3 because $2 + 2 + 1 + 1 = 6$ is divisible by 3.

It is not divisible by 4, 5, 7, 8, 10.

It is divisible by 11 because $2211 \rightarrow (2 + 1) - (2 + 1) = 3 - 3 = 0$.

(iii) 87120

It is divisible by 2 because its unit's place digit is 0.

It is divisible by 3 because $8 + 7 + 1 + 2 + 0 = 18$ is divisible by 3.

It is divisible by 4 because 20 is divisible by 4.

It is divisible by 5 because its unit's place digit is 0.

It is not divisible by 7.

It is divisible by 9 because $8 + 7 + 1 + 2 + 0 = 18$ is divisible by 9.

It is divisible by 10 because its unit's place digit is 0.

It is divisible by 11 because $87120 \rightarrow (8 + 1 + 0) - (7 + 2) = 9 - 9 = 0$.

EXAMPLE 12. Is 473312 divisible by 7?

Sol. $47331 - 2 \times 2 = 47327$

$$4732 - 2 \times 7 = 4718$$

$$471 - 2 \times 8 = 455$$

$$45 - 2 \times 5 = 35$$

35 is divisible by 7, therefore, 473312 is divisible by 7.

EXAMPLE 13. What is the value of M and N respectively if $M39048458N$ is divisible by 8 and 11, where M and N are single digit integers?

(a) 7, 4 (b) 8, 6

(c) 6, 4 (d) 3, 2

Sol. (c) A number is divisible by 8 if the number formed by the last three digits is divisible by 8.

i.e., $58N$ is divisible by 8.

Clearly, $N = 4$

Again, a number is divisible by 11 if the difference between the sum of digits at even places and sum of digits at the odd places is either 0 or is divisible by 11.

$$\text{i.e. } (M + 9 + 4 + 4 + 8) - (3 + 0 + 8 + 5 + N)$$

$$= M + 25 - (16 + N)$$

$$= M - N + 9 \text{ must be zero or it must be divisible by 11}$$

$$\text{i.e. } M - N = 2$$

$$\Rightarrow M = 2 + 4 = 6$$

Hence, $M = 6, N = 4$

EXAMPLE 14. The highest power of 9 dividing $99!$ completely, is:

(a) 20 (b) 24

(c) 12 (d) 11

Sol. (c) $99! = 99 \times 98 \times 97 \times 96 \times 95 \times 94 \dots \times 1$

To find the highest power of 9 that divides this product, we have to find the sum of powers of all 9's in the expression.

In the nos. from 1 to 99, all the nos. divisible by 9 are 9, 18, 27, 36, 45, 54, 63, 72, 81 (9×9), 90, 99, i.e. 12 in no.

This clearly shows that $99!$ will be completely divisible by 9^{12} .

DIVISION ALGORITHM :

$$\text{Dividend} = (\text{Divisor} \times \text{Quotient}) + \text{Remainder}$$

where, Dividend = The number which is being divided

Divisor = The number which performs the division process

All factors (or divisor) of 8 are 1, 2, 4 and 8.

1, 2 and 4 divides each of the three given numbers 12, 20 and 32. Out of 1, 2 and 4; 4 is the highest number. Hence, HCF = 4.

LEAST COMMON MULTIPLE (LCM)

The least common multiple (LCM) of two or more numbers is the lowest number which is divisible by all the given numbers.

Methods to Find The LCM

There are two methods to find the LCM.

(i) Prime Factorization Method

After performing the prime factorization of all the given numbers, we find the highest index of all the prime numbers among the given numbers. The LCM is the product of all these prime numbers with their respective highest indices because LCM must be divisible by all of the given numbers.

EXAMPLE 20. Find the LCM of 72, 288 and 1080.

Sol. $72 = 2^3 \times 3^2$
 $288 = 2^5 \times 3^2$
 $1080 = 2^3 \times 3^3 \times 5$
 Hence, $LCM = 2^5 \times 3^3 \times 5^1 = 4320$

(ii) Division Method

To find the LCM of 5, 72, 196 and 240, we use the division method in the following way:

Check whether any prime number that divides at least two of all the given numbers. If there is no such prime number, then the product of all these numbers is the required LCM, otherwise find the smallest prime number that divides at least two of the given numbers. Here, we see that smallest prime number that divides at least two given numbers is 2.

Divide those numbers out of the given numbers by 2 which are divisible by 2 and write the quotient below it. The given number(s) that are not divisible by 2 write as it is below it and repeat this step till you do not find at least two numbers that are not divisible by any prime number.

2	5, 72, 196, 240
2	5, 36, 98, 120
2	5, 18, 49, 60
3	5, 9, 49, 30
5	5, 3, 49, 10
	1, 3, 49, 2

After that find the product of all divisors and the quotient left at the end of the division. This product is the required LCM.

Hence, LCM of the given numbers = product of all divisors and the quotient left at the end.
 $= 2 \times 2 \times 2 \times 3 \times 5 \times 3 \times 49 \times 2 = 35280$

Shortcut Approach

Using idea of co-prime, you can find the LCM by the following shortcut method:

LCM of 9, 10, 15 and 36 can be written directly as $9 \times 10 \times 2$.

The logical thinking that behind it is as follows:

Step 1: If you can see a set of 2 or more co-prime numbers in the set of numbers of which you are finding the LCM, write them down by multiplying them.

In the above situation, since we see that 9 and 10 are co-prime to each other, we start off writing the LCM by writing 9×10 as the first step.

Step 2: For each of the other numbers, consider what prime factor(s) of it is/are not present in the LCM (if factorised into primes) taken in step 1. In case you see some prime factors of each of the other given numbers separately are not present in the LCM (if factorised into primes) taken in step 1, such prime factors will be multiplied in the LCM taken in step 1.

Prime factorisation of $9 \times 10 = 3 \times 3 \times 2 \times 5$

Prime factorisation of $15 = 3 \times 5$

Prime factorisation of $36 = 2 \times 2 \times 3 \times 3$

Here we see that both prime factors of 15 are present in the prime factorisation of 9×10 but one prime factor 2 of 36 is not present in the LCM taken in step 1. So to find the LCM of 9, 10, 15 and 36; we multiply the LCM taken in step 1 by 2.

Thus required $LCM = 9 \times 10 \times 2 = 180$

RULE FOR FINDING HCF AND LCM OF FRACTIONS

(I) HCF of two or more fractions

$$= \frac{\text{HCF of numerator of all fractions}}{\text{LCM of denominator of all fractions}}$$

(II) LCM of two or more fractions

$$= \frac{\text{LCM of numerator of all fractions}}{\text{HCF of denominator of all fractions}}$$

EXAMPLE 21. Find the HCF and LCM of.

Sol. $HCF = \frac{\text{HCF of } 4, 6, 3}{\text{LCM of } 5, 11, 5} = \frac{1}{55}$

$$LCM = \frac{\text{LCM of } 4, 6, 3}{\text{HCF of } 5, 11, 5} = \frac{12}{1} = 12$$

SIMPLIFICATION

FUNDAMENTAL OPERATIONS :

1. Addition :

- (a) Sum of two positive numbers is a positive number.
 For example : $(+5) + (+2) = +7$

Sol. (d) Let the missing figure in the expression be x .

$$\frac{16}{7} \times \frac{16}{7} - \frac{x}{7} \times \frac{9}{7} + \frac{9}{7} \times \frac{9}{7} = 1$$

$$\Rightarrow 16 \times 16 - 9x + 9 \times 9 = 7 \times 7$$

$$\Rightarrow 9x = 16 \times 16 + 9 \times 9 - 7 \times 7$$

$$= 256 + 81 - 49 = 288$$

$$\Rightarrow x = \frac{288}{9} = 32$$

POWERS OR EXPONENTS

When a number is multiplied by itself, it gives the square of the number. i.e., $a \times a = a^2$ (Example $5 \times 5 = 5^2$)

If the same number is multiplied by itself twice we get the cube of the number i.e., $a \times a \times a = a^3$ (Example $4 \times 4 \times 4 = 4^3$)

In the same way $a \times a \times a \times a \times a = a^5$
and $a \times a \times a \times \dots$ upto n times $= a^n$

There are five basic rules of powers which you should know:

If a and b are any two real numbers and m and n are positive integers, then

(i) $a^m \times a^n = a^{m+n}$ (Example: $5^3 \times 5^4 = 5^{3+4} = 5^7$)

(ii) $\frac{a^m}{a^n} = a^{m-n}$, if $m > n$ (Example: $\frac{6^5}{6^2} = 6^{5-2} = 6^3$)

$\frac{a^m}{a^n} = \frac{1}{a^{n-m}}$, if $m < n$ (Example: $\frac{4^3}{4^8} = \frac{1}{4^{8-3}} = \frac{1}{4^5}$)

and $\frac{a^m}{a^n} = a^0 = 1$, if $m = n$ (Example: $\frac{3^4}{3^4} = 3^{4-4} = 3^0 = 1$)

(iii) $(a^m)^n = a^{mn} = (a^n)^m$ (Example: $(6^2)^4 = 6^{2 \times 4} = 6^8 = (6^4)^2$)

(iv) (a) $(ab)^n = a^n \cdot b^n$ (Example: $(6 \times 4)^3 = 6^3 \times 4^3$)

(b) $\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$, $b \neq 0$ (Example: $\left(\frac{5}{3}\right)^4 = \frac{5^4}{3^4}$)

(v) $a^{-n} = \frac{1}{a^n}$ (Example: $5^{-3} = \frac{1}{5^3}$)

(vi) For any real number a , $a^0 = 1$

ALGEBRIC IDENTITIES

Standard Identities

- (i) $(a + b)^2 = a^2 + 2ab + b^2$
- (ii) $(a - b)^2 = a^2 - 2ab + b^2$
- (iii) $a^2 - b^2 = (a + b)(a - b)$
- (iv) $(x + a)(x + b) = x^2 + (a + b)x + ab$
- (v) $(a + b + c)^2 = a^2 + b^2 + c^2 + 2ab + 2bc + 2ca$

Some More Identities

We have dealt with identities involving squares. Now we will see how to handle identities involving cubes.

- (i) $(a + b)^3 = a^3 + b^3 + 3a^2b + 3ab^2$
 $\Rightarrow (a + b)^3 = a^3 + b^3 + 3ab(a + b)$
- (ii) $(a - b)^3 = a^3 - b^3 - 3a^2b + 3ab^2$
 $\Rightarrow (a - b)^3 = a^3 - b^3 - 3ab(a - b)$
- (iii) $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$
- (iv) $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$
- (v) $a^3 + b^3 + c^3 - 3abc$
 $= (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$
If $a + b + c = 0$ then $a^3 + b^3 + c^3 = 3abc$

EXERCISE

Directions (Qs. 1 - 50): What will come in place of the question mark (?) in the following questions?

1. $16.02 \times 0.001 = ?$
(a) 0.1602 (b) 0.001602
(c) 1.6021 (d) 0.01602
(e) None of these
2. $\frac{?}{50} = \frac{60.5}{?}$
(a) 55 (b) 1512.5
(c) 52.5 (d) 57.5
(e) None of these
3. $5400 \div 9 \div 3 = ?$
(a) 1800 (b) 900
(c) 450 (d) 300
(e) None of these

4. $10^{150} \div 10^{146} = ?$
(a) 10^6 (b) 100000
(c) 1000 (d) 10000
(e) None of these
5. $? \% \text{ of } 360 = 129.6$
(a) 277 (b) 36
(c) 64 (d) 72
(e) None of these
6. $8265 + 2736 + 41320 = ?$
(a) 51321 (b) 52231
(c) 52321 (d) 52311
(e) None of these
7. $\frac{(7 \times ?)^2}{49} = \sqrt{81}$
(a) 9 (b) 2
(c) 3 (d) 4
(e) None of these

8. $\sqrt{625.04} \times 16.96 + 136.001 \div 17 = ?$
 (a) 418 (b) 441
 (c) 425 (d) 433
 (e) 449
9. $48.25 \times 150 + 32 \times 16.5 - 125 \times 10.5 = ?$
 (a) 6200 (b) 7500
 (c) 6453 (d) 7100
 (e) 6700
10. $36.0001 \div 5.9998 \times \sqrt{?} = 108.0005$
 (a) 325 (b) 316
 (c) 256 (d) 16
 (e) 18
11. $138.009 + 341.981 - 146.305 = 123.6 + ?$
 (a) 210.85 (b) 120.85
 (c) 220.085 (d) 120.085
 (e) None of these
12. $197 \times ? + 16^2 = 2620$
 (a) 22 (b) 12
 (c) 14 (d) 16
 (e) None of these
13. $287.532 + 1894.029 - 657.48 = 743.095 + ?$
 (a) 870 (b) 790
 (c) 780 (d) 770
 (e) 890
14. $27\frac{3}{11} + 118\frac{2}{5} - 32\frac{5}{22} = 11\frac{6}{11} + ?$
 (a) $113\frac{9}{10}$ (b) $111\frac{9}{11}$
 (c) $90\frac{9}{10}$ (d) $101\frac{9}{11}$
 (e) None of these
15. $\frac{21}{25} \div \frac{9}{20} \times \frac{5}{12} \div \frac{10}{17} = ?$
 (a) $7\frac{77}{125}$ (b) $11\frac{9}{10}$
 (c) $\frac{119}{450}$ (d) $1\frac{29}{90}$
 (e) None of these
16. $69012 - 20167 + (51246 \div 6) = ?$
 (a) 57385 (b) 57286
 (c) 57476 (d) 57368
 (e) None of these
17. $98.98 \div 11.03 + 7.014 \times 15.99 = (?)^2$
 (a) 131 (b) 144
 (c) 12 (d) 121
 (e) 11
18. $39.05 \times 14.95 - 27.99 \times 10.12 = (36 + ?) \times 5$
 (a) 22 (b) 29
 (c) 34 (d) 32
 (e) 25
19. $2070.50 \div 15.004 + 39.001 \times (4.999)^2 = ?$
 (a) 1005 (b) 997
 (c) 1049 (d) 1213
 (e) 1113
20. $\frac{45^2 \times 27^2}{135^2} = ?$
 (a) 81 (b) 1
 (c) 243 (d) 9
 (e) None of these
21. $4\frac{1}{2} \times 4\frac{1}{3} - 8\frac{1}{3} \div 5\frac{2}{3} = ?$
 (a) 8 (b) $18\frac{1}{34}$
 (c) $1\frac{33}{34}$ (d) $\frac{7}{17}$
 (e) None of these
22. $85.147 + 34.912 \times 6.2 + ? = 802.293$
 (a) 400 (b) 450
 (c) 550 (d) 600
 (e) 500
23. $9548 + 7314 = 8362 + ?$
 (a) 8230 (b) 8500
 (c) 8410 (d) 8600
 (e) None of these
24. $248.251 \div 12.62 \times 20.52 = ?$
 (a) 400 (b) 450
 (c) 600 (d) 350
 (e) 375
25. $6.595 \times 1084 + 2568.34 - 1708.34 = ?$
 (a) 6,000 (b) 12,000
 (c) 10,000 (d) 8,000
 (e) 9,000
26. $5679 + 1438 - 2015 = ?$
 (a) 5192 (b) 5012
 (c) 5102 (d) 5002
 (e) None of these
27. $18\frac{2}{5}$ of $150.8 + ? = 8697.32 - 3058.16$
 (a) 2764.44 (b) 2864.34
 (c) 1864.44 (d) 2684.44
 (e) None of these
28. $\frac{?}{24} = \frac{72}{\sqrt{?}}$
 (a) 12 (b) 16
 (c) 114 (d) 144
 (e) None of these

29. $6\frac{5}{6} \times 5\frac{1}{3} + 17\frac{2}{3} \times 4\frac{1}{2} = ?$
- (a) $112\frac{1}{3}$ (b) 663
(c) 240 (d) $116\frac{2}{3}$
(e) None of these
30. 35% of 1478 + 29% of 3214 = ?
(a) 1600 (b) 1250
(c) 1300 (d) 1450
(e) 1500
31. $\frac{5}{7}$ of 1596 + 3015 = ? - 2150
(a) 7200 (b) 48000
(c) 5300 (d) 58000
(e) 6300
32. $5798 - ? = 7385 - 4632$
(a) 3225 (b) 2595
(c) 2775 (d) 3045
(e) None of these
33. $152\sqrt{?} + 795 = 8226 - 3486$
(a) 425 (b) 985
(c) 1225 (d) 1025
(e) 675
34. $6.39 \times 15.266 + 115.8 \text{ of } \frac{2}{5} = ?$
(a) 145 (b) 165
(c) 180 (d) 130
(e) 135
35. $8597 - ? = 7429 - 4358$
(a) 5706 (b) 5526
(c) 5426 (d) 5626
(e) None of these
36. 857 of 14% - $5.6 \times 12.128 = ?$
(a) 48 (b) 36
(c) 60 (d) 52
(e) 46
37. $5\frac{3}{5} \div 3\frac{11}{15} + 5\frac{1}{2} = ?$
- (a) 7 (b) $8\frac{1}{2}$
(c) $7\frac{1}{2}$ (d) $6\frac{1}{2}$
(e) None of these
38. $5978 + 6134 + 7014 = ?$
(a) 19226 (b) 16226
(c) 19216 (d) 19126
(e) None of these
39. $9568 - 6548 - 1024 = ?$
(a) 2086 (b) 1996
(c) 2293 (d) 1896
(e) None of these
40. $1.542 \times 2408.69 + 1134.632 = ?$
(a) 4600 (b) 4800
(c) 5200 (d) 6400
(e) 3600
41. $8.539 + 16.84 \times 6.5 \div 4.2 = ?$
(a) 25 (b) 42
(c) 44 (d) 35
(e) None of these
42. $17\frac{2}{3}$ of 180 + $\frac{1}{4}$ of 480 = ?
(a) 3180 (b) 3420
(c) 3200 (d) 3300
(e) None of these
43. $1325\sqrt{17} + 508.24 \text{ of } 20\% - 85.39 \text{ of } \frac{3}{4} = ?$
(a) 5500 (b) 5200
(c) 5800 (d) 4900
(e) 5900
44. 45% of 1500 + 35% of 1700 = ?% of 3175.
(a) 50 (b) 45
(c) 30 (d) 35
(e) None of these
45. $3\frac{3}{5}$ of 157.85 + 39% of 1847 = ? - 447.30
(a) 1200 (b) 1500
(c) 1600 (d) 1800
(e) 2100
46. $47^{7.5} \div 47^{3/2} \times 47^{-3} = (\sqrt{47})^?$
(a) 3 (b) $2\frac{1}{2}$
(c) 6 (d) 3.5
(e) None of these
47. $33\frac{1}{3}\%$ of 768.9 + 25% of 161.2 - 68.12 = ?
(a) 230 (b) 225
(c) 235 (d) 220
(e) 240
48. $25^{7.5} \times 5^{2.5} \div 125^{1.5} = 5^?$
(a) 16 (b) 17.5
(c) 8.5 (d) 13
(e) None of these
49. $16\sqrt{524} + 1492 - 250.0521 = ?$
(a) 1600 (b) 1800
(c) 1900 (d) 2400
(e) 1400
50. $\sqrt{(0.798)^2 + 0.404 \times 0.798 + (0.202)^2} + 1 = ?$
(a) 0 (b) 2
(c) 1.596 (d) 10.404
(e) 3

Directions (Qs. 51-60) : Four of the following five parts (a), (b), (c), (d) and (e) are exactly equal. Which part is not equal to the other four parts ?

51. (a) $30 \times 14 \div 7 \times 5$ (b) $10^3 - 100 \times 7$
 (c) $5 \times \sqrt{3600}$ (d) $450 \div 50 \times 50 - 5 \times 30$
 (e) $10 \times 3 + 120 \times 2$
52. (a) $10.36 + 69.802 + 24.938$
 (b) $2207.1 \div 21$ (c) $16\frac{2}{3}\%$ of 630.6
 (d) 32.84375×3.2 (e) $\frac{1}{5}$ of $\frac{1}{9}$ of 4729.4
53. (a) $75 \times 8 \div 6$ (b) $98 \div 2.5 + 15.2 \times 4$
 (c) $\sqrt{225} \times 2^3 - 5 \times 2^2$ (d) $76 \times 1.5 - 5.5 \times 2.6$
 (e) $48 \times 1.2 + 127.2 \div 3$
54. (a) $115 \times 8 \div 10 + 8$ (b) $425 \div 17 \times 4$
 (c) $36 \times 5 \div 6 + 17 \times 4$ (d) $2^6 + \sqrt{256} + 20$
 (e) $35 \times 12 \div 14 + 14 \times 5$
55. (a) $45 \times 120 + 5^2 \times 10$
 (b) $113 \times 25 \times 2$
 (c) $27 \times 25 \times 8 + 15 \times 6 + 4 \times 40$
 (d) $226 \times 5 + 113 \times 45$
 (e) $50^2 \times 2 + 13 \times 50$
56. (a) $85 \div 17 \times 110$ (b) $45 \times 6 + 75 \times 4$
 (c) $175 \div 25 \times 75 + 5^2$ (d) $36 \times 4 + 21^2 - 7 \times 5$
 (e) $65 \times 12 - 46 \times 5$
57. (a) $120 \times 12 - 22 \times 20$ (b) 10% of 5000 + $\frac{2}{5}$ of 1200
 (c) $80 \times 40 - 20 \times 110$ (d) $8640 \div 60 + 53.5 \times 16$
 (e) $5314 - 3029 - 1285$
58. (a) $16.80 \times 4.50 + 4.4$ (b) $1600 \div 40 + 16 \times 2.5$
 (c) $5.5 \times 8.4 + 34.6$ (d) $1620 \div 20 - 1$
 (e) $1856.95 - 1680.65 - 96.3$
59. (a) 40% of 160 + $\frac{1}{3}$ of 240 (b) 120% of 1200
 (c) $38 \times 12 - 39 \times 8$ (d) $1648 - 938 - 566$
 (e) $6\frac{1}{2}$ of 140 - 2.5×306.4
60. (a) $732.534 + 412.256 - 544.29$
 (b) $1256.214 - 355.514 - 300.2$
 (c) $246.86 + 439.38 - 80.74$
 (d) $1415.329 + 532.4 - 1347.229$
 (e) $398.14 - 239.39 + 441.75$
61. Four of the following five parts lettered a, b, c, d and e are exactly equal. Which of the following is not equal to the other four?
 (a) $24^2 - 12^2 + 112 \div 14$ (b) $17 \times 12 + 59 \times 4$
 (c) $15 \times 28 + 20$ (d) $27 \times 16 + 56 \div 8$
 (e) $185 \times 6 \div 2 - 23 \times 5$

62. Which of the following is the highest fraction?
 (a) $\frac{5}{7}$ (b) $\frac{3}{4}$
 (c) $\frac{2}{3}$ (d) $\frac{6}{7}$
 (e) $\frac{7}{8}$
63. If $\frac{4}{9}$ of $\frac{3}{10}$ of $\frac{5}{8}$ of a number is 45, what is the number?
 (a) 450 (b) 550
 (c) 560 (d) 650
 (e) None of these
64. Which of the following has fractions in ascending order?
 (a) $\frac{2}{5}, \frac{3}{5}, \frac{1}{3}, \frac{4}{7}, \frac{5}{6}, \frac{6}{7}$ (b) $\frac{1}{3}, \frac{2}{5}, \frac{3}{5}, \frac{5}{6}, \frac{4}{7}, \frac{6}{7}$
 (c) $\frac{1}{3}, \frac{2}{5}, \frac{3}{5}, \frac{4}{7}, \frac{5}{6}, \frac{6}{7}$ (d) $\frac{1}{3}, \frac{2}{5}, \frac{4}{7}, \frac{3}{5}, \frac{5}{6}, \frac{6}{7}$
 (e) None of these
65. Find the value of $\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right)\left(1 - \frac{1}{5}\right)\dots\left(1 - \frac{1}{100}\right)$.
 (a) $\frac{1}{5}$ (b) $\frac{1}{10}$
 (c) $\frac{1}{50}$ (d) $\frac{2}{5}$
 (e) $\frac{3}{5}$
66. If $\sqrt{15625} = 125$, then the value of $\sqrt{15625} + \sqrt{156.25} + \sqrt{1.5625}$ is
 (a) 1.3875 (b) 13.875
 (c) 138.75 (d) 156.25
 (e) 162.235
67. When $0.\overline{47}$ is converted into a fraction the result is
 (a) $\frac{46}{90}$ (b) $\frac{46}{99}$
 (c) $\frac{47}{90}$ (d) $\frac{47}{99}$
 (e) $\frac{99}{90}$
68. $(x^n - a^n)$ is completely divisible by $(x + a)$, when
 (a) n is any natural number
 (b) n is an even natural number
 (c) n is an odd natural number
 (d) n is prime
 (e) None of these

Directions (Qs. 69-78): What approximate value will come in place of the question mark (?) in the following questions ? (You are not required to find the exact value).

69. $2371 \div 6 + (43 \times 4.35) = ?$
 (a) 582 (b) 590
 (c) 600 (d) 570
 (e) 595
70. $\sqrt[3]{3380} + \sqrt{1300} = ?$
 (a) 56 (b) 51
 (c) 53 (d) 54
 (e) 55
71. $(4.989)^2 + (21.012)^3 + \sqrt{1090} = ?$
 (a) 9219 (b) 9391
 (c) 9319 (d) 9129
 (e) None of these
72. $7020 \div 2.99 \times \frac{13}{29} = ?$
 (a) 1040 (b) 1100
 (c) 1060 (d) 1050
 (e) None of these
73. $24.99\% \text{ of } 5001 - 65.01\% \text{ of } 2999 = ?$
 (a) 840 (b) 500
 (c) 700 (d) -500
 (e) -700
74. $(81)^{\frac{1}{2}} - (64)^{\frac{2}{3}} = ?$
 (a) $\frac{3}{19}$ (b) $\frac{1}{16}$
 (c) $\frac{7}{144}$ (d) $\frac{1}{9}$
 (e) None of these
75. $331.8 \div 23.7 + (-21)^2 - 94 = (?)^2$
 (a) 15 (b) 16
 (c) 18 (d) 19
 (e) 17
76. $34\% \text{ of } 576 + 18\% \text{ of } 842 = ?\% \text{ of } 400 + 83.4$
 (a) 75 (b) 72
 (c) 62 (d) 65
 (e) 66
77. $\frac{\sqrt{29241}}{\sqrt{361}} \times 5\frac{2}{9} = ?$
 (a) 47 (b) 49
 (c) 46 (d) 45
 (e) 61
78. $3\frac{1}{4} + 6\frac{2}{7} + ? = 13\frac{3}{28}$
 (a) $3\frac{2}{7}$ (b) $3\frac{4}{7}$
- (c) $3\frac{3}{7}$ (d) $3\frac{5}{7}$
 (e) $3\frac{6}{7}$
79. If the sum of two numbers is 55 and the H.C.F. and L.C.M. of these numbers are 5 and 120 respectively, then the sum of the reciprocals of the numbers is equal to:
 (a) $\frac{55}{601}$ (b) $\frac{601}{55}$
 (c) $\frac{11}{120}$ (d) $\frac{120}{11}$
 (e) None of these
80. The least number which when divided by 48, 64, 90, 120 will leave the remainders 38, 54, 80, 110 respectively, is
 (a) 2870 (b) 2860
 (c) 2890 (d) 2880
 (e) None of these
81. Product of two co-prime numbers is 117. Their L.C.M. should be:
 (a) 1 (b) 117
 (c) equal to their H.C.F. (d) cannot be calculated
 (e) None of these
82. The number of prime factors in the expression $(6)^{10} \times (7)^{17} \times (11)^{27}$ is:
 (a) 54 (b) 64
 (c) 71 (d) 81
 (e) None of these
83. The least number of five digits which is exactly divisible by 12, 15 and 18, is:
 (a) 10010 (b) 10051
 (c) 10020 (d) 10080
 (e) None of these
84. The sum of two numbers is 462 and their highest common factor is 22. What is the maximum number of pairs that satisfy these conditions ?
 (a) 1 (b) 3
 (c) 5 (d) 6
 (e) None of these
85. When n is divisible by 5 the remainder is 2. What is the remainder when n^2 is divided by 5.
 (a) 2 (b) 3
 (c) 1 (d) 4
 (e) None of these

ANSWER KEY

1	(d)	10	(e)	19	(e)	28	(d)	37	(a)	46	(c)	55	(d)	64	(d)	73	(e)	82	(b)
2	(a)	11	(e)	20	(a)	29	(e)	38	(d)	47	(a)	56	(b)	65	(c)	74	(c)	83	(d)
3	(e)	12	(b)	21	(b)	30	(d)	39	(b)	48	(d)	57	(B)	66	(c)	75	(d)	84	(d)
4	(d)	13	(c)	22	(e)	31	(e)	40	(b)	49	(a)	58	(c)	67	(d)	76	(e)	85	(d)
5	(b)	14	(e)	23	(b)	32	(d)	41	(d)	50	(b)	59	(b)	68	(a)	77	(a)		
6	(c)	15	(d)	24	(a)	33	(e)	42	(d)	51	(e)	60	(c)	69	(a)	78	(b)		
7	(c)	16	(e)	25	(d)	34	(a)	43	(a)	52	(e)	61	(d)	70	(b)	79	(c)		
8	(d)	17	(e)	26	(c)	35	(b)	44	(e)	53	(d)	62	(e)	71	(c)	80	(a)		
9	(c)	18	(e)	27	(e)	36	(d)	45	(d)	54	(c)	63	(e)	72	(d)	81	(b)		

Hints & Explanations

- (d) $16.02 \times 0.001 = ?$
or, $? = 0.01602$
- (a) $\frac{?}{50} = \frac{60.5}{?}$
or, $?^2 = 50 \times 60.5$ or, $?^2 = 3025$
or, $? = \sqrt{3025} = 55$
- (e) $5400 \div 9 \div 3 = ?$
or, $? = 5400 \times \frac{1}{9 \times 3} = 200$
- (d) $10^{150} \div 10^{146} = ?$
or, $? = \frac{10^{150}}{10^{146}} = 10^{150-146}$ i.e.,
 $\left[\because \frac{m^x}{m^y} = m^{x-y} \right] = 10^4 = 10000$
- (b) $? \% \text{ of } 360 = 129.6$
or, $? = \frac{129.6 \times 100}{360} = 36$
- (c) 7. (c)
- (d) $? = \sqrt{625.04} \times 16.96 + 136.001 \div 17 \approx 25 \times 17 + 8$
 $= 425 + 8 = 433$
- (c)
- (e) Using approximation, we get $\frac{36}{6} \times \sqrt{?} = 108$
or, $\sqrt{?} = \frac{108}{6}$
or, $\sqrt{?} = 18$
or, $? = 324 \approx 325$.
- (e) $? = 138.009 + 341.981 - 146.305 - 123.60$
 $\therefore ? = 210.085$
- (b) $? = \frac{2620 - 256}{197} = 12$
- (c) $? = 285 + 1895 - 655 - 745$ or, $? = 780$
- (e) $? = (27 + 118 - 32 - 11) + \left(\frac{3}{11} + \frac{2}{5} - \frac{5}{22} - \frac{6}{11} \right)$
or, $? = 102 + \left(\frac{30 + 44 - 25 - 60}{110} \right)$
or, $? = 102 - \frac{1}{10} = 101\frac{9}{10}$
- (d) $? = \frac{21}{25} \times \frac{20}{9} \times \frac{5}{12} \times \frac{17}{10} = \frac{119}{90} = 1\frac{29}{90}$
- (e) $? = 48845 + \frac{51246}{6} = 48845 + 8541 = 57386$
- (e) $98.98 \div 11.03 + 7.014 \times 15.99 = (?)^2$
Suppose $? = x$
Then $99 \div 11 + 7 \times 16 + \approx 121$
(taking approximate value)
 $\therefore x = 11$
- (e) Solve using approximation
- (e) $2070.50 \div 15.004 + 39.001 \times (4.999)^2 = ?$
or $? \approx 2070 \div 15 + 39 \times 5 \times 5$
 $= 138 + 975 = 1113$
- (a) $? = \frac{45 \times 45 \times 27 \times 27}{135 \times 135} = 81$
- (b) $? = \frac{9}{2} \times \frac{13}{3} - \frac{25}{3} \times \frac{3}{17}$
 $= \frac{39}{2} - \frac{25}{17} = \frac{663 - 50}{34} = \frac{613}{34} = 18\frac{1}{34}$

22. (e) $85.147 + 34.912 \times 6.2 + ? = 802.293$
 or, $? = 802.293 - 85.147 - 34.912 \times 6.2$
 $\approx 800 - 85 - 35 \times 6 \approx 500$
23. (b) $9548 + 7314 = 8362 + ?$
 or, $? = 9548 + 7314 - 8362 = 8500$
24. (a) $248.251 \div 12.62 \times 20.52 = ?$
 or, $? \approx 240 \div 12 \times 20 = 20 \times 20 = 400$
25. (d) $? \approx 6.6 \times 1080 + 2560 - 1700 \approx 7128 + 860 \approx 8000$
26. (c) $? = 5679 + 1438 - 2015 = 5102$
27. (e) $? = 8697.32 - 3058.16 - \frac{92}{5} \times 150.8$
 $= 5639.16 - 2774.72 = 2864.44$
28. (d) $? \times \sqrt{?} = 24 \times 72$ Squaring both the sides,
 $(?^2 \times ?) = ?^3 = (8 \times 3) \times (8 \times 3) \times (8 \times 9) \times (8 \times 9)$
 $= 2^3 8^3 9^3$
 $\therefore ? = 2 \times 8 \times 9 = 144$
29. (e) $? = \frac{41}{6} \times \frac{16}{3} + \frac{53}{3} \times \frac{9}{2} = \frac{41 \times 16 + 53 \times 9 \times 3}{6 \times 3}$
 $= \frac{656 + 1431}{18} = \frac{2087}{18} = 115 \frac{17}{18}$
30. (d) $? = 35\% \text{ of } 1478 + 29\% \text{ of } 3214$
 $\approx 35\% \text{ of } (1500 - 22) + (30\% - 1\%) \text{ of } 3200$
 $\approx 35 \times 15 - 8 + 30 \times 32 - 32$
 $= 525 + 960 - 40 = 525 + 920$
 $= 1445 \approx 1450$
31. (e) $? \approx 5 \times 230 + 3000 + 2150$
 $= 1150 + 3000 + 2150 = 6300$
32. (d) $? = 5798 + 4632 - 7385 = 3045$
33. (e) $152\sqrt{?} \approx 8200 - 3500 - 800 = 3900$
 $\therefore \sqrt{?} = \frac{3900}{152}$
 $= \text{slightly less than } \left(\frac{4000}{150} = \right) 26.67 \text{ i.e., } 26$
 $\therefore \sqrt{?} = (26)^2 = 676 \approx 675$
34. (a) $? = 6.39 \times 15.266 + 115.8 \text{ of } \frac{2}{5}$
 $\approx 6.50 \times 15 + 115 \times 0.4 = 97.50 + 46 \approx 145$
35. (b) $8597 - ? = 7429 - 4358$
 $\therefore ? = 5526$
36. (d) $? = 857 \text{ of } 14\% - 5.6 \times 12.128$
 $\approx 857 \text{ of } 14\% - 5.6 \times 12 \approx 120 - 67 \approx 52$
37. (a) $? = 5 \frac{3}{5} \div 3 \frac{11}{15} + 5 \frac{1}{2} = \frac{28}{5} \div \frac{56}{15} + \frac{11}{2}$
 $= \frac{28}{5} \times \frac{15}{56} + \frac{11}{2} = \frac{3}{2} + \frac{11}{2} = \frac{14}{2} = 7$
38. (d) $? = 5978 + 6134 + 7014 = 19126$

39. (b) $? = 9568 - 6548 - 1024 = 1996$
40. (b) $? \approx 3700 + 1100 = 4800$
41. (d) $? \approx 8.6 + 4 \times 6.5 \approx 35$
42. (d) $17 \frac{2}{3} \text{ of } 180 + \frac{1}{4} \text{ of } 480 = ?$
 or, $? = \frac{53}{3} \text{ of } 180 + \frac{1}{4} \text{ of } 480 = 3180 + 120 = 3300$
43. (a) $? = 1325\sqrt{17} + 508.24 \text{ of } 20\% - 85.39 \text{ of } \frac{3}{4}$
 $= 1325\sqrt{17} + 500 \text{ of } 20\% - 85 \times 0.75$
 $= 5460 + 100 - 60 = 5500$
44. (e) $45\% \text{ of } 1500 + 35\% \text{ of } 1700 = ?\% \text{ of } 3175$
 $\therefore ? = \frac{127000}{3175} = 40$
45. (d) $? \approx \frac{18}{5} \times 160 + \frac{40}{100} \times 1850 + 450$
 $\approx 576 + 740 + 450 \approx 1760 \approx 1800$
46. (c) $(47)^3 = [(47)^{1/2}]^6$
47. (a) $? = 33 \frac{1}{3}\% \text{ of } 768.9 + 25\% \text{ of } 161.2 - 68.12$
 $= \frac{1}{3} \text{ of } 768.9 + \frac{1}{4} \text{ of } 161.2 - 68.12$
 $= 256.3 + 40.3 - 68.12 \approx 230$
48. (d) $25^{7.5} \times 5^{2.5} \div 125^{1.5} = 5^?$
 or, $5^{2 \times 7.5} \times 5^{2.5} \div 5^3 \times 1.5 = 5^?$
 or, $5^{15} \times 5^{2.5} \times \frac{1}{5^{4.5}} = 5^?$
 or, $5^{13} = 5^? \text{ or, } ? = 13$
49. (a) $? \approx 16 \times 23 + 1490 - 250 \approx 1600$
50. (b) $\sqrt{(0.798)^2 + 0.404 \times 0.798 + (0.202)^2} + 1$
 $= \sqrt{(0.798)^2 + 2 \times 0.202 \times 0.798 + (0.202)^2} + 1$
 $= \sqrt{(0.798 + 0.202)^2} + 1$
 $= 1.000 + 1 = 1 + 1 = 2$
51. (e) Other parts are equal to 300.
52. (e) The other parts are equal to 105.10.
53. (d) Check all options one by one.
 (a) $\frac{75 \times 8}{6} = 100$
 (b) $\frac{98}{2.5} + (15.2 \times 4) = 100$
 (c) $(15 \times 8) - (5 \times 4) = 100$
 (d) $(76 \times 1.5) - (5.5 \times 2.6) = 99.7$
 (e) $(48 \times 1.2) + \frac{127.2}{3} = 100$

54. (c) All others are equal to 100. But option (c) gives a value equal to 98.
55. (d) Others equal 5650.
56. (b) Except it, others are equal to 550.
57. (b) The other parts are equal to 1000.
58. (c) Others equal 80 whereas (c) equals 80.8.
59. (b) Others are equal to 144 whereas (b) equals 1440.
60. (c) (c) = 605.5 whereas the other parts are equal to 600.5
61. (d) Other parts are equal to 440.
62. (e) **Note:** If the difference between the numerator and the denominator is constant, then the fraction which has larger value in the numerator is the larger fraction.
Using the above, among the options (a), (c), (d) and (e), (e) has the larger value. Now, compared to option (a), (e) has the larger value.
63. (e) Number = $\frac{45 \times 9 \times 10 \times 8}{4 \times 3 \times 5} \Rightarrow 540$
64. (d) $\frac{1}{3} = 0.33; \frac{2}{5} = 0.4; \frac{4}{7} = 0.57; \frac{3}{5} = 0.6;$
 $\frac{5}{6} = 0.83$ and $\frac{6}{7} = 0.85$
65. (c) Given expression
 $= \frac{2}{3} \times \frac{3}{4} \times \frac{4}{5} \times \dots \times \frac{99}{100} = \frac{2}{100} = \frac{1}{50}$
66. (c) Given expression = $\sqrt{15625} + \sqrt{\frac{15625}{100}} + \sqrt{\frac{15625}{10000}}$
 $= \left(125 + \frac{125}{10} + \frac{125}{100}\right) = (125 + 12.5 + 1.25) = 138.75$
67. (d) $0.47 = \frac{47}{99}$.
68. (a) $(x^n - a^n)$ is always divisible by $(x + a)$, when n is even natural number.
69. (a) $? \approx 395 + 187 = 582$
70. (b) $? = \sqrt[3]{3380} + \sqrt{1300} \approx \sqrt[3]{3375} + \sqrt{1296}$
 $\approx 15 + 36 \approx 51$
71. (c) $? \approx (5)^2 + (21)^3 + \sqrt{1089}$
 $\approx 25 + 9261 + 33 \approx 9319$
72. (d) $? \approx \frac{7020}{3} \times \frac{13}{29} \approx \frac{2340 \times 13}{29} = 1049$
73. (e) $? \approx \frac{5000 \times 25}{100} - \frac{3000 \times 65}{100}$
 $\approx 1250 - 1950 \approx -700$
74. (c) $? = (81)^{-1/2} - (64)^{-2/3}$
 $= \left(\frac{1}{8}\right)^{1/2} - \left(\frac{1}{64}\right)^{2/3} = \frac{1}{9} - \frac{1}{16} = \frac{16-9}{144} = \frac{7}{144}$
75. (d) $(?)^2 = 331.8 \div 23.7 + (-21)^2 - 94$
 $= 14 + 441 - 94 = 361$
 $\Rightarrow ? = \sqrt{361} = 19$
76. (e) $\frac{576 \times 34}{100} + \frac{842 \times 18}{100} = \frac{400 \times ?}{100} + 83.4$
 $\Rightarrow 195.84 + 151.56 = 4 \times ? + 83.4$
 $\Rightarrow 347.4 = 4 \times ? + 83.4$
 $\Rightarrow 4 \times ? = 347.4 - 83.4 = 264$
 $\Rightarrow ? = \frac{264}{4} = 66$
77. (a) $? = \frac{\sqrt{29241}}{\sqrt{361}} \times \frac{47}{9} = \frac{171}{19} \times \frac{47}{9} = 47$
78. (b) $\frac{13}{4} + \frac{44}{7} + ? = 13 + \frac{3}{28}$
 $\Rightarrow \frac{91+176}{28} + ? = 13 + \frac{3}{28}$
 $\Rightarrow \frac{267}{28} + ? = 13 + \frac{3}{28}$
 $\Rightarrow \frac{264}{28} + ? = 13 \Rightarrow \frac{66}{7} + ? = 13$
 $\Rightarrow ? = 13 - \frac{66}{7} = \frac{91-66}{7} = \frac{25}{7} = 3\frac{4}{7}$
79. (c) Let the numbers be a and b. Then, $a + b = 55$ and $ab = 5 \times 120 = 600$.
 \therefore Required sum = $\frac{1}{a} + \frac{1}{b} = \frac{a+b}{ab} = \frac{55}{600} = \frac{11}{120}$.
80. (a) Here, $(48 - 38) = 10, (64 - 54) = 10, (90 - 80) = 10$ and $(120 - 110) = 10$.
 \therefore Required number = (L.C.M of 48, 64, 90 and 120) - 10 = 2870
81. (b) H.C.F of co-prime numbers is 1.
So, L.C.M. = $117/1 = 117$.
82. (b) Since, 2, 3, 7, 11 are prime numbers and the given expression is $2^{10} \times 3^{10} \times 3^{17} \times 11^{27}$
So the numbers of prime factors in the given expression is $(10 + 10 + 17 + 27) = 64$
83. (d) Least number of 5 digits is 10,000. L.C.M. of 12, 15 and 18 is 180.
On dividing 10000 by 180, the remainder is 100.
 \therefore Required number = $10000 + (180 - 100) = 10080$.
84. (d) There are 6 such pairs:
 $(22, 440), (44, 418), (88, 374), (110, 352)$
 $(176, 286), (220, 242)$
85. (d) $n = 5K + 2$
Squaring both side
 $n^2 = (5K + 2)^2$
 $= 25K^2 + 20K + 4$
So, the required remainder is 4.

Algebraic Expression & Inequalities

VARIABLE

An unknown quantity used in any equation may be constant known as variable. Variables are generally denoted by the last English alphabet x, y, z etc.

An equation is a statement of equality of two algebraic expressions, which involve one or more variables.

LINEAR EQUATION

An equation in which the highest power of variables is one, is called a linear equation. These equations are called linear because the graph of such equations on the x - y cartesian plane is a straight line.

Linear Equation in one variable

A linear equation which contains only one variable is called **linear equation in one variable**.

The general form of such equations is $ax + b = c$, where a, b and c are constants and $a \neq 0$.

All the values of x which satisfy this equation are called its solution(s).

NOTE : An equation satisfied by all values of the variable is called an identity. For example : $2x + x = 3x$.

EXAMPLE 1. Solve $2x - 5 = 1$

Sol. $2x - 5 = 1$

$$\Rightarrow 2x = 1 + 5$$

$$\Rightarrow 2x = 6 \Rightarrow x = \frac{6}{2} = 3.$$

EXAMPLE 2. Solve $7x - 5 = 4x + 11$

Sol. $7x - 5 = 4x + 11$

$$\Rightarrow 7x - 4x = 11 + 5 \text{ (Bringing like terms together)}$$

$$\Rightarrow 3x = 16 \Rightarrow x = \frac{16}{3} = 5\frac{1}{3}.$$

EXAMPLE 3. Solve $\frac{4}{x} - \frac{3}{2x} = 5$

Sol. $\frac{4}{x} - \frac{3}{2x} = 5 \Rightarrow \frac{8-3}{2x} = 5$

$$\Rightarrow \frac{5}{2x} = 5 \Rightarrow 10x = 5$$

$$\Rightarrow x = \frac{5}{10} = \frac{1}{2}$$

Application of linear equations with one variables

EXAMPLE 4. The sum of the digits of a two digit number is 16. If the number formed by reversing the digits is less than the original number by 18. Find the original number.

Sol. Let unit digit be x .

$$\text{Then tens digit} = 16 - x$$

$$\begin{aligned} \therefore \text{Original number} &= 10 \times (16 - x) + x \\ &= 160 - 9x. \end{aligned}$$

On reversing the digits, we have x at the tens place and $(16 - x)$ at the unit place.

$$\therefore \text{New number} = 10x + (16 - x) = 9x + 16$$

$$\text{Original number} - \text{New number} = 18$$

$$(160 - 9x) - (9x + 16) = 18$$

$$160 - 18x - 16 = 18$$

$$-18x + 144 = 18$$

$$-18x = 18 - 144 \Rightarrow 18x = 126$$

$$\Rightarrow x = 7$$

\therefore In the original number, we have unit digit = 7

$$\text{Ten's digit} = (16 - 7) = 9$$

Thus, original number = 97

EXAMPLE 5. The denominator of a rational number is greater than its numerator by 4. If 4 is subtracted from the numerator and 2 is added to its denominator, the new number

becomes $\frac{1}{6}$. Find the original number.

Sol. Let the numerator be x .

$$\text{Then, denominator} = x + 4$$

$$\therefore \frac{x-4}{x+4+2} = \frac{1}{6}$$

$$\Rightarrow \frac{x-4}{x+6} = \frac{1}{6}$$

$$\Rightarrow 6(x-4) = x+6$$

$$\Rightarrow 6x - 24 = x + 6 \Rightarrow 5x = 30$$

$$\therefore x = 6$$

Thus, Numerator = 6, Denominator = 6 + 4 = 10.

Hence the original number = $\frac{6}{10}$.

EXAMPLE 6. A man covers a distance of 33 km in $3\frac{1}{2}$ hours;

partly on foot at the rate of 4 km/hr and partly on bicycle at the rate of 10 km/hr. Find the distance covered on foot.

Sol. Let the distance covered on foot be x km.

\therefore Distance covered on bicycle = $(33 - x)$ km

\therefore Time taken on foot = $\frac{\text{Distance}}{\text{Speed}} = \frac{x}{4}$ hr.

\therefore Time taken on bicycle = $\frac{33-x}{10}$ hr.

The total time taken = $\frac{7}{2}$ hr.

$$\frac{x}{4} + \frac{33-x}{10} = \frac{7}{2}$$

$$\frac{5x + 66 - 2x}{20} = \frac{7}{2}$$

$$6x + 132 = 140$$

$$6x = 140 - 132$$

$$6x = 8$$

$$x = \frac{8}{6} = 1.33 \text{ km.}$$

\therefore The distance covered on foot is 1.33 km.

Linear equation in two variables

General equation of a linear equation in two variables is $ax + by + c = 0$, where $a, b \neq 0$ and c is a constant, and x and y are the two variables.

The sets of values of x and y satisfying any equation are called its solution(s).

Consider the equation $2x + y = 4$. Now, if we substitute $x = -2$ in the equation, we obtain $2 \cdot (-2) + y = 4$ or $-4 + y = 4$ or $y = 8$. Hence $(-2, 8)$ is a solution. If we substitute $x = 3$ in the equation, we obtain $2 \cdot 3 + y = 4$ or $6 + y = 4$ or $y = -2$.

Hence $(3, -2)$ is a solution. The following table lists six possible values for x and the corresponding values for y , i.e. six solutions of the equation.

x	-2	-1	0	1	2	3
y	8	6	4	2	0	-2

Systems of Linear equation

Consistent System : A system (of 2 or 3 or more equations taken together) of linear equations is said to be consistent, if it has at least one solution.

Inconsistent System: A system of simultaneous linear equations is said to be inconsistent, if it has no solutions at all.

e.g. $X + Y = 9;$ $3X + 3Y = 8$

Clearly there are no values of X & Y which simultaneously satisfy the given equations. So the system is inconsistent.

REMEMBER

★ The system $a_1x + b_1y = c_1$ and $a_2x + b_2y = c_2$ has :

- a unique solution, if $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$.
- Infinitely many solutions, if $\frac{a_1}{a_2} = \frac{b_1}{b_2} = \frac{c_1}{c_2}$.

• No solution, if $\frac{a_1}{a_2} = \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$.

★ The homogeneous system $a_1x + b_1y = 0$ and

$a_2x + b_2y = 0$ has the only solution $x = y = 0$ when $\frac{a_1}{a_2} \neq \frac{b_1}{b_2}$.

★ The homogeneous system $a_1x + b_1y = 0$ and

$a_2x + b_2y = 0$ has a non-zero solution only when $\frac{a_1}{a_2} = \frac{b_1}{b_2}$,

and in this case, the system has an infinite number of solutions.

EXAMPLE 7. Find k for which the system $3x - y = 4,$
 $kx + y = 3$ has a infinitely many solution.

Sol. The given system will have infinite solution,

$$\text{if } \frac{a_1}{a_2} = \frac{b_1}{b_2} \text{ i.e. } \frac{3}{k} = \frac{-1}{1} \text{ or } k = -3.$$

EXAMPLE 8. Find k for which the system $6x - 2y = 3,$
 $kx - y = 2$ has a unique solution.

Sol. The given system will have a unique solution,

$$\text{if } \frac{a_1}{a_2} \neq \frac{b_1}{b_2} \text{ i.e. } \frac{6}{k} \neq \frac{-2}{-1} \text{ or } k \neq 3.$$

EXAMPLE 9. What is the value of k for which the system
 $x + 2y = 3, 5x + ky = -7$ is inconsistent?

Sol. The given system will be inconsistent if $\frac{a_1}{a_2} \neq \frac{b_1}{b_2} \neq \frac{c_1}{c_2}$

$$\text{i.e. if } \frac{1}{5} = \frac{2}{k} \neq \frac{3}{-7} \text{ or } k = 10.$$

EXAMPLE 10. Find k such that the system $3x + 5y = 0,$
 $kx + 10y = 0$ has a non-zero solution.

Sol. The given system has a non zero solution,

$$\text{if } \frac{3}{k} = \frac{5}{10} \text{ or } k = 6$$

QUADRATIC EQUATION

An equation of the degree two of one variable is called quadratic equation.

General form : $ax^2 + bx + c = 0$(1) where a, b and c are all real number and $a \neq 0$.

For Example :

$$2x^2 - 5x + 3 = 0; 2x^2 - 5 = 0; x^2 + 3x = 0$$

If $b^2 - 4ac \geq 0$, then the quadratic equation gives two and only two values (either same or different) of the unknown variable and both these values are called the roots of the equation.

The roots of the quadratic equation (1) can be evaluated using the following formula.

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad \dots(2)$$

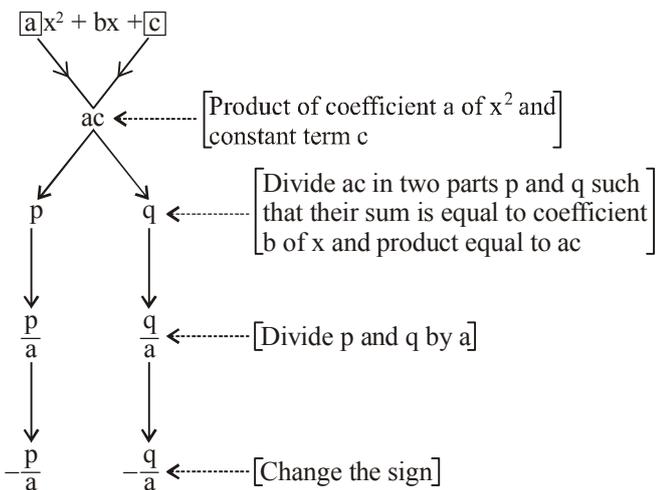
The above formula provides both the roots of the quadratic equation, which are generally denoted by α and β ,

$$\text{say } \alpha = \frac{-b + \sqrt{b^2 - 4ac}}{2a} \text{ and } \beta = \frac{-b - \sqrt{b^2 - 4ac}}{2a}$$

The expression inside the square root $b^2 - 4ac$ is called the DISCRIMINANT of the quadratic equation and denoted by D. Thus, Discriminant (D) = $b^2 - 4ac$.

Shortcut Approach

Shortcut Approach to solve Quadratic equation $ax^2 + bx + c = 0$, if $b^2 - 4ac \geq 0$,



Here $-\frac{p}{a}$ and $-\frac{q}{a}$ are two roots or solutions of quadratic equation $ax^2 + bx + c = 0$ i.e. $x = -\frac{p}{a}$ or $-\frac{q}{a}$.

EXAMPLE 11. Which of the following is a quadratic equation?

- (a) $x^{\frac{1}{2}} + 2x + 3 = 0$
- (b) $(x-1)(x+4) = x^2 + 1$
- (c) $x^4 - 3x + 5 = 0$
- (d) $(2x+1)(3x-4) = 2x^2 + 3$

Sol. (d) Equations in options (a) and (c) are not quadratic equations as in (a) max. power of x is fractional and in (c), it is not 2 in any of the terms.

For option (b), $(x-1)(x+4) = x^2 + 1$

or $x^2 + 4x - x - 4 = x^2 + 1$

or $3x - 5 = 0$

which is not a quadratic equation but a linear.

For option (d), $(2x+1)(3x-4) = 2x^2 + 3$

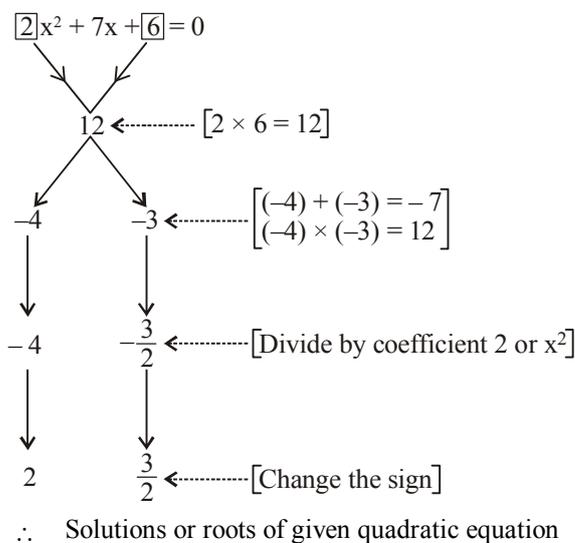
or $6x^2 - 8x + 3x - 4 = 2x^2 + 3$

or $4x^2 - 5x - 7 = 0$

which is clearly a quadratic equation.

EXAMPLE 12. Solve $2x^2 + 6 = 7x$

Sol. $2x^2 + 6 = 7x$
 $\Rightarrow 2x^2 - 7x + 6 = 0$



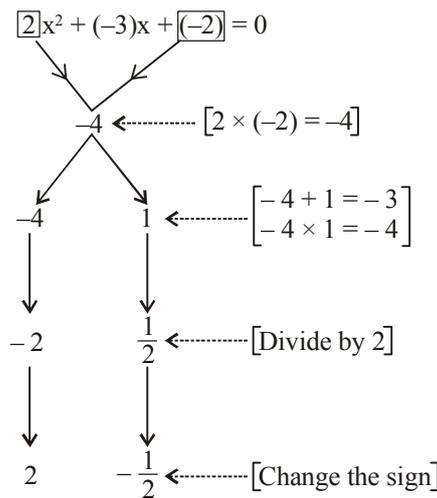
EXAMPLE 13. Solve $x - \frac{1}{x} = 1\frac{1}{2}$

Sol. $x - \frac{1}{x} = 1\frac{1}{2} \Rightarrow \frac{x^2 - 1}{x} = \frac{3}{2}$

$\Rightarrow 2(x^2 - 1) = 3x$

$\Rightarrow 2x^2 - 2 = 3x$

$\Rightarrow 2x^2 - 3x - 2 = 0$



Nature of Roots

The nature of roots of the equation depends upon the nature of its discriminant D.

- If $D < 0$, then the roots are non-real complex, Such roots are always conjugate to one another. That is, if one root is p + iq then other is p - iq, $q \neq 0$.

2. If $D = 0$, then the roots are real and equal. Each root of the equation becomes $-\frac{b}{2a}$. Equal roots are referred as repeated roots or double roots also.
3. If $D > 0$ then the roots are real and unequal.

Sign of Roots:

Let α, β are real roots of the quadratic equation $ax^2 + bx + c = 0$ that is $D = b^2 - 4ac \geq 0$. Then

- Both the roots are positive if a and c have the same sign and the sign of b is opposite.
- Both the roots are negative if a, b and c all have the same sign.
- The Roots have opposite sign if sign of a and c are opposite.
- The Roots are equal in magnitude and opposite in sign if $b = 0$ [that is its roots α and $-\alpha$]
- The roots are reciprocal if $a = c$.

[that is the roots are α and $\frac{1}{\alpha}$]

EXAMPLE 14. The solutions of the equation

$$\sqrt{25 - x^2} = x - 1 \text{ are :}$$

- (a) $x = 3$ and $x = 4$ (b) $x = 5$ and $x = 1$
 (c) $x = -3$ and $x = 4$ (d) $x = 4$ and $x = -3$

Sol. (d) $\sqrt{25 - x^2} = x - 1$

$$\text{or } 25 - x^2 = (x - 1)^2 \text{ or } 25 - x^2 = x^2 + 1 - 2x$$

$$\text{or } 2x^2 - 2x - 24 = 0 \text{ or } x^2 - x - 12 = 0$$

$$\text{or } (x - 4)(x + 3) = 0 \text{ or } x = 4, x = -3$$

EXAMPLE 15. Which of the following equations has real roots?

- (a) $3x^2 + 4x + 5 = 0$ (b) $x^2 + x + 4 = 0$
 (c) $(x - 1)(2x - 5) = 0$ (d) $2x^2 - 3x + 4 = 0$

Sol. (c) Roots of a quadratic equation

$$ax^2 + bx + c = 0 \text{ are real if } b^2 - 4ac \geq 0$$

Let us work with options as follows.

Option (a) : $3x^2 + 4x + 5 = 0$

$$b^2 - 4ac = (4)^2 - 4(3)(5) = -44 < 0.$$

Thus, roots are not real.

(b) : $x^2 + x + 4 = 0$

$$b^2 - 4ac = (1)^2 - 4(1)(4) = 1 - 16 = -15 < 0$$

Thus, roots are not real.

(c) : $(x - 1)(2x - 5) = 0 \Rightarrow 2x^2 - 7x + 5 = 0$

$$b^2 - 4ac = (-7)^2 - 4 \times 2 \times 5 = 49 - 40 = 9 > 0$$

Thus roots are real.

or $x = 1$ and $x = \frac{5}{2} > 0$; Thus, equation has real roots.

(d) : $2x^2 - 3x + 4 = 0$

$$b^2 - 4ac = (-3)^2 - 4(2)(4) = 9 - 32 = -23 < 0$$

Thus, roots are not real.

Hence, option (c) is correct.

EXAMPLE 16. If $2x^2 - 7xy + 3y^2 = 0$, then the value of x :

y is :

- (a) 3 : 2 (b) 2 : 3
 (c) 3 : 1 or 1 : 2 (d) 5 : 6

Sol. (c) $2x^2 - 7xy + 3y^2 = 0$

$$2\left(\frac{x}{y}\right)^2 - 7\left(\frac{x}{y}\right) + 3 = 0$$

$$\frac{x}{y} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} = \frac{7 \pm \sqrt{49 - 24}}{2 \times 2} = \frac{7 \pm 5}{4} = 3, \frac{1}{2}$$

$$\Rightarrow \frac{x}{y} = \frac{3}{1} \text{ or } \frac{x}{y} = \frac{1}{2}$$

EXAMPLE 17. If $a + b + c = 0$ and a, b, c , are rational numbers then the roots of the equation

$$(b + c - a)x^2 + (c + a - b)x + (a + b - c) = 0 \text{ are}$$

- (a) rational (b) irrational
 (c) non real (d) none of these.

Sol. (a) The sum of coefficients

$$= (b + c - a) + (c + a - b) + (a + b - c) = a + b + c = 0$$

(given)

$\therefore x = 1$ is a root of the equation

\therefore The other root is $\frac{a + b - c}{b + c - a}$, which is rational as $a,$

b, c , are rational

Hence, both the roots are rational.

OTHER METHOD :

$$D = (c + a - b)^2 - 4(b + c - a)(a + b - c)$$

$$= (-2b)^2 - 4(-2a)(-2c) = 4b^2 - 16ac$$

$$= 4(a + c)^2 - 16ac = 4[(a + c)^2 - 4ac] = [2(a - c)]^2$$

D is a perfect square. Hence, the roots of the equation are rational.

EXAMPLE 18. Both the roots of the equation

$$(x - b)(x - c) + (x - c)(x - a) + (x - a)(x - b) = 0 \text{ are}$$

- (a) dependent on a, b, c (b) always non real
 (c) always real (d) rational

Sol. (c) The equation is

$$3x^2 - 2(a + b + c)x + (bc + ca + ab) = 0$$

The discriminant

$$D = 4(a + b + c)^2 - 4 \cdot 3 \cdot (bc + ca + ab)$$

$$= 4[a^2 + b^2 + c^2 - ab - bc - ca]$$

$$= 2[(a^2 - 2ab + b^2) + (b^2 - 2bc + c^2) + (c^2 - 2ca + a^2)]$$

$$= 2[(a - b)^2 + (b - c)^2 + (c - a)^2] \geq 0$$

\therefore Roots are always real.

Symmetric Functions of Roots :

An expression in α, β is called a symmetric function of α, β if the function is not affected by interchanging α and β . If α, β are the roots of the quadratic equation $ax^2 + bx + c = 0$, $a \neq 0$ then,

$$\text{Sum of roots : } \alpha + \beta = -\frac{b}{a} = -\frac{\text{coefficient of } x}{\text{coefficient of } x^2}$$

$$\text{and Product of roots : } \alpha\beta = \frac{c}{a} = \frac{\text{constant term}}{\text{coefficient of } x^2}$$

Formation of quadratic Equation with Given Roots :

- An equation whose roots are α and β can be written as $(x - \alpha)(x - \beta) = 0$ or $x^2 - (\alpha + \beta)x + \alpha\beta = 0$ or $x^2 - (\text{sum of the roots})x + \text{product of the roots} = 0$.
- Further if α and β are the roots of a quadratic equation $ax^2 + bx + c = 0$, then $ax^2 + bx + c = a(x - \alpha)(x - \beta)$ is an identity.

EXAMPLE 19. Of the following quadratic equations, which is the one whose roots are 2 and -15 ?

(a) $x^2 - 2x + 15 = 0$ (b) $x^2 + 15x - 2 = 0$

(c) $x^2 + 13x - 30 = 0$ (d) $x^2 - 30 = 0$

Sol. (c) Sum of roots $= 2 - 15 = -13$
Product of roots $= 2 \times (-15) = -30$
Required equation

$$= x^2 - x(\text{sum of roots}) + \text{product of roots} = 0$$

$$\Rightarrow x^2 + 13x - 30 = 0$$

EXAMPLE 20. If a and b are the roots of the equation

$x^2 - 6x + 6 = 0$, then the value of $a^2 + b^2$ is :

(a) 36 (b) 24 (c) 17 (d) 6

Sol. (b) The sum of roots $= a + b = 6$
Product of roots $= ab = 6$

$$\text{Now, } a^2 + b^2 = (a + b)^2 - 2ab = 36 - 12 = 24$$

EXAMPLE 21. If a, b are the two roots of a quadratic equation such that $a + b = 24$ and $a - b = 8$, then the quadratic equation having a and b as its roots is :

(a) $x^2 + 2x + 8 = 0$ (b) $x^2 - 4x + 8 = 0$

(c) $x^2 - 24x + 128 = 0$ (d) $2x^2 + 8x + 9 = 0$

Sol. (c) $a + b = 24$ and $a - b = 8$

$$\Rightarrow a = 16 \text{ and } b = 8 \Rightarrow ab = 16 \times 8 = 128$$

A quadratic equation with roots a and b is

$$x^2 - (a + b)x + ab = 0 \text{ or } x^2 - 24x + 128 = 0$$

INEQUATIONS :

A statement or equation which states that one thing is not equal to another, is called an inequation.

Symbols :

' $<$ ' means "is less than"

' $>$ ' means "is greater than"

' \leq ' means "is less than or equal to"

' \geq ' means "is greater than or equal to"

For example :

(a) $x < 3$ means x is less than 3.

(b) $y \geq 9$ means y is greater than or equal to 9.

Properties

- Adding the same number to each side of an inequation does not effect the sign of inequality, i.e. if $x > y$ then, $x + a > y + a$.
- Subtracting the same number to each side of an inequation does not effect the sign of inequality, i.e., if $x < y$ then, $x - a < y - a$.
- Multiplying each side of an inequality with same positive number does not effect the sign of inequality, i.e., if $x \leq y$ then $ax \leq ay$ (where, $a > 0$).
- Multiplying each side of an inequality with a negative number reverse the sign of inequality i.e., if $x < y$ then $ax > ay$ (where $a < 0$).
- Dividing each side of an inequation by a positive number does not effect the sign of inequality, i.e., if $x \leq y$ then $\frac{x}{a} \leq \frac{y}{a}$ (where $a > 0$).
- Dividing each side of an inequation by a negative number reverses the sign of inequality, i.e., if $x > y$ then $\frac{x}{a} < \frac{y}{a}$ (where $a < 0$).



REMEMBER

- ★ If $a > b$ and a, b, n are positive, then $a^n > b^n$ but $a^{-n} < b^{-n}$.
For example $5 > 4$; then $5^3 > 4^3$ or $125 > 64$, but

$$5^{-3} < 4^{-3} \text{ or } \frac{1}{125} < \frac{1}{64}.$$

- ★ If $a > b$ and $c > d$, then $(a + c) > (b + d)$.
- ★ If $a > b > 0$ and $c > d > 0$, then $ac > bd$.
- ★ If the signs of all the terms of an inequality are changed, then the sign of the inequality will also be reversed.

MODULUS :

$$|x| = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}$$

- If a is a positive real number, x and y be the fixed real numbers, then
 - $|x - y| < a \Leftrightarrow y - a < x < y + a$
 - $|x - y| \leq a \Leftrightarrow y - a \leq x \leq y + a$
 - $|x - y| > a \Leftrightarrow x > y + a \text{ or } x < y - a$
 - $|x - y| \geq a \Leftrightarrow x \geq y + a \text{ or } x \leq y - a$

2. Triangle inequality :

$$(i) |x + y| \leq |x| + |y|, \forall x, y \in \mathbb{R}$$

$$(ii) |x - y| \geq |x| - |y|, \forall x, y \in \mathbb{R}$$

EXAMPLE 22. If $a - 8 = b$, then determine the value of $|a - b| - |b - a|$.

- (a) 16 (b) 0 (c) 4 (d) 2

Sol. (b) $|a - b| = |8| = 8$

$$\Rightarrow |b - a| = |-8| = 8$$

$$\Rightarrow |a - b| - |b - a| = 8 - 8 = 0$$

EXAMPLE 23. Solve : $3x + 4 \leq 19$, $x \in \mathbb{N}$

Sol. $3x + 4 \leq 19$

$$3x + 4 - 4 \leq 19 - 4 \quad [\text{Subtracting 4 from both the sides}]$$

$$3x \leq 15$$

$$\frac{3x}{3} \leq \frac{15}{3} \quad [\text{Dividing both the sides by 3}]$$

$$x \leq 5; \quad x \in \mathbb{N}$$

$$\therefore x = \{1, 2, 3, 4, 5\}.$$

EXAMPLE 24. Solve $5 \leq 2x - 1 \leq 11$

Sol. $5 \leq 2x - 1 \leq 11$

$$5 + 1 \leq 2x - 1 + 1 \leq 11 + 1$$

[Adding 1 to each sides]

$$6 \leq 2x \leq 12$$

$$\frac{6}{2} \leq \frac{2x}{2} \leq \frac{12}{2} \quad [\text{Dividing each side by 2}]$$

$$3 \leq x \leq 6$$

$$\Rightarrow x = \{3, 4, 5, 6\}.$$

Applications Formulation of Equations/ Expressions :

A formula is an equation, which represents the relations between two or more quantities.

For example :

Area of parallelogram (A) is equal to the product of its base (b) and height (h), which is given by

$$A = b \times h$$

or $A = bh.$

Perimeter of triangle (P),

$P = a + b + c$, where a, b and c are length of three sides.

EXAMPLE 25. Form the expression for each of the following:

- (a) 5 less than a number is 7.
 (b) Monika's salary is 1500 less than thrice the salary of Surbhi.

Sol. (a) Expression is given by $x - 5 = 7$, where x is any number

(b) Let the salary of Surbhi be Rs. x and salary of Monika be Rs. y.

Now, according to the question

$$y = 3x - 1500$$

More Applications of Equations :

Problems on Ages can be solved by linear equations in one variable, linear equations in two variables, and quadratic equations.

EXAMPLE 26. Kareem is three times as old as his son. After ten years, the sum of their ages will be 76 years. Find their present ages.

Sol. Let the present age of Kareem's son be x years.

Then, Kareem's age = 3x years

After 10 years, Kareem's age = 3x + 10 years

and Kareem's son's age = x + 10 years

$$\therefore (3x + 10) + (x + 10) = 76$$

$$\Rightarrow 4x = 56 \Rightarrow x = 14$$

$$\therefore \text{Kareem's present age} = 3x = 3 \times 14 = 42 \text{ years}$$

$$\text{Kareem's son's age} = x = 14 \text{ years.}$$

EXAMPLE 27. The present ages of Vikas and Vishal are in the ratio 15 : 8. After ten years, their ages will be in the ratio 5 : 3. Find their present ages.

Sol. Let the present ages of Vikas and Vishal be 15x years and 8x years.

After 10 years,

Vikas's age = 15x + 10 and

Vishal's age = 8x + 10

$$\therefore \frac{15x + 10}{8x + 10} = \frac{5}{3}$$

$$\Rightarrow 3(15x + 10) = 5(8x + 10)$$

$$\Rightarrow 45x + 30 = 40x + 50$$

$$\Rightarrow 5x = 20 \Rightarrow x = \frac{20}{5} = 4$$

$$\therefore \text{Present age of Vikas} = 15x = 15 \times 4 = 60 \text{ years}$$

$$\text{Present age of Vishal} = 8x = 8 \times 4 = 32 \text{ years.}$$

SHORTCUT METHOD

Ratio of present age of vikas and vishal	$\left(\begin{array}{l} \text{After 10} \\ \text{years,} \\ \text{ratio of age} \\ \text{of vikash} \\ \text{and vishal} \end{array} \right)$
--	--

$$\frac{15}{8} \xrightarrow{\text{Difference}} \frac{5}{3} \xrightarrow{\text{Difference after 10 years}} 2 \xrightarrow{\text{Difference}} 10 \times 2 = 20$$

$$\text{Difference} = 15 \times 3 - 8 \times 5 = 5$$

$$\text{Common part} = \frac{20}{5} = 4$$

$$\text{Vikas Present age} = 15 \times 4 = 60 \text{ years}$$

$$\text{Vishal Present age} = 8 \times 4 = 32 \text{ years}$$

EXAMPLE 28. Father's age is 4 less than five times the age of his son and the product of their ages is 288. Find the father's age.

Sol. Let the son's age be x years.

So, father's age = 5x - 4 years.

$$\therefore x(5x - 4) = 288$$

$$\Rightarrow 5x^2 - 4x - 288 = 0 \Rightarrow 5x^2 - 40x + 36x - 288 = 0$$

$$\Rightarrow 5x(x - 8) + 36(x - 8) = 0$$

$$\Rightarrow (5x + 36)(x - 8) = 0$$

Either $x - 8 = 0$ or $5x + 36 = 0 \Rightarrow x = 8$ or $x = \frac{-36}{5}$

x cannot be negative; therefore, $x = 8$ is the solution.
 \therefore Son's age = 8 years and Father's age = $5x - 4 = 36$ years.

Shortcut Approach

If present age of the father is F times the age of his son. T years hence, the father's age become Z times the age of son then present age of his son is given by $\frac{(Z-1)T}{(F-Z)}$

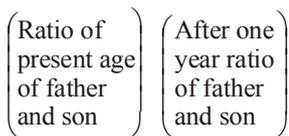
EXAMPLE 29. Present age of the father is 9 times the age of his son. One year later, father's age become 7 times the age of his son. What are the present ages of the father and his son.

Sol. By the formula

Son's age = $\frac{(7-1)}{(9-7)} \times 1 = \frac{6}{2} \times 1 = 3$ years.

So, father's age = $9 \times \text{son's age} = 9 \times 3 = 27$ years.

SHORTCUT METHOD



$\frac{9}{1} \rightarrow \frac{7}{1}$ Difference after one year $\rightarrow 6 \rightarrow 1 \times 6 = 6$

Difference = $9 \times 1 - 1 \times 7 = 2$

Common part = $\frac{6}{2} = 3$

Present age of father = $9 \times 3 = 27$ years

Present age of son = $1 \times 3 = 3$ years

Shortcut Approach

If T_1 years earlier the age of the father was n times the age of his son, T_2 years hence, the age of the father becomes m times the age of his son then his son's age is given by

Son's age = $\frac{T_2(n-1) + T_1(m-1)}{n-m}$

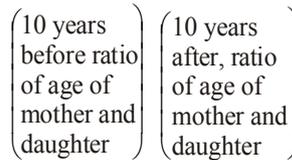
EXAMPLE 30. 10 years ago, Shakti's mother was 4 times older than her. After 10 years, the mother will be twice older than the daughter. What is the present age of Shakti?

Sol. By using formula,

Shakti's age = $\frac{10(4-1) + 10(2-1)}{4-2} = 20$ years.

SHORTCUT METHOD

Comparisons of ages is given 10 years before the present time and 10 years after the present time.
 Therefore time gap = $10 + 10 = 20$ years.



$\frac{4}{1} \rightarrow \frac{2}{1}$ Difference after 20 years $\rightarrow 20 \times 1 = 20$

Difference = $4 \times 1 - 1 \times 2 = 2$

Common part = $\frac{20}{2} = 10$

Present age of Shakti's mother = $4 \times 10 + 10 = 50$ years

Present age fo Shakti = $10 + 10 = 20$ years

Shortcut Approach

Present age of Father : Son = $a : b$

After / Before T years = $m : n$

Then son's age = $b \times \frac{T(m-n)}{an-bm}$

and Father's age = $a \times \frac{T(m-n)}{an-bm}$

EXAMPLE 31. The ratio of the ages of the father and the son at present is 3 : 1. Four years earlier, the ratio was 4 : 1. What are the present ages of the son and the father?

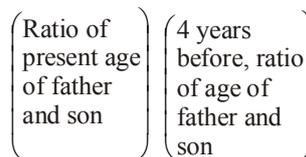
Sol. Ratio of present age of Father and Son = 3 : 1

4 years before = 4 : 1

Son's age = $1 \times \frac{4(4-1)}{4 \times 1 - 3 \times 1} = 12$ years.

Father's age = $3 \times \frac{4(4-1)}{4 \times 1 - 3 \times 1} = 36$ years.

SHORTCUT METHOD



$\frac{3}{1} \rightarrow \frac{4}{1}$ Difference after 4 years $\rightarrow 4 \times 3 = 12$

Difference = $4 - 3 = 1$

Common part = $\frac{12}{1} = 12$

Present age of father = $3 \times 12 = 36$ years

Present age of son = $1 \times 12 = 12$ years

EXERCISE

Directions (Qs. 1-5): In each question one/two equations are provided. On the basis of these you have to find out the relation between p and q .

Give answer (a) if $p = q$

Give answer (b) if $p > q$

Give answer (c) if $q > p$

Give answer (d) if $p \geq q$, and

Give answer (e) if $q \geq p$

1. I $pq + 30 = 6p + 5q$
2. I $2p^2 + 12p + 16 = 0$
II $2q^2 + 14q + 24 = 0$
3. I $2p^2 + 48 = 20p$
II $2q^2 + 18 = 12q$
4. I $q^2 + q = 2$
II $p^2 + 7p + 10 = 0$
5. I $p^2 + 36 = 12p$
II $4q^2 + 144 = 48q$

Directions (Qs.6-10): For the two given equations I and II give answer

(a) if p is greater than q

(b) if p is smaller than q

(c) if p is equal to q .

(d) if p is either equal to or greater than q

(e) if p is either equal to or smaller than q .

6. I $6p^2 + 5p + 1 = 0$
II $20q^2 + 9q = -1$
7. I $3p^2 + 2p - 1 = 0$
II $2q^2 + 7q + 6 = 0$
8. I $3p^2 + 15p = -18$
II $q^2 + 7q + 12 = 0$
9. I $p = \frac{\sqrt{4}}{\sqrt{9}}$
II $9q^2 - 12q + 4 = 0$
10. I $p^2 + 13p + 42 = 0$
II $q^2 = 36$

Directions (Qs. 11 - 14): In each of the following questions, one or two equation(s) is/are given. On their basis you have to determine the relation between x and y and then give answer

(a) if $x < y$

(b) if $x > y$

(c) if $x \leq y$

(d) if $x \geq y$

(e) if $x = y$

11. I $x^2 + 3x + 2 = 0$ II $2y^2 = 5y$
12. I $2x^2 + 5x + 2 = 0$ II $4y^2 = 1$
13. I $y^2 + 2y - 3 = 0$ II $2x^2 - 7x + 6 = 0$
14. I $x^2 - 5x + 6 = 0$ II $y^2 + y - 6 = 0$

Directions (Qs. 15-18): In each of the following questions two equations are given. You have to solve them and Give answer

(a) if $p < q$

(b) if $p > q$

(c) if $p \leq q$

(d) if $p \geq q$

(e) if $p = q$

15. I $p^2 - 7p = -12$
II $q^2 - 3q + 2 = 0$
16. I $12p^2 - 7p = -1$
II $6q^2 - 7q + 2 = 0$
17. I $p^2 - 8p + 15 = 0$
II $q^2 - 5q = -6$
18. I $2p^2 + 20p + 50 = 0$
II $q^2 - 25$

Directions (Qs.19-23): In each of these questions two equations are given. You have to solve these equations and Give answer

(a) if $x < y$

(b) if $x > y$

(c) if $x = y$

(d) if $x \geq y$

(e) if $x \leq y$

19. I $x^2 - 6x = 7$
II $2y^2 + 13y + 15 = 0$
20. I $3x^2 - 7x + 2 = 0$
II $2y^2 - 11y + 15 = 0$
21. I $10x^2 - 7x + 1 = 0$
II $35y^2 - 12y + 1 = 0$
22. I $4x^2 = 25$
II $2y^2 - 13y + 21 = 0$
23. I $3x^2 + 7x = 6$
II $6(2y^2 + 1) = 17y$

Directions (Qs. 24-26): In each question below one or more equation(s) is /are given. On the basis of these, you have to find out the relationship between p and q .

Give answer (a) if $p = q$

Give answer (b) if $p > q$

Give answer (c) if $p < q$

Give answer (d) if $p \leq q$

Give answer (e) if $p \geq q$

24. I $2p^2 = 23p - 63$
II $2q(q^{-8}) = q^{-36}$
25. I $p(p^{-1}) = (p^{-1})$
II $q^2 = 4q^{-1}$
26. I $2p(p-4) = 8(p+5)$
II $q^2 + 12 + 7q$

Directions (Qs. 27-30): In each of the following questions two equations I and II are given. You have to solve both the equations and give answer

(a) if $a < b$

(b) if $a \leq b$

(c) if $a \geq b$

(d) if $a = b$

(e) if $a > b$

27. I $a^2 - 5a + 6 = 0$
II $b^2 - 3b + 2 = 0$
28. I $2a + 3b = 31$
II $3a = 2b + 1$
29. I $2a^2 + 5a + 3 = 0$
II $2b^2 - 5b + 3 = 0$

30. I. $4a^2 = 1$
 II. $4b^2 - 12b + 5 = 0$

Directions (Qs. 31-35): In each of the following questions there are two equations. Solve them and choose the correct option

- (a) If $P < Q$ (b) If $P > Q$
 (c) If $P \leq Q$ (d) If $P \geq Q$
 (e) If $P = Q$
31. I. $4P^2 - 8P + 3 = 0$ II. $2Q^2 - 13Q + 15 = 0$
 32. I. $P^2 + 3P - 4 = 0$ II. $3Q^2 - 10Q + 8 = 0$
 33. I. $3P^2 - 10P + 7 = 0$ II. $15Q^2 - 22Q + 8 = 0$
 34. I. $20P^2 - 17P + 3 = 0$ II. $20Q^2 - 9Q + 1 = 0$
 35. I. $20P^2 + 31P + 12 = 0$ II. $21Q^2 + 23Q + 6 = 0$

Directions (Qs. 36-40): For the two given equations I and II, give answer

- (a) if a is greater than b
 (b) if a is smaller than b
 (c) if a is equal to b
 (d) if a is either equal to or greater than b
 (e) if a is either equal to or smaller than b
36. I. $\sqrt{2304} = a$
 II. $b^2 = 2304$
37. I. $12a^2 - 7a + 1 = 0$
 II. $15b^2 - 16b + 4 = 0$
38. I. $a^2 + 9a + 20 = 0$
 II. $2b^2 - 10b + 12 = 0$
39. I. $3a + 2b = 14$
 II. $a + 4b - 13 = 0$
40. I. $a^2 - 7a + 12 = 0$
 II. $b^2 - 9b + 20 = 0$

Directions (Qs. 41-45): In each question one or more equation(s) is (are) provided. On the basis of these you have

- Give answer (a) if $p = q$
 Give answer (b) if $p > q$
 Give answer (c) if $q > p$
 Give answer (d) if $p \geq q$ and
 Give answer (e) if $q \geq p$

41. (i) $\frac{5}{28} \times \frac{9}{8} p = \frac{15}{14} \times \frac{13}{16} q$
 42. (i) $p - 7 = 0$ (ii) $3q^2 - 10q + 7 = 0$
 43. (i) $4p^2 = 16$ (ii) $q^2 - 10q + 25 = 0$
 44. (i) $4p^2 - 5p + 1 = 0$ (ii) $q^2 - 2q + 1 = 0$
 45. (i) $q^2 - 11q + 30 = 0$ (ii) $2p^2 - 7p + 6 = 0$

Directions (Qs. 46-48): In each question below one or more equation(s) is/are provided. On the basis of these, you have to find out relation between p and q .

- Give answer (a) if $p = q$, Give answer
 (b) if $p > q$, Give answer
 (c) if $q > p$, Give answer
 (d) if $p \geq q$ and Give answers
 (e) if $q \geq p$.
46. I. $4q^2 + 8q = 4q + 8$
 II. $p^2 + 9p = 2p - 12$
47. I. $2p^2 + 40 = 18p$
 II. $q^2 = 13q - 42$

48. I. $6q^2 + \frac{1}{2} = \frac{7}{2} q$
 II. $12p^2 + 2 = 10p$

Directions (Qs. 49-53): In each of the following questions two equations are given. You have to solve them and give answer

- (a) if $x > y$; (b) if $x < y$;
 (c) if $x = y$; (d) if $x \geq y$;
 (e) if $x \leq y$;
49. I. $y^2 - 6y + 9 = 0$ II. $x^2 + 2x - 3 = 0$
 50. I. $x^2 - 5x + 6 = 0$ II. $2y^2 + 3y - 5 = 0$
 51. I. $x = \sqrt{256}$ II. $y = (-4)^2$
 52. I. $x^2 - 6x + 5 = 0$ II. $y^2 - 13y + 42 = 0$
 53. I. $x^2 + 3x + 2 = 0$ II. $y^2 - 4y + 1 = 0$
54. If $3x - 5y = 5$ and $\frac{x}{x+y} = \frac{5}{7}$, then what is the value of $x - y$?
 (a) 9 (b) 6
 (c) 4 (d) 3
 (e) None of these
55. $\frac{5}{7}$ of $\frac{4}{15}$ of a number is 8 more than $\frac{2}{5}$ of $\frac{4}{9}$ of the same number. What is half of that number?
 (a) 630 (b) 315
 (c) 210 (d) 105
 (e) None of these
56. The difference between a two-digit number obtained by interchanging the positions of its digits is 36. What is the difference between the two digits of that number?
 (a) 4 (b) 9
 (c) 3 (d) Cannot be determined
 (e) None of these
57. By the how much is two-fifth of 200 greater than three-fifths of 125?
 (a) 15 (b) 3
 (c) 5 (d) 30
 (e) None of these
58. If $\frac{x^2 - 1}{x + 1} = 2$, then, $x = ?$
 (a) 1 (b) 0
 (c) 2 (d) Can't be determined
 (e) None of these
59. The difference between a number and its one-third is double of its one-third. What is the number?
 (a) 60 (b) 18
 (c) 30 (d) Cannot be determined
 (e) None of these
60. Two pens and three pencils cost ₹ 86. Four pens and a pencil cost ₹ 112. What is the difference between the cost of a pen and that of a pencil?
 (a) ₹ 25 (b) ₹ 13
 (c) ₹ 19 (d) Cannot be determined
 (e) None of these
61. The difference between a two-digit number and the number after interchanging the position of the two digits is 36. What is the difference between the two digits of the number?
 (a) 4 (b) 6
 (c) 3 (d) Cannot be determined
 (e) None of these

62. If the digit in the unit's place of a two-digit number is halved and the digit in the ten's place is doubled, the number thus obtained is equal to the number obtained by interchanging the digits. Which of the following is **definitely true**?
- (a) Digits in the unit's place and the ten's place are equal.
 (b) Sum of the digits is a two-digit number.
 (c) Digit in the unit's place is half of the digit in the ten's place.
 (d) Digit in the unit's place is twice the digit in the ten's place.
 (e) None of these
63. If A and B are positive integers such that $9A^2 = 12A + 96$ and $B^2 = 2B + 3$, then which of the following is the value of $5A + 7B$?
- (a) 31 (b) 41
 (c) 36 (d) 43
 (e) 27
64. On Children's Day, sweets were to be equally distributed among 175 children in a school. Actually on the Children's Day 35 children were absent and therefore, each child got 4 sweets extra. How many sweets were available in all for distribution?
- (a) 2480 (b) 2680
 (c) 2750 (d) 2400
 (e) None of these
65. A two-digit number is seven times the sum of its digits. If each digit is increased by 2, the number thus obtained is 4 more than six times the sum of its digits. Find the number.
- (a) 42 (b) 24
 (c) 48 (d) Data inadequate
 (e) None of these
66. One-third of Ramani's savings in National Savings Certificate is equal to one-half of his savings in Public Provident Fund. If he has ₹ 150000 as total savings, how much he saved in Public Provident Fund?
- (a) ₹ 60000 (b) ₹ 50000
 (c) ₹ 90000 (d) ₹ 30000
 (e) None of these
67. $\frac{1}{5}$ of a number is equal to $\frac{5}{8}$ of the second number. If 35 is added to the first number then it becomes 4 times of second number. What is the value of the second number?
- (a) 125 (b) 70
 (c) 40 (d) 25
 (e) None of these
68. In a two-digit number, the digit at unit place is 1 more than twice of the digit at tens place. If the digit at unit and tens place be interchanged, then the difference between the new number and original number is less than 1 to that of original number. What is the original number?
- (a) 52 (b) 73
 (c) 25 (d) 49
 (e) 37
69. Free notebooks were distributed equally among children of a class. The number of notebooks each child got was one-eighth of the number of children. Had the number of children been half, each child would have got 16 notebooks. How many notebooks were distributed in all?
- (a) 432 (b) 640
 (c) 256 (d) 512
 (e) None of these
70. Twenty times a positive integer is less than its square by 96. What is the integer?
- (a) 24 (b) 20
 (c) 30 (d) Cannot be determined
 (e) None of these
71. The digit in the units place of a number is equal to the digit in the tens place of half of that number and the digit in the tens place of that number is less than the digit in units place of half of the number by 1. If the sum of the digits of the number is seven, then what is the number?
- (a) 52 (b) 16
 (c) 34 (d) Data inadequate
 (e) None of these
72. The difference between a two-digit number and the number obtained by interchanging the digits is 9. What is the difference between the two digits of the number?
- (a) 8 (b) 2
 (c) 7 (d) Cannot be determined
 (e) None of these
73. The difference between a number and its three-fifths is 50. What is the number?
- (a) 75 (b) 100
 (c) 125 (d) Cannot be determined
 (e) None of these
74. If the numerator of a fraction is increased by 2 and the denominator is increased by 1, the fraction becomes $\frac{5}{8}$ and if the numerator of the same fraction is increased by 3 and the denominator is increased by 1 the fraction becomes $\frac{3}{4}$. What is the original fraction?
- (a) Data inadequate (b) $\frac{2}{7}$
 (c) $\frac{4}{7}$ (d) $\frac{3}{7}$
 (e) None of these
75. If $2x + 3y = 26$; $2y + z = 19$ and $x + 2z = 29$, what is the value of $x + y + z$?
- (a) 18 (b) 32
 (c) 26 (d) 22
 (e) None of these
76. If the sum of a number and its square is 182, what is the number?
- (a) 15 (b) 26
 (c) 28 (d) 91
 (e) None of these

77. A certain number of tennis balls were purchased for ₹ 450. Five more balls could have been purchased for the same amount if each ball was cheaper by ₹ 15. Find the number of balls purchased.
- (a) 15 (b) 20
(c) 10 (d) 25
(e) None of these
78. What will be the value of $n^4 - 10n^3 + 36n^2 - 49n + 24$, if $n = 1$?
- (a) 21 (b) 2
(c) 1 (d) 22
(e) None of these
79. Out of total number of students in a college 12% are interested in sports. $\frac{3}{4}$ th of the total number of students are interested in dancing. 10% of the total number of students are interested in singing and the remaining 15 students are not interested in any of the activities. What is the total number of students in the college?
- (a) 450 (b) 500
(c) 600 (d) Cannot be determined
(e) None of these
80. The sum of four numbers is 64. If you add 3 to the first number, 3 is subtracted from the second number, the third is multiplied by 3 and the fourth is divided by 3, then all the results are equal. What is the difference between the largest and the smallest of the original numbers?
- (a) 32 (b) 27
(c) 21 (d) Cannot be determined
(e) None of these
81. A classroom has equal number of boys and girls. Eight girls left to play Kho-kho, leaving twice as many boy as girls in the classroom. What was the total number of girls and boys present initially?
- (a) Cannot be determined (b) 16
(c) 24 (d) 32
(e) None of these
82. The difference between the digits of a two-digit number is one-ninth of the difference between the original number and the number obtained by interchanging positions of the digits. What definitely is the sum of digits of that number?
- (a) 5 (b) 14
(c) 12 (d) Data inadequate
(e) None of these
83. The denominator of a fraction is 2 more than thrice its numerator. If the numerator as well as denominator is increased by one, the fraction becomes $\frac{1}{3}$. What was the original fraction?
- (a) $\frac{4}{13}$ (b) $\frac{3}{11}$
(c) $\frac{5}{13}$ (d) $\frac{5}{11}$
(e) None of these
84. If $2x + y = 15$, $2y + z = 25$ and $2z + x = 26$, what is the value of z ?
- (a) 4 (b) 7
(c) 9 (d) 12
(e) None of these
85. Which of the following values of P satisfy the inequality $P(P-3) < 4P-12$?
- (a) $P > 4$ or $P \leq 3$ (b) $24 \leq P < 71$
(c) $P > 13$; $P < 51$ (d) $3 < P < 4$
(e) $P = 4$, $P = +3$
86. If the ages of P and R are added to twice the age of Q , the total becomes 59. If the ages of Q and R are added to thrice the age of P , the total becomes 68. And if the age of P is added to thrice the age of Q and thrice the age of R , the total becomes 108. What is the age of P ?
- (a) 15 years (b) 19 years
(c) 17 years (d) 12 years
(e) None of these
87. The product of the ages of Harish and Seema is 240. If twice the age of Seema is more than Harish's age by 4 years, what is Seema's age in years?
- (a) 12 years (b) 20 years
(c) 10 years (d) 14 years
(e) Data inadequate
88. What would be the maximum value of Q in the following equation? $5P9 + 3R7 + 2Q8 = 1114$
- (a) 8 (b) 7
(c) 5 (d) 4
(e) None of the above
89. Two-fifths of one-fourth of three-sevenths of a number is 15. What is half of that number?
- (a) 96 (b) 196
(c) 94 (d) 188
(e) None of these
90. The sum of the digits of a two-digit number is $\frac{1}{11}$ of the sum of the number and the number obtained by interchanging the position of the digits. What is the difference between the digits of that number?
- (a) 3 (b) 2
(c) 6 (d) Data inadequate
(e) None of these
91. If a fraction's numerator is increased by 1 and the denominator is increased by 2 then the fraction becomes $\frac{2}{3}$. But when the numerator is increased by 5 and the denominator is increased by 1 then the fraction becomes $\frac{5}{4}$. What is the value of the original fraction?
- (a) $\frac{3}{7}$ (b) $\frac{5}{8}$
(c) $\frac{5}{7}$ (d) $\frac{6}{7}$
(e) None of these

92. In a two-digit number the digit in the unit's place is more than the digit in the ten's place by 2. If the difference between the number and the number obtained by interchanging the digits is 18 what is the original number?
 (a) 46 (b) 68
 (c) 24 (d) Data inadequate
 (e) None of these
93. If $2x + y = 17$, $2z = 15$ and $x + z = 9$ then what is the value of $4x + 3y + z$?
 (a) 41 (b) 43
 (c) 55 (d) 45
 (e) None of these
94. If the numerator of a fraction is increased by 2 and denominator is increased by 3, the fraction becomes $\frac{7}{9}$; and if numerator as well as denominator are decreased by 1 the fraction becomes $\frac{4}{5}$. What is the original fraction?
 (a) $\frac{13}{16}$ (b) $\frac{9}{11}$
 (c) $\frac{5}{6}$ (d) $\frac{17}{21}$
 (e) None of these
95. The inequality $3n^2 - 18n + 24 > 0$ gets satisfied for which of the following values of n ?
 (a) $n < 2$ & $n > 4$ (b) $2 < n < 4$
 (c) $n > 2$ (d) $n > 4$
 (e) None of these
96. A sum is divided among Rakesh, Suresh and Mohan. If the difference between the shares of Rakesh and Mohan is ₹7000 and between those of Suresh and Mohan is ₹3000, what was the sum?
 (a) ₹30,000 (b) ₹13,000
 (c) ₹10,000 (d) Cannot be determined
 (e) None of these
97. Three-fifths of a number is 30 more than 50 per cent of that number. What is 80 per cent of that number?
 (a) 300 (b) 60
 (c) 240 (d) Cannot be determined
 (e) None of these
98. The difference between a two-digit number and the number obtained by interchanging the position of the digits of the number is 27. What is the difference between the digits of that number?
 (a) 2 (b) 3
 (c) 4 (d) Cannot be determined
 (e) None of these
99. The sum of the ages of a father and his son is 4 times the age of the son. If the average age of the father and the son is 28 years, what is the son's age?
 (a) 14 years (b) 16 years
 (c) 12 years (d) Data inadequate
 (e) None of these
100. Two-fifths of one-fourth of five-eighths of a number is 6. What is 50 per cent of that number?
 (a) 96 (b) 32
 (c) 24 (d) 48
 (e) None of these
101. The sum of the digits of a two-digit number is $\frac{1}{5}$ of the difference between the number and the number obtained by interchanging the positions of the digits. What definitely is the difference between the digits of that number?
 (a) 5 (b) 9
 (c) 7 (d) Data inadequate
 (e) None of these
102. Ashok gave 40 per cent of the amount he had to Jayant. Jayant in turn gave one-fourth of what he received from Ashok to Prakash. After paying ₹200 to the taxi-driver out of the amount he got from Jayant, Prakash now has ₹600 left with him. How much amount did Ashok have?
 (a) ₹1,200 (b) ₹4,000
 (c) ₹8,000 (d) Data inadequate
 (e) None of these
103. What should be the maximum value of Q in the following equation?
 $5P9 - 7Q2 + 9R6 = 823$
 (a) 7 (b) 5
 (c) 9 (d) 6
 (e) None of these
104. The difference between a two-digit number and the number obtained by interchanging the position of the digits of that number is 54. What is the sum of the digits of that number?
 (a) 6 (b) 9
 (c) 15 (d) Data inadequate
 (e) None of these
105. The product of two numbers is 192 and the sum of these two numbers is 28. What is the smaller of these two numbers?
 (a) 16 (b) 14
 (c) 12 (d) 18
 (e) None of these
106. The age of Mr. Ramesh is four times the age of his son. After ten years the age of Mr. Ramesh will be only twice the age of his son. Find the present age of Mr. Ramesh's son.
 (a) 10 years (b) 11 years
 (c) 12 years (d) Cannot be determined
 (e) None of these
107. In an exercise room some discs of denominations 2 kg and 5 kg are kept for weightlifting. If the total number of discs is 21 and the weight of all the discs of 5 kg is equal to the weight of all the discs of 2 kg, find the weight of all the discs together.
 (a) 80 kg (b) 90 kg
 (c) 56 kg (d) Cannot be determined
 (e) None of these

108. If the number of barrels of oil consumed doubles in a 10-year period and if B barrels were consumed in the year 1940, what multiple of B will be consumed in the year 2000?
- (a) 64 (b) 60
(c) 12 (d) 32
(e) None of these
109. The sum of three consecutive even numbers is 14 less than one-fourth of 176. What is the middle number?
- (a) 8 (b) 10
(c) 6 (d) Data inadequate
(e) None of these
110. The price of four tables and seven chairs is ₹ 12,090. **Approximately**, what will be the price of twelve tables and twenty-one chairs?
- (a) ₹ 32,000 (b) ₹ 46,000
(c) ₹ 38,000 (d) ₹ 36,000
(e) ₹ 39,000
111. If the price of 253 pencils is ₹ 4263.05, what will be the **approximate** value of 39 such pencils'?
- (a) ₹ 650 (b) ₹ 550
(c) ₹ 450 (d) ₹ 700
(e) ₹ 750
112. Sundari, Kusu and Jyoti took two tests each. Sundari secured $\frac{24}{60}$ marks in the first test and $\frac{32}{40}$ marks in the second test. Kusu secured $\frac{35}{70}$ marks in the first test and $\frac{54}{60}$ marks in the second test. Jyoti secured $\frac{27}{90}$ marks in the first test and $\frac{45}{50}$ marks in the second test. Who among them did register maximum progress?
- (a) Only Sundari (b) Only Kusu
(c) Only Jyoti (d) Both Sundari and Kusu
(e) Both Kusu and Jyoti

ANSWER KEY

1	(c)	13	(b)	25	(c)	37	(b)	49	(b)	61	(a)	73	(c)	85	(d)	97	(c)	109	(b)
2	(b)	14	(d)	26	(b)	38	(b)	50	(a)	62	(d)	74	(d)	86	(d)	98	(b)	110	(d)
3	(b)	15	(b)	27	(c)	39	(a)	51	(c)	63	(b)	75	(d)	87	(a)	99	(a)	111	(a)
4	(e)	16	(a)	28	(a)	40	(e)	52	(b)	64	(e)	76	(e)	88	(e)	100	(d)	112	(c)
5	(a)	17	(d)	29	(a)	41	(b)	53	(b)	65	(a)	77	(c)	89	(e)	101	(a)		
6	(b)	18	(c)	30	(b)	42	(b)	54	(d)	66	(a)	78	(b)	90	(d)	102	(c)		
7	(a)	19	(b)	31	(c)	43	(c)	55	(d)	68	(c)	79	(b)	91	(c)	103	(a)		
8	(d)	20	(a)	32	(a)	44	(e)	56	(a)	68	(e)	80	(a)	92	(d)	104	(d)		
9	(c)	21	(d)	33	(b)	45	(c)	57	(c)	69	(d)	81	(d)	93	(d)	105	(c)		
10	(e)	22	(a)	34	(d)	46	(c)	58	(e)	70	(a)	82	(d)	94	(c)	106	(e)		
11	(a)	23	(e)	35	(a)	47	(c)	59	(d)	71	(a)	83	(b)	95	(a)	107	(e)		
12	(c)	24	(b)	36	(c)	48	(d)	60	(b)	72	(e)	84	(e)	96	(d)	108	(a)		

Hints & Explanations

1. (c) I. $pq + 30 = 6p + 5q$
 or, $(6p - 30) + (5q - pq) = 0$
 or, $6(p - 5) - q(p - 5) = 0$
 or, $(p - 5)(6 - q) = 0$
 $\therefore p = 5$
 or, $q = 6$
 Hence, $q > p$
2. (b) I. $2p^2 - 12p + 16 = 0$
 II. $2q^2 + 14q + 24 = 0$
 or, $p^2 - 6p + 8 = 0$
 or, $(p - 4)(p - 2) = 0$
 or, $q^2 + 7q + 12 = 0$
 or, $(q + 4)(q + 3) = 0$
 $p = +4$ or, $+2$
 $\therefore q = -3$ or, -4
 When $p = +2$, $q = -3$, then, $p > q$
 When $p = +4$, $q = -4$, then, $p > q$
 When $p = +4$, $q = -3$, then, $p > q$
 Hence $p > q$
3. (b) I. $2p^2 - 20p + 48 = 0$
 $p^2 - 10p + 24 = 0$
 $(p - 4)(p - 6) = 0$
 or $p = 4$; $p = 6$
 II. $2q^2 - 12q + 18 = 0$
 $q^2 - 6q + 9 = 0$
 $(q - 3)(q - 3) = 0$
 or $q = 3$; $q = 3$
 hence $p > q$
4. (e) I. $q^2 + q = 2$
 or, $q^2 + q - 2 = 0$
 II. $p^2 + 7p + 10 = 0$
 or, $p^2 + 5p + 2p + 10 = 0$
 or, $(q + 2)(q - 1) = 0$
 or, $(q + 5)(p + 2) = 0$
 $\therefore q = -2$ or 1
 $\therefore p = -5$ or -2
 Hence, $q \geq p$
5. (a) I. $p^2 + 36 = 12p$
 or, $p^2 - 12p + 36 = 0$
 II. $4q^2 + 144 = 48q$
 or, $(p - 6)^2 = 0$
 or, $q^2 - 12q + 36 = 0$
 $\therefore p = 6$
 or, $(q - 6)^2 = 0$
 $\therefore q = 6$
 Hence, $p = q$
6. (b) I. $6p^2 + 5p + 1 = 0$
 or, $6p^2 + 3p + 2p + 1 = 0$
 or, $3p(2p + 1) + 1(2p + 1) = 0$
 or, $(3p + 1)(2p + 1) = 0$
 Hence, $p = \frac{-1}{3}, \frac{-1}{2}$
 II. $20q^2 + 9q + 1 = 0$
 or, $20q^2 + 5q + 4q + 1 = 0$
 or, $5q(4q + 1) + 1(4q + 1) = 0$
 or, $(5q + 1)(4q + 1) = 0$
 Hence, $q = \frac{-1}{5}, \frac{-1}{4}$ Thus, $p < q$.
7. (a) I. $3p^2 + 2p - 1 = 0$
 or, $3p^2 + 3p - p - 1 = 0$
 or, $3p(p + 1) - 1(p + 1) = 0$
 or, $(3p - 1)(p + 1) = 0$
 Therefore, $p = \frac{1}{3}, -1$
 II. $2q^2 + 7q + 6 = 0$
 or, $2q^2 + 4q + 3q + 6 = 0$
 or, $2q(q + 2) + 3(q + 2) = 0$
 or, $(2q + 3)(q + 2) = 0$
 Therefore, $q = \frac{-3}{2}, -2$ Thus $p > q$
8. (d) I. $3p^2 + 15p + 18 = 0$
 or, $3p^2 + 9p + 6p + 18 = 0$
 or, $3p(p + 3) + 6(p + 3) = 0$
 or, $(3p + 6)(p + 3) = 0$
 or, $p = \frac{-6}{3}, -3 = -2, -3$
 II. $q^2 + 7q + 12 = 0$
 or, $q^2 + 4q + 3q + 12 = 0$
 or, $q(q + 4) + 3(q + 4) = 0$
 or, $(q + 3)(q + 4) = 0$
 or, $q = -3, -4$
 Therefore, $p \geq q$
9. (c) I. $p = \frac{\sqrt{4}}{\sqrt{9}} = \frac{2}{3}$
 II. $9q^2 - 12q + 4 = 0$
 or, $9q^2 - 6q - 6q + 4 = 0$
 or, $3q(3q - 2) - 2(3q - 2) = 0$
 or, $(3q - 2)(3q - 2) = 0$

$$\text{or, } q = \frac{2}{3}$$

Therefore, $p = q$

10. (e) **I** $p^2 + 13p + 42 = 0$
 or, $p^2 + 7p + 6p + 42 = 0$
 or, $p(p+7) + 6(p+7) = 0$
 or, $(p+6)(p+7) = 0$
 or, $p = -6, -7$
II $q^2 = 36$
 $q = \sqrt{36}$
 $\therefore q = +6, -6$
 Therefore, $p \leq q$.

11. (a) **I** $x^2 + 3x + 2 = 0$
 or, $x^2 + 2x + x + 2 = 0$
 or, $(x+2)(x+1) = 0$
 or, $x = -2, -1$
II $2y^2 = 5y$
 or, $2y^2 - 5y = 0$
 or, $y(2y-5) = 0$

$$\text{or, } y = 0, \frac{5}{2}$$

Hence, $y > x$

12. (c) **I** $2x^2 + 5x + 2 = 0$
 or, $2x^2 + 4x + x + 2 = 0$
 or, $(x+2)(2x+1) = 0$

$$\text{or, } x = -2, -\frac{1}{2}$$

$$\text{II. } 4y^2 = 1$$

$$\text{or } y^2 = \frac{1}{4}$$

$$\text{or, } y = \pm \frac{1}{2}$$

Hence, $y \geq x$

13. (b) **I** $y^2 + 2y - 3 = 0 \Rightarrow (y-1)(y+3) = 0$
 or, $y = 1, -3$
II $2x^2 - 7x + 6 = 0$
 or, $2x^2 - 4x - 3x + 6 = 0$
 or, $(2x-3)(x-2) = 0$

$$\text{or, } x = 2, \frac{3}{2}$$

Hence, $x > y$

14. (d) **I** $x^2 - 5x + 6 = 0$
 or, $x^2 - 3x - 2x + 6 = 0$
 or, $x(x-3) - 2(x-3) = 0$
 or, $(x-3)(x-2) = 0$
 or, $x = 2, 3$
II $y^2 + y - 6 = 0$
 or, $y^2 + 3y - 2y - 6 = 0$

$$\text{or, } y(y+3) - 2(y+3) = 0$$

$$\text{or, } (y+3)(y-2) = 0$$

$$\text{or, } y = 2, -3$$

Hence, $x \geq y$

15. (b) **I** $p^2 - 7p = -12$
 or, $p^2 - 7p + 12 = 0$
 or, $(p-3)(p-4) = 0$
 or, $p = 3$ or 4
II $q^2 - 3q + 2 = 0$
 or, $(q-2)(q-1) = 0$
 or, $q = 1$ or 2

Hence, $p > q$

16. (a) **I** $12p^2 - 7p = -1$
 or, $12p^2 - 7p + 1 = 0$
 or, $(3p-1)(4p-1) = 0$

$$\text{or, } p = \frac{1}{4} \text{ or } \frac{1}{3}$$

- II** $6q^2 - 7q + 2 = 0$
 or, $(3q-2)(2q-1) = 0$

$$\text{or, } q = \frac{1}{2} \text{ or } \frac{2}{3}$$

Hence, $q > p$

17. (d) **I** $p^2 - 8p + 15 = 0$
 or, $(p-3)(p-5) = 0$
 or, $p = 3$ or 5
II $q^2 - 5q + 6 = 0$
 or, $(q-2)(q-3) = 0$
 or, $q = 2$ or 3

Hence, $p \geq q$

18. (c) **I** $2p^2 + 20p + 50 = 0$
 or, $p^2 + 10p + 25 = 0$
 or, $(p+5)^2 = 0$
 or, $p = -5$
II $q^2 = 25$
 or, $q = \pm 5$

Hence, $p \leq q$

19. (b) **I** $x^2 - 6x = 7$
 or, $x^2 - 6x - 7 = 0$
 or, $(x-7)(x+1) = 0$
 or, $x = 7, -1$
II $2y^2 + 13y + 15 = 0$
 or, $2y^2 + 3y + 10y + 15 = 0$

$$\text{or, } (2y+3)(y+5) = 0 \text{ or, } y = \frac{-3}{2}, -5$$

Hence, $x > y$

20. (a) **I** $3x^2 - 7x + 2 = 0$
 or, $3x^2 - 6x - x + 2 = 0$
 or, $(x-2)(3x-1) = 0$
 or, $x = 2, \frac{1}{3}$
II $2y^2 - 11y + 15 = 0$

- or, $2y^2 - 6y - 5y + 15 = 0$
 or, $(2y - 5)(y - 3) = 0$
 or, $y = 5/2, 3$
 Hence, $y > x$
21. (d) **I.** $10x^2 - 7x + 1 = 0$
 or, $10x^2 - 5x - 2x + 1 = 0$
 or, $(2x - 1)(5x - 1) = 0$
 or, $x = 1/2, 1/5$
II. $35y^2 - 12y + 1 = 0$
 or, $35y^2 - 7y - 5y + 1 = 0$
 or, $(5y - 1)(7y - 1) = 0$
 or, $y = \frac{1}{5}, \frac{1}{7}$
 Hence, $x \geq y$
22. (a) **I.** $4x^2 = 25$
 or $x = \pm \frac{5}{2}$
II. $2y^2 - 13y + 21 = 0$
 or, $2y^2 - 6y - 7y + 21 = 0$
 or, $(y - 3)(2y - 7) = 0$
 or, $y = 3, \frac{7}{2}$
 Hence, $y > x$
23. (e) **I.** $3x^2 + 7x - 6 = 0$
 or, $3x^2 + 9x - 2x - 6 = 0$
 or, $(x + 3)(3x - 2) = 0$
 or, $x = -3, \frac{2}{3}$
II. $6(2y^2 + 1) = 17y$
 or, $12y^2 + 6 - 17y = 0$
 or, $12y^2 - 9y - 8y + 6 = 0$
 or, $(4y - 3)(3y - 2) = 0$
 or, $y = \frac{3}{4}, \frac{2}{3}$
 Hence, $y \geq x$
24. (b) **I.** $2p^2 = 23p - 63$
 or, $2p^2 - 23p + 63 = 0$
II. $2q(q^{-8}) = q^{-36}$
 or, $(2p - 9)(p - 7) = 0$
 or, $q^{-7} \times q^{36} = \frac{1}{2}$
 $\therefore p = \frac{9}{2} \text{ or } 7$
 or, $q^{29} = \frac{1}{2}$
 $\therefore q = \left(\frac{1}{2}\right)^{1/29}$
 Hence, $p > q$
25. (c) **I.** $p(p^{-1}) = p^{-1}$
II. $q^2 = 4(q^{-1})$
 or, $p \times \frac{1}{p} = \frac{1}{p}$
 $\therefore p = 1$
 or, $q^3 = 4$
 $\therefore q = (4)^{1/3} > 1$
 Hence, $q > p$
26. (b) **I.** $2p(p - 4) = 8(p + 5)$
 or $p^2 - 8p - 20 = 0$
 or $(p + 2)(p - 10) = 0$
 $\Rightarrow p = -2, \text{ or } +10$
II. $q^2 + 7q + 12 = 0$
 $(q + 3)(q + 4) = 0$
 $q = -3 \text{ or } -4$
 $p > q$
27. (c) For eqn I, the roots (a) will be 2, 3. As $-2 \times -3 = 6$ (ac) and $(-2) + (-3) = -5$
 (b). Similarly, for eqn II, the roots (b) will be 2, 1.
28. (a) $2a + 3b = 31 \dots$ (i)
 $3a - 2b = 1 \dots$ (ii)
 Multiply (i) by 2 and (ii) by 3 and then adding
 (i) and (ii), we get $a = \frac{65}{13} = 5$. Putting the value of 'a'
 in any equation, we get $b = 7$.
 Hence, $b > a$ or $a < b$.
29. (a) $a = -3/2$ & -1 ; $b = \frac{3}{2}$ & 1
30. (b) $a = \pm 1/2$; $b = 1/2, 5/2$
31. (c) **I.** $4P^2 - 8P + 3 = 0$
 $4P^2 - 2P - 6P + 3 = 0$
 $2P(2P - 1) - 3(2P - 1) = 0$
 $(2P - 3)(2P - 1) = 0$
 $\Rightarrow P = 1/2, 3/2$
II. $2Q^2 - 13Q + 15 = 0$
 $2Q^2 - 10Q - 3Q + 15 = 0$
 $2Q(Q - 5) - 3(Q - 5) = 0$
 $\Rightarrow (2Q - 3)(Q - 5) = 0$
 $\Rightarrow Q = 3/2, 5$
 $\therefore Q \geq P$
32. (a) **I.** $P^2 + 3P - 4 = 0$
 $P^2 + 4P - P - 4 = 0$
 $\Rightarrow P(P + 4) - 1(P + 4) = 0$
 $\Rightarrow P = 1, -4$
II. $3Q^2 - 10Q + 8 = 0$
 $3Q^2 - 6Q - 4Q + 8 = 0$
 $3Q(Q - 2) - 4(Q - 2) = 0$
 $(3Q - 4)(Q - 2) = 0$
 $\Rightarrow Q = 4/3, 2$
 $\therefore Q > P$

33. (b) **I** $3P^2 - 10P + 7 = 0$
 $3P^2 - 3P - 7P + 7 = 0$
 $3P(P-1) - 7(P-1) = 0$
 $\Rightarrow (3P-7)(P-1) = 0$
 $\Rightarrow P = 7/3, 1$
- II** $15Q^2 - 22Q + 8 = 0$
 $15Q^2 - 10Q - 12Q + 8 = 0$
 $5Q(3Q-2) - 4(3Q-2) = 0$
 $(5Q-4)(3Q-2) = 0$
 $\Rightarrow Q = \frac{4}{5}, \frac{2}{3}$
- $\therefore P > Q$
34. (d) **I** $20P^2 - 17P + 3 = 0$
 $20P^2 - 12P - 5P + 3 = 0$
 $5P(4P-1) - 3(4P-1) = 0$
 $\Rightarrow P = 3/5, 1/4$
- II** $20Q^2 - 9Q + 1 = 0$
 $20Q^2 - 4Q - 5Q + 1 = 0$
 $4Q(5Q-1) - 1(5Q-1) = 0$
 $(4Q-1)(5Q-1) = 0$
 $\Rightarrow Q = 1/4, 1/5$
 $\therefore P \geq Q$
35. (a) **I** $20P^2 + 31P + 12 = 0$
 $20P^2 + 16P + 15P + 12 = 0$
 $5P(4P+3) + 4(4P+3) = 0$
 $\therefore P = -4/5, -\frac{3}{4}$
- II** $21Q^2 + 23Q + 6 = 0$
 $21Q^2 + 14Q + 9Q + 6 = 0$
 $7Q(3Q+2) + 3(3Q+2) = 0$
 $(7Q+3)(3Q+2) = 0$
 $\Rightarrow Q = -3/7, -2/3$
 $\therefore Q > P$
36. (c) **From I:**
 If $\sqrt{2304} = a$
 then $a = \pm 48$
 (Do not consider -48 as value of a)
 Again,
From II:
 If $b^2 = 2304$ then $b = \pm 48$
 Hence $a = b$.
37. (b) **I** $12a^2 - 7a + 1 = 0$
II $15b^2 - 16b + 4 = 0$
 Sum of the two values of a , i.e., $(a_1 + a_2)$
 $= \frac{-(-7)}{12} = \frac{7}{12}$
 Similarly,
 Sum of the two values of b ,
 i.e., $(b_1 + b_2) = \frac{-(-16)}{15} = \frac{16}{15}$

$$\text{Since } \frac{7}{12} < \frac{16}{15}$$

Therefore, $a < b$,

Now check the equality of root

$$(12 \times 4 - 15 \times 1)^2 = \{12 \times (-16) - 15 \times (-7)\}$$

$$\{(-7) \times 4 - (-16) \times 1\}$$

$$\Rightarrow 33^2 = \{-87\} \{-12\}$$

$$\Rightarrow 1089 = 1044, \text{ which is not true.}$$

Therefore, our answer should be $a < b$.

38. (b) **I** $a^2 + 9a + 20 = 0$
 Break 9 as F_1 and F_2 , so that $F_1 \times F_2 = 20$ and $F_1 + F_2 = 9$.
 Therefore, $F_1 = 5, F_2 = 4$
 Now one value of $a = \frac{-5}{1} = -5$
- other value of $a = \frac{-20}{5} = -4$
- II** $2b^2 + 10b + 12 = 0$
 The two parts of 10, ie $F_1 = 6$ and $F_2 = 4$
 \therefore Value of $b = \frac{-6}{2} = -3$ and $\frac{-12}{6} = -2$
- Obviously $b > a$.
 If general form of quadratic equation is $ax^2 + bx + c = 0$,
 then split b into two parts so that $b_1 + b_2 = b$ and $b_1 \times b_2 = a \times c$
 Now say b_1 as F_1 and b_2 as F_2 . Then the values
 of 'x' will be $\frac{-F_1}{a}$ and $\frac{-F_2}{a}$ or
- $\frac{-F_2}{a}$ and $\frac{-F_1}{a}$

39. (a) **I** $3a + 2b = 14$
II $a + 4b = 13$
 Subtract equation I from equation II after multiplying II by 3.
 We get $3a + 12b - 3a - 2b = 39 - 14$
 $\Rightarrow 10b = 25$
 $\Rightarrow b = 2.5$
 Put value of b in equation II. We set $a + 4 \times 2.5 = 13$.
 Therefore, $a = 3$. Thus, $a > b$
40. (e) **I** $a^2 - 7a + 12 = 0$
 Here, $F_1 = -4$ and $F_2 = -3$
 Now, values of $a = \frac{-(-4)}{1} = 4$
 and $\frac{-12}{-4} = 3$

$$\text{II. } b^2 - 9b + 20 = 0$$

$$\text{Here } F_1 = -5 \text{ and } F_2 = -4$$

$$\text{Now, values of } a = \frac{-(-5)}{1} = 5$$

$$\text{and } \frac{-20}{-5} = 4$$

$$\text{Thus } b \geq a.$$

$$41. \text{ (b) } \frac{5}{28} \times \frac{9}{8} p = \frac{15}{14} \times \frac{13}{16} a$$

$$\text{or, } \frac{45p}{224} = \frac{195q}{224}$$

$$\text{or, } 3p = 13q$$

$$\therefore p > q$$

$$42. \text{ (b) (i) } p - 7 = 0 \text{ or, } p = 7$$

$$\text{(ii) } 3q^2 - 10q + 7 = 0$$

$$\text{or, } 3q^2 - 3q - 7q + 7 = 0$$

$$\text{or, } 3q(q-1) - 7(q-1) = 0$$

$$\text{or, } (3q-7)(q-1) \text{ or, } q = 1 \text{ or, } \frac{7}{3}$$

$$\therefore p > q$$

$$43. \text{ (c) (i) } 4p^2 = 16; p = \sqrt{4} = 2$$

$$\text{(ii) } q^2 - 10q + 25 = 0 \Rightarrow (q-5)(q-5) = 0$$

$$\text{or, } q = 5 \therefore q > p$$

$$44. \text{ (e) (i) } 4p^2 - 5p + 1 = 0 \quad \text{or, } 4p^2 - 4p - p + 1 = 0$$

$$\text{or, } 4p(p-1) - 1(p-1) = 0$$

$$\text{or, } (4p-1)(p-1) = 0$$

$$\text{or, } p = 1 \text{ and } p = \frac{1}{4}$$

$$\text{(ii) } q^2 - 2q + 1 = 0$$

$$\Rightarrow (q-1)(q-1) = 0$$

$$\text{or, } q = 1$$

$$\therefore q \geq p$$

$$45. \text{ (c) } q = 5, 6 \text{ \& } p = \frac{3}{2}, 2$$

$$46. \text{ (c) I. } 4q^2 + 8q = 4q + 8$$

$$\text{or, } q^2 + q - 2 = 0$$

$$\text{or, } (q-1)(q+2) = 0$$

$$\therefore q = 1 \text{ or } -2$$

$$\text{Hence, } q > p$$

$$\text{II. } p^2 + 9p = 2p - 12$$

$$\text{or, } p^2 + 7p + 12 = 0$$

$$\text{or, } (p+3)(p+4) = 0$$

$$\therefore p = -3 \text{ or } -4$$

$$47. \text{ (c) I. } 2p^2 + 40 = 18p$$

$$\text{or, } p^2 - 9p + 20 = 0$$

$$\text{or, } (p-4)(p-5) = 0$$

$$\therefore p = 4 \text{ or } 5$$

$$\text{Hence, } q > p$$

$$\text{II. } q^2 = 13q - 42$$

$$\text{or, } q^2 - 13q + 42 = 0$$

$$\text{or, } (q-7)(q-6) = 0$$

$$\therefore q = 6 \text{ or } 7$$

$$48. \text{ (d) I. } 6q^2 + \frac{1}{2} = \frac{7}{2}q$$

$$\text{or, } 12q^2 - 7q + 1 = 0$$

$$\text{II. } 12p^2 + 2 = 10p$$

$$\text{or, } 6p^2 - 5p + 1 = 0$$

$$\text{or } \left(q - \frac{1}{4}\right) \left(q - \frac{1}{3}\right) = 0 \quad \text{or, } \left(p - \frac{1}{3}\right) \left(p - \frac{1}{2}\right) = 0$$

$$\therefore q = \frac{1}{4} \text{ or } \frac{1}{3}$$

$$\therefore p = \frac{1}{3} \text{ or } \frac{1}{2}$$

$$\text{Hence, } p \geq q$$

$$49. \text{ (b) I. } y^2 - 6y + 9 = 0$$

$$\text{or, } (y-3)^2 = 0 \text{ or, } y = 3$$

$$\text{II. } x^2 + 2x - 3 = 0 \text{ or, } x = 1, -3$$

$$\text{Hence, } y > x$$

$$50. \text{ (a) I. } x^2 - 5x + 6 = 0$$

$$\text{or, } (x-3)(x-2) = 0 \text{ or, } x = 2, 3$$

$$\text{II. } 2y^2 - 3y - 5 = 0$$

$$\text{or, } y = 1, -\frac{5}{2}$$

$$\text{Hence, } x > y$$

$$51. \text{ (c) I. } x = \sqrt{256} = 16$$

$$\text{II. } y = (-4)^2 = 16$$

$$\text{Hence, } x = y$$

$$52. \text{ (b) I. } x^2 - 6x + 5 = 0 \text{ or, } x = 1, 5$$

$$\text{II. } y^2 - 13y + 42 = 0$$

$$\text{or, } (y-7)(y-6) = 0 \text{ or, } y = 6, 7$$

$$\text{Hence, } y > x$$

$$53. \text{ (b) I. } x^2 + 3x + 2 = 0$$

$$\text{or, } (x+2)(x+1) = 0$$

$$\text{or, } x = -2 \text{ or, } -1$$

$$\text{II. } y^2 - 4y + 1 = 0 \text{ or, } y = 2 \pm \sqrt{3}$$

$$\text{Hence, } y > x$$

$$54. \text{ (d) } 3x - 5y = 5 \quad \dots(i)$$

$$\text{And } \frac{x}{x+y} = \frac{5}{7} \Rightarrow 7x = 5x + 5y$$

$$\Rightarrow 2x = 5y \quad \dots(ii)$$

$$\text{From (i) and (ii), } x = 5 \text{ and } y = 2$$

$$\therefore x - y = 3$$

$$55. \text{ (d) Let the number be } x.$$

$$\therefore \frac{5}{7} \times \frac{4}{15} \times x - \frac{2}{5} \times \frac{4}{9} \times x = 8$$

$$\text{or, } x = \frac{8 \times 315}{12} = 210$$

$$\therefore \text{Half of the number} = 105$$

$$56. \text{ (a) Let the two-digit number be } 10x + y.$$

$$\text{Then, } (10x + y) - (10y + x) = 36$$

$$\text{or, } x - y = 4$$

$$57. \text{ (c) Reqd no.} = \frac{2}{5} \times 200 - \frac{3}{5} \times 125$$

$$= 80 - 75 = 5$$

$$58. \text{ (e) } (x-1) = 2 \Rightarrow x = 3$$

$$59. \text{ (d) Let the no. be } x.$$

$$\text{Then, } x - \frac{x}{3} = \frac{2}{3}x$$

$$\text{or, } \frac{2}{3}x = \frac{2}{3}x$$

So, can't be determined is the correct choice.

60. (b) Let the cost of a pen and a pencil be ₹ 'x' and ₹ 'y' respectively. We have to find (x - y).

From the question,

$$2x + 3y = 86 \dots (i)$$

$$4x + y = 112 \dots (ii)$$

Subtracting (i) from (ii), we get

$$2x - 2y = 26 \text{ or, } x - y = 13$$

61. (a) Let the two-digit no. be $10x + y$.

$$\text{Then, } (10x + y) - (10y + x) = 36$$

$$\text{or, } 9(x - y) = 36$$

$$\text{or, } x - y = 4$$

62. (d) Suppose the two-digit number is

$$10x + y$$

$$\text{Then, } 10y + x = 20x + y/2$$

$$\text{or } 20y + 2x = 40x + y \text{ or, } y = 2x$$

63. (b) $9A^2 = 12A + 96 \Rightarrow 3A^2 - 4A - 32 = 0$

$$\therefore A = \frac{4 \pm \sqrt{16 + 384}}{6} = 4, -\frac{8}{3}$$

$$B^2 = 2B + 3 \Rightarrow B^2 - 2B - 3 = 0$$

$$\therefore B = \frac{2 \pm \sqrt{4 + 12}}{2} = 3, -1$$

$$\therefore 5A + 7B = 5 \times 4 + 7 \times 3 = 20 + 21 = 41$$

64. (e) Let the original number of sweets be x.

According to the question,

$$\frac{x}{140} - \frac{x}{175} = 4$$

$$\text{or, } 175x - 140x = 4 \times 140 \times 175$$

$$\text{or, } x = \frac{4 \times 140 \times 175}{35} = 2800$$

65. (a) Let the two-digit number be $10x + y$.

$$10x + y = 7(x + y) \Rightarrow x = 2y \dots (i)$$

$$10(x + 2) + y + 2 = 6(x + y + 4) + 4$$

$$\text{or } 10x + y + 22 = 6x + 6y + 28 \Rightarrow 4x - 5y = 6 \dots (ii)$$

Solving equations (i) and (ii), we get $x = 4$ and $y = 2$

66. (a) Ratio of Ramani's savings in NSC and PPF = 3 : 2

$$\text{His savings in PPF} = \frac{2}{5} \times 150000 = 60000$$

68. (c) Let x be the first number and y be the second number.

$$\frac{1}{5}x = \frac{5}{8}y \quad \therefore \frac{x}{y} = \frac{25}{8} \quad \dots (i)$$

$$x + 35 = 4y \quad \text{or, } \frac{25}{8}y + 35 = 4y$$

$$\therefore y = 40$$

68. (e) Let the original number be $10x + y$

$$y = 2x + 1 \dots (i)$$

$$\text{and } (10y + x) - (10x + y) = 10x + y - 1$$

$$\text{or, } 9y - 9x = 10x + y - 1$$

$$\text{or, } 19x - 8y = 1 \dots (ii)$$

Putting the value of (i) in equation (ii) we get,

$$19x - 8(2x + 1) = 1$$

$$\text{or, } 19x - 16x - 8 = 1$$

$$\text{or, } 3x = 9 \text{ or, } x = 3$$

$$\text{So, } y = 2 \times 3 + 1 = 7$$

$$\therefore \text{original number} = 10 \times 3 + 7 = 37$$

69. (d) **In case I:** Let the no. of children = x.

Hence, total no. of notebooks distributed

$$\frac{1}{8}x \cdot x \text{ or } \frac{x^2}{8} \quad \dots (i)$$

$$\text{In case II: no. of children} = \frac{x}{2}$$

Now, the total no. of notebooks

$$= 16 \times \frac{x}{2} \quad \dots (ii)$$

Comparing (i) & (ii), we get

$$\frac{x^2}{8} = 8x$$

$$\text{or, } x = 64$$

Hence, total no. of notebooks

$$= \frac{64 \times 64}{8} = 512$$

70. (a) Let the positive integer be x.

$$\text{Now, } x^2 - 20x = 96$$

$$\text{or, } x^2 - 20x - 96 = 0$$

$$\text{or, } x^2 - 24x + 4x - 96 = 0$$

$$\text{or, } x(x - 24) + 4(x - 24) = 0$$

$$\text{or, } (x - 24)(x + 4) = 0$$

$$\text{or, } x = 24, -4$$

$$x \neq -4 \text{ because } x \text{ is a positive integer}$$

71. (a) Let $\frac{1}{2}$ of the no. = $10x + y$

and the no. = $10V + W$ From the given conditions,

$$W = x \text{ and } V = y - 1$$

$$\text{Thus the no.} = 10(y - 1) + x \dots (A)$$

$$\therefore 2(10x + y) = 10(y - 1) + x \Rightarrow 8y - 19x = 10 \dots (i)$$

Again, from the question,

$$V + W = 7 \Rightarrow y - 1 + x = 7$$

$$\therefore x + y = 8 \dots (ii)$$

Solving equations (i) and (ii), we get $x = 2$ and $y = 6$.

$$\therefore \text{From equation ((A), Number} = 10(y - 1) + x = 52$$

72. (e) Suppose the two-digit number be $10x + y$.
Then we have been given
 $10x + y - (10y + x) = 9$
 $\Rightarrow 9x - 9y = 9$
 $\Rightarrow x - y = 1$
Hence, the required difference = 1
Note that if the difference between a two-digit number and the number obtained by interchanging the digits is D , then the difference between the two digits of the number = $\frac{D}{9}$
73. (c) Suppose the number is N .
Then $N - \frac{3}{5}N = 50$
 $\Rightarrow \frac{2N}{5} = 50, \therefore N = \frac{50 \times 5}{2} = 125$
74. (d) Let the original fraction be $\frac{x}{y}$.
Then $\frac{x+2}{y+1} = \frac{5}{8}$ or, $8x - 5y = -11$ (i)
Again, $\frac{x+3}{y+1} = \frac{3}{4}$ or, $4x - 3y = -9$ (ii)
Solving, (i) and (ii) we get $x = 3$ and $y = 7$
 \therefore fraction = $\frac{3}{7}$
75. (d) On solving equation we get
 $x = 7, y = 4, z = 11$
76. (e) Let the number = x
Then, $x^2 + x = 182$
or, $x^2 + x - 182 = 0$
or, $x^2 + 14x - 13x - 182 = 0$
or, $x(x + 14) - 13(x + 14) = 0$
or, $(x - 13)(x + 14) = 0$
or, $x = 13$ (negative value is neglected)
77. (c) Let the no. of balls = b
Rate = $\frac{450}{b}$
 $(b + 5) \left(\frac{450}{b} - 15 \right) = 450$
or, $450 - 15b + \frac{2250}{b} - 75 = 450$
or, $b^2 + 5b - 150 = 0$
or, $(b + 15)(b - 10) = 0$
or, $b = 10$ (Neglecting negative value)
78. (b) $n^4 - 10n^3 + 36n^2 - 49n + 24$
 $1 - 10 + 36 - 49 + 24 = 2$
79. (b) Let 'x' be the total number of students in college
 $x - \left[\frac{12x}{100} + \frac{3x}{4} + \frac{10x}{100} \right] = 15$
 $x - \left[\frac{48x + 300x + 40x}{400} \right] = 15 \quad \therefore x = 500$
80. (a) Let the first, second, third and fourth numbers be a, b, c and d respectively.
According to the question,
 $a + b + c + d = 64$ (i)
and $a + 3 = b - 3 = 3c = \frac{d}{3}$
i.e., $a + 3 = b - 3 \Rightarrow b = a + 6$ (ii)
Also, $c = \frac{a + 3}{3}$ and $d = 3(a + 3)$
Solving the above eqns, we get
 $a = 9, b = 15, c = 4$ and $d = 36$
 \therefore Difference between the largest and the smallest numbers = $36 - 4 = 32$
81. (d) Let the no. of boys and girls in the classroom is x each.
From the question,
 $2(x - 8) = x \quad \therefore x = 16$
 \therefore Number of boys and girls = $16 + 16 = 32$
82. (d) $x - y = \frac{1}{9} \{ (10x + y) - (10y + x) \} = \frac{1}{9}$
 $(9x - 9y) = x - y$
83. (b) By trial and error method.
84. (e) $2x + y = 15 \Rightarrow y = 15 - 2x$ (i)
 $2y + z = 25 \Rightarrow 2(15 - 2x) + z = 25$ [from (i)]
 $\Rightarrow 4x - z = 5$ (ii)
and $2z + x = 26$ (iii)
Combining equation (ii) and (iii), we get $z = 11$
85. (d) $P(P - 3) < 4(P - 3)$;
 $P(P - 3) - 4(P - 3) < 0$
 $(P - 3)(P - 4) < 0$
This means that when
 $(P - 3) > 0$ then $(P - 4) < 0$ (i)
or, when $(P - 3) < 0$ then $(P - 4) > 0$ (ii)
From (i),
 $P > 3$ and $P < 4$
 $\therefore 3 < P < 4$
From (ii)
 $P < 3$ and $P > 4$
86. (d) $P + R + 2Q = 59$;
 $Q + R + 3P = 68$
and $P + 3(Q + R) = 108$
Solving the above two equations, we get $P = 12$ years.
87. (a) Let the ages of Harish and Seema be x and y respectively.
According to the question,
 $x \cdot y = 240$ (i)
 $2y - x = 4$ (ii)
Solving equations (i) and (ii), we get
 $y = 12$ years

88. (e) $5P^9 + 3R^7 + 2Q^8 = 1114$
 For the maximum value of Q , the values of P and R should be the minimum, i.e. zero each.
 Now, $509 + 307 + 2Q^8 = 1114$
 or, $816 + 2Q^8 = 1114$
 or, $2Q^8 = (1114 - 816) = 298$
 So, the reqd value of Q is 9.
89. (e) $\frac{2}{5} \times \frac{1}{4} \times \frac{3}{7} \times x = 15$
 $\therefore \frac{x}{2} = \frac{5 \times 7 \times 2 \times 5}{2} = 25 \times 7 = 175$
90. (d) Let, the two-digit no. be xy , i.e. $10x + y$ then,
 $x + y = \frac{1}{11} [(10x + y) + (10y + x)] = x + y$
 Thus we see that the difference of x and y can't be determined.
 Hence, the answer is data inadequate.
91. (c) Let the fraction be $\frac{x}{y}$ then
 $\frac{x+1}{y+2} = \frac{2}{3}$ or, $3x+3=2y+4$ or, $3x=2y+1$ I
 Also, we have
 $\frac{x+5}{y+1} = \frac{5}{4}$
 or, $4x+20=5y+5$
 or $4x=5y-15$ II
 From I and II, we get
 $\frac{2y+1}{3} = \frac{5y-15}{4}$
 or, $8y+4=15y-45$
 $\therefore y=7$ and $x = \frac{2y+1}{3} = \frac{2 \times 7 + 1}{3} = \frac{15}{3} = 5$
 \therefore Reqd original fraction = $\frac{x}{y} = \frac{5}{7}$
92. (d) Let the no. be $10x + y$
 then $y = x + 2$ or $y - x = 2$ (i)
 $(10y + x) - (10x + y) = 18$
 or, $9y - 9x = 18$
 $y - x = 2$ (ii)
 From eq. (i) and (ii) we can't get any conclusion.
93. (d) $2x + y = 17 \Rightarrow y = 17 - 2x$ (i)
 $y + 2z = 15 \Rightarrow 17 - 2x + 2z = 15$
 $\Rightarrow 2x - 2z = 2 \Rightarrow x - z = 1$ (ii)
 and $x + z = 9$ (iii)
 Solving equations (i) and (ii), we get

- $x = 5, z = 4$
 $\therefore y = 17 - 2x = 17 - 10 = 7$
 $4x + 3y + z = 4 \times 5 + 3 \times 7 + 4$
 $= 20 + 21 + 4 = 45$
94. (c) Let the numerator and denominator be x and y respectively. Then $\frac{x+2}{y+3} = \frac{7}{9}$
 or, $9(x+2) = 7(y+3)$
 or $9x - 7y = 3$ (i)
 $\frac{x-1}{y-1} = \frac{4}{5}$
 $\Rightarrow 5x - 4y = 1$ (ii)
 Solving (i) and (ii), we get
 $x = 5, y = 6$
 Reqd fraction = $5/6$
95. (a) $3n^2 - 18n + 24 = 0$
 or, $n^2 - 6n + 8 = 0$ or, $(n-4)(n-2) = 0$
 $\therefore n = 4, 2$
 $\therefore n > 4$
96. (d) $R - M = 7000$ and $S - M = 3000$
 Here, $S + M + R$ can be found only when one more equation in terms of S and R is given. Therefore, Can't be determined is the correct answer.
97. (c) Let the no. be N .
 Now, $\frac{3N}{5} - \frac{N}{2} = 30$ or, $\frac{N}{10} = 30$
 or, $N = 300$
 80% of $N = 240$
98. (b) Let the two-digit no. be $10x + y$.
 Then, $(10x + y) - (10y + x) = 27$
 or, $x - y = 3$
99. (a) $F + S = 4S$
 or, $F = 3S \Rightarrow F : S = 3 : 1$
 The ages of father and son = 56 years
 \therefore Son's age = $\frac{1}{4} \times 56 = 14$ years
100. (d) Let the number be x .
 $\therefore \frac{2}{5} \times \frac{1}{4} \times \frac{5}{8} \times x = 6$
 $\therefore x = \frac{6 \times 5 \times 4 \times 8}{2 \times 1 \times 5} \times \frac{1}{2} = 48$
101. (a) Let the two-digit number be $10x + y$.
 Then $x + y = \frac{1}{5}(10x + y - 10y - x)$
 or, $x + y = \frac{9}{5}(x - y)$
 or, $4x - 14y = 0 \Rightarrow \frac{x}{y} = \frac{7}{2}$

Using componendo & dividendo, we have,

$$\frac{x+y}{x-y} = \frac{7+2}{7-2} = \frac{9}{5} \text{ i.e., } x-y=5k$$

Here k has the only possible value, $k=1$. Because the difference of two single-digit numbers will always be of a single digit.

$$102. (c) \quad J = \frac{2}{5}A, \quad P = \frac{1}{4} \times \frac{2}{5}A = \frac{1}{10}A$$

$$\frac{1}{10}A - 200 = 600 \therefore \frac{1}{10}A = 800$$

$$A = ₹ 8,000$$

103. (a) For Q to be maximum. P and R will also be maximum, i.e., $P=R=9$.

So, by putting the value of P and R in

$$5P^9 - 7Q^2 + 9R^6 = 823, \text{ we get } Q=7$$

104. (d) Let the two-digit no. be $10x+y$.

According to question,

$$(10x+y) - (10y+x) = 54$$

$$9x - 9y = 54 \quad x - y = 6$$

105. (c) Let the two numbers be x and y .

$$\therefore xy = 192, \quad x+y = 28 \dots\dots\dots(i)$$

$$\therefore (x-y)^2 = (x+y)^2 - 4xy = 784 - 768 = 16$$

$$\therefore x-y = 4 \dots\dots\dots(ii)$$

Combining (i) and (ii), $x=16$, and $y=12$.

106. (e) Let the present ages of Mr. Ramesh and his son be x and y respectively.

$\therefore x=4y$ and $(x+10)=2(y+10)$ Solving the above two equations, we get $x=20$ years and $y=5$ years

107. (e) Let the total number of discs of 2 kg and 5 kg be ' a ' and ' b ' respectively.

Then, $a+b=21$ and $5b=2a$

Solving the above two equations, we get $a=15$, $b=6$

\therefore Weight of all discs together

$$= 15 \times 2 + 6 \times 5 = 60 \text{ kg}$$

108. (a) No. of 10-year periods = 6

$$2 \times 2 \times 2 \times 2 \times 2 \times 2 \times B = 64B$$

109. (b) Let the middle no. = x

$$(x-2) + x + (x+2) = \frac{176}{4} - 14 \text{ or,}$$

$$3x = \frac{120}{4} \text{ or, } x = 10$$

110. (d) number of tables and chairs and tripled, so price is $12,090 \times 3 = 36,000$

111. (a) Price of 39 pencils = $\frac{4263.05}{253} \times 39 \approx ₹ 650$

112. (c) Percentage of marks obtained by Sundari in first and second papers is 40% and 80% respectively. Percentage of marks obtained by Kusu in first and second papers is 50% and 90%, respectively. Percentage of marks obtained by Jyoti in first and second papers is 30% and 90% respectively.

From the above, we see that Jyoti's progress is maximum.



EXAMPLE 6. The average monthly expenditure of a family was ₹2200 during the first 3 months; ₹2250 during the next 4 months and ₹3120 during the last 5 months of a year. If the total saving during the year were ₹1260, then the average monthly income was

Sol: Total annual income
 $= 3 \times 2200 + 4 \times 2250 + 5 \times 3120 + 1260$
 $= 6600 + 9000 + 15600 + 1260 = 32460$

$$\therefore \text{Average monthly income} = \frac{32460}{12} = ₹ 2705$$

EXAMPLE 7. The average monthly expenditure of a family was ₹ 2200 during the first 3 months; ₹ 2250 during the next 4 months and ₹ 3120 during the last 5 months of a year. If the total saving during the year were ₹ 1260, then the average monthly income was

- (a) ₹ 2605 (b) ₹ 2805
 (c) ₹ 2705 (d) ₹ 2905

Sol. (c) Total annual income
 $= 3 \times 2200 + 4 \times 2250 + 5 \times 3120 + 1260$
 $= 6600 + 9000 + 15600 + 1260 = 32460$

$$\therefore \text{Average monthly income} = \frac{32460}{12} = ₹ 2705$$

If the average of m observations is a and the average of n observations taken out of m is b , then

$$\text{Average of rest of the observations} = \frac{ma - nb}{m - n}$$

EXAMPLE 8. A man bought 20 cows in ₹ 200000. If the average cost of 12 cows is ₹ 12500, then what will be the average cost of remaining cows?

Sol. Average cost of 20 cows $= \frac{200000}{20} = ₹ 10000$

Here, $m = 20$, $n = 12$, $a = 10000$, $b = 12500$

$$\text{Average cost of remaining } (20 - 12) \text{ cows} = \frac{20 \times 10000 - 12 \times 12500}{20 - 12}$$

$$= \frac{200000 - 150000}{8} = \frac{50000}{8} = ₹ 6250$$

EXAMPLE 9. The mean of the marks secured by 25 students of section A of class X is 47, that of 35 students of section B is 51 and that of 30 students of section C is 53. Find the combined mean of the marks of students of three sections of class X.

Sol. Mean of the marks of 25 students of XA = 47
 \therefore Sum of the marks of 25 students $= 25 \times 47 = 1175$ (i)
 Mean of the marks of 35 students of XB = 51
 \therefore Sum of the marks of 35 students $= 35 \times 51 = 1785$ (ii)
 Mean of the marks of 30 students of XC = 53
 \therefore Sum of the marks of 30 students $= 30 \times 53 = 1590$ (iii)
 Adding (i), (ii) and (iii)
 Sum of the marks of $(25 + 35 + 30)$ i.e., 90 students
 $= 1175 + 1785 + 1590 = 4550$

Thus the combined mean of the marks of students of three sections $= \frac{4550}{90} = 50.56$

Shortcut Approach

If, in a group, one or more new quantities are added or excluded, then the new quantity or sum of added or excluded quantities $= [\text{Change in no. of quantities} \times \text{original average}] \pm [\text{change in average} \times \text{final no. of quantities}]$

Take +ve sign if quantities added and take -ve sign if quantities removed.

EXAMPLE 10. The average weight of 29 students in a class is 48 kg. If the weight of the teacher is included, the average weight rises by 500 g. Find the weight of the teacher.

Sol. Here, weight of the teacher is added and final average of the group increases.

\therefore Change in average is (+)ve, using the formula
 Sum of the quantities added

$$= \left(\begin{array}{c} \text{Change in no. of quantities} \\ \times \\ \text{Original average} \end{array} \right) + \left(\begin{array}{c} \text{Change in average} \\ \times \\ \text{Final no. of quantities} \end{array} \right)$$

$$\Rightarrow \text{weight of teacher} = (1 \times 48) + (0.5 \times 30) = 63 \text{ kg.}$$

\therefore weight of teacher is 63 kg.

EXAMPLE 11. The average age of 40 students in a class is 15 years. When 10 new students are admitted, the average is increased by 0.2 year. Find the average age of the new students.

Sol. Here, 10 new students are admitted.

\therefore Change in average is +ve. Using the formula
 Sum of the quantities added

$$= \left(\begin{array}{c} \text{Change in no. of quantities} \\ \times \\ \text{Original average} \end{array} \right) + \left(\begin{array}{c} \text{Change in average} \\ \times \\ \text{Final no. of quantities} \end{array} \right)$$

$$\Rightarrow \text{Sum of the weight of 10 new students admitted} \\ = (10 \times 15) + (0.2 \times 50) = 160 \text{ kg.}$$

$$\therefore \text{Average age of 10 new students} = \frac{S_a}{n_a} = \frac{160}{10} = 16$$

\therefore Average age of 10 new students is 16 years.

AVERAGE SPEED IF EQUAL DISTANCES ARE TRAVELLED BY TWO DIFFERENT SPEEDS

If a car travels at a speed S_1 from A to B and at a speed S_2 from B to A . Then

$$\text{Average speed} = \frac{2S_1 \cdot S_2}{S_1 + S_2}$$

The above formula can be found out as follows:

If distance between A and B is d , then

$$\text{Average speed} = \frac{\text{Total distance}}{\text{Total time}} = \frac{2d}{\frac{d}{S_1} + \frac{d}{S_2}} = \frac{2}{\frac{1}{S_1} + \frac{1}{S_2}} = \frac{2S_1 \cdot S_2}{S_2 + S_1}$$

EXAMPLE 12. A motorist travels to a place 150 km away at an average speed of 50 km/hr and returns at 30 km/hr. His average speed for the whole journey in km/hr is :

- (a) 35 (b) 37
(c) 37.5 (d) 40

Sol. (c) Average speed

$$= \frac{2xy}{x+y} \text{ km/hr} = \left(\frac{2 \times 50 \times 30}{50+30} \right) \text{ km/hr} = 37.5 \text{ km/hr.}$$

AVERAGE SPEED IF EQUAL DISTANCES ARE TRAVELLED BY THREE DIFFERENT SPEEDS

$$\text{Average speed} = \frac{3xyz}{xy + yz + zx}$$

Where x, y and z are these different speeds.

EXAMPLE 13. A train covers the first 160 km at a speed of 120 km/h, another 160 km at 140 km/h and the last 160 km at 80 km/h. Find the average speed of the train for the entire journey.

Sol. Average speed = $\frac{3xyz}{xy + yz + zx}$

$$= \frac{3 \times 120 \times 140 \times 80}{120 \times 140 + 140 \times 80 + 80 \times 120}$$

$$= \frac{360 \times 140 \times 80}{16800 + 11200 + 9600} = \frac{4032000}{37600}$$

$$= 107 \frac{11}{47} \text{ km/h}$$



REMEMBER

- ★ Average of first n natural numbers = $\frac{(n+1)}{2}$
- ★ Average of first n consecutive $\times 2$ even numbers = $(n+1)$
- ★ Average of first n consecutive $\times 2$ odd numbers = n
- ★ Average of consecutive numbers = $\frac{\text{First number} + \text{Last number}}{2}$
- ★ Average of 1 to n odd numbers = $\frac{\text{Last odd number} + 1}{2}$
- ★ Average of 1 and n even numbers = $\frac{\text{Last even number} + 2}{2}$
- ★ Average of squares of first n natural numbers = $\frac{(n+1)(2n+1)}{6}$
- ★ Average of the cubes of first n natural numbers = $\frac{n(n+1)^2}{4}$
- ★ Average of n multiples of any number = $\frac{\text{Number} \times (n+1)}{2}$

- ★ If n is odd: The average of n consecutive numbers, consecutive even numbers or consecutive odd numbers is always the middle number.
- ★ If n is even: The average of n consecutive numbers, consecutive even numbers or consecutive odd numbers is always the average of the middle two numbers.
- ★ The average of squares of first n consecutive even number is $\frac{2(n+1)(2n+1)}{3}$.
- ★ The average of squares of consecutive even numbers till n is $\frac{(n+1)(n+2)}{3}$.
- ★ The average of square of consecutive odd numbers till n is $\frac{n(n+2)}{3}$.
- ★ If the average of n consecutive numbers is m, then the difference between the smallest and the largest number is $2(n-1)$.

EXAMPLE 14. Find the A.M. of the sequence 1, 2, 3, ..., 100.

Sol. We have sum of first n natural numbers = $\frac{n}{2}(n+1)$,

here n = 100

$$\Rightarrow \text{Sum} = \frac{100}{2} \times 101 = 101 \times 50$$

$$\Rightarrow \text{AM} = \frac{\text{Sum}}{100} = \frac{101 \times 50}{100} = 50.5$$

EXAMPLE 15. A sequence of seven consecutive integers is given. The average of the first five given integers is n. Find the average of all the seven integers.

Sol. Let the seven consecutive integers be

$$x, x+1, x+2, \dots, x+6$$

The sum of the first five is

$$x + x+1 + x+2 + x+3 + x+4 = 5x+10$$

$$\text{The average of these five is } \frac{5x+10}{5} = x+2 = n$$

The average of the seven will be

$$\frac{5x+10 + x+5 + x+6}{7} = \frac{7x+21}{7} = x+3$$

$$\text{As } x+2 = n, \text{ so } x+3 = x+2+1 = n+1$$

EXAMPLE 16. The average of 11 results is 50. If the average of first six result is 49 and that of last six results is 52, find the sixth result.

Sol. Average of 11 results

$$1 \ 2 \ 3 \ 4 \ 5 \ 6 \ 7 \ 8 \ 9 \ 10 \ 11$$

$$\text{Average of last 6 results} = 52$$

$$\text{Average of first 6 results} = 49$$

It is quite obvious that the sixth result is included twice, once in the first six results and second in the last six results.

$$\therefore \text{Value of the sixth result} = (\text{Sum of first six results})$$

$$+ (\text{Sum of last six results}) - \text{Sum of 11 results}$$

$$= 6 \times 49 + 6 \times 52 - 11 \times 50 = 56$$

EXAMPLE 17. Typist A can type a sheet in 5 minutes, typist B in 6 minutes and typist C in 8 minutes. The average number of sheets typed per hour per typist is sheets.

Sol. A types 12 sheets in 1 hour
 B types 10 sheets in 1 hour
 C types 7.5 sheets in 1 hour
 Average number of sheets types per hour per typist

$$= \frac{12+10+7.5}{3} = \frac{29.5}{3} = 9.83$$

If a person or a motor car covers three equal distances at the speed of x km/h, y km/h and z km/h, respectively, then for the entire journey average speed of the person or motor

$$\text{car is } \left(\frac{3xyz}{xy + yz + zx} \right) \text{ km/h.}$$

Shortcut Approach

↗ If average of n observations is a but the average becomes b when one observation is eliminated, then
 Value of eliminated observation = $n(a - b) + b$

↗ If average of n observations is a but the average becomes b when a new observation is added, then
 Value of added observation = $n(b - a) + b$
 We have n observations out of which some observations (a_1, a_2, a_3, \dots) are replaced by some other new observations in this way, if the average increases or decreases by b , then
 Value of new observations = $a \pm nb$
 where, $a = a_1 + a_2 + a_3 + \dots$

NOTE : In this formula, the signs of '+' and '-' depend upon the increment or decrement in the average.

EXAMPLE 18. The average run scored by a batsman in 20 innings is 32. After 21st innings, the runs average becomes 34. How much runs does the batsman score in his 21st innings?

Sol. Runs scored in 20 innings = $20 \times 32 = 640$
 Runs scored in 21 innings = $21 \times 34 = 714$
 Runs scored in the 21st innings = $714 - 640 = 74$

SHORTCUT METHOD

Here, $n = 20$; Initial average, $a = 32$; Last average, $(b) = 34$
 \therefore Runs scored in the 21st innings = $n(b - a) + b$
 $= 20(34 - 32) + 34 = 20 \times 2 + 34 = 74$

EXAMPLE 19. The average weight of 3 women is increased by 4 kg, when one of them whose weight is 100 kg, is replaced by another woman. What is the weight of the new woman?

Sol. Total weight increased = $4 \times 3 = 12$ kg
 \therefore Weight of new woman = $100 + 12 = 112$ kg

SHORTCUT METHOD

Here, $n = 3$, $a = 100$ kg, $b = 4$ kg
 \therefore Weight of new woman = $a + nb = 100 + 3 \times 4 = 112$ kg
 [here, '+' sign has been taken as average increases in this case.]

EXERCISE

- The average of two numbers is XY . If one number is X , then the other number is
 - Y
 - $\frac{Y}{2}$
 - $2XY - X$
 - $X(Y - 1)$
 - None of these
- The average of four consecutive odd numbers is 12. Which is the lowest odd number?
 - 9
 - 3
 - 5
 - Cannot be determined
 - None of these
- The average marks scored by Ganesh in English, Science, Mathematics and History is less than 15 from that scored by him in English, History, Geography and Mathematics. What is the difference of marks in Science and Geography scored by him?
 - 40
 - 50
 - 60
 - Data inadequate
 - None of these
- The average age of 24 students and the class teacher is 16 years. If the class teacher's age is excluded, the average reduces by one year. What is the age of the class teacher?
 - 50 years
 - 45 years
 - 40 years
 - Data inadequate
 - None of these
- There are 50 boys in a class. Their average weight is 45 kg. When one boy leaves the class, the average reduces by 100 g. Find the weight of the boy who left the class.
 - 40.9 kg
 - 42.9 kg
 - 49.9 kg
 - 39.9 kg
 - None of these
- The average age of 36 students in a group is 14 years. When teacher's age is included to it, the average increases by one. What is the teacher's age in years?
 - 31
 - 36
 - 51
 - cannot be determined
 - None of these
- The average weight of 8 persons increases by 1.5 kg. If a person weighing 65 kg is replaced by a new person, what could be the weight of the new person?
 - 76 kg
 - 77 kg
 - 76.5 kg
 - Data inadequate
 - None of these
- N number of persons decide to raise ₹ 3 lakhs by equal contributions from each. If they contributed ₹ 50 each extra, the contribution would be ₹ 3.25 lakhs. How many persons are there?
 - 600
 - 400
 - 450
 - Cannot be determined
 - None of these
- The average of the first and the second of three numbers is 15 more than the average of the second and the third of these numbers. What is the difference between the first and the third of these three numbers?
 - 15
 - 45
 - 60
 - Data inadequate
 - None of these
- The average of Suresh's marks in English and History is 55. His average of marks in English and Science is 65. What is the difference between the marks which he obtained in History and Science?
 - 40
 - 60
 - 20
 - Data inadequate
 - None of the above
- The average of four consecutive even numbers is one-fourth of the sum of these numbers. What is the difference between the first and the last number?
 - 4
 - 6
 - 2
 - Cannot be determined
 - None of these
- The average of three consecutive odd numbers is 14 more than one-third of the first of these numbers, what is the last of these numbers?
 - 17
 - 19
 - 15
 - Data inadequate
 - None of these
- A mathematics teacher tabulated the marks secured by 35 students of 8th class. The average of their marks was 72. If the marks secured by Reema was written as 36 instead of 86 then find the correct average marks upto two decimal places.
 - 73.41
 - 74.31
 - 72.43
 - 73.43
 - Cannot be determined
- The average of five consecutive odd numbers is 61. What is the difference between the highest and the lowest number?
 - 8
 - 2
 - 5
 - Cannot be determined
 - None of these
- In a coconut grove, $(x + 2)$ trees yield 60 nuts per year, x trees yield 120 nuts per year and $(x - 2)$ trees yield 180 nuts per year. If the average yield per year per tree be 100, find x .
 - 3
 - 4
 - 5
 - 6
 - None of the above
- 30 pens and 75 pencils were purchased for ₹ 510. If the average price of a pencil was ₹ 2.00, find the average price of a pen.
 - ₹ 10
 - ₹ 11
 - ₹ 12
 - cannot be determined
 - None of the above
- A school has 4 section of Chemistry in Class X having 40, 35, 45 and 42 students. The mean marks obtained in Chemistry test are 50, 60, 55 and 45 respectively for the 4 sections. Determine the overall average of marks per student
 - 50.25
 - 52.25
 - 51.25
 - 53.25
 - None of the above

18. The average of 20 numbers is zero. Of them, at the most, how many may be greater than zero?
 (a) 0 (b) 1
 (c) 10 (d) 19
 (e) None of the above
19. The average of six numbers is 3.95. The average of two of them is 3.4, while the average of the other two is 3.85. What is the average of the remaining two numbers?
 (a) 4.5 (b) 4.6
 (c) 4.7 (d) 4.8
 (e) None of the above
20. Nine persons went to a hotel for taking their meals. Eight of them spent ₹ 12 each on their meals and the ninth spend ₹ 8 more than the average expenditure of all the nine. What was the total money spent by them?
 (a) ₹ 115 (b) ₹ 117
 (c) ₹ 119 (d) ₹ 122
 (e) None of the above
21. The average age of A and B is 20 years. If C were to replace A, the average would be 19 and if C were to replace B, the average would be 21. What are the age of A, B and C?
 (a) 22, 18, 20 (b) 20, 20, 18
 (c) 18, 22, 20 (d) 21, 20, 19
 (e) None of the above
22. 3 years ago the average age of a family of 5 members was 17 years. With the birth of a new baby, the average age of six members remains the same even today. Find the age of the new baby.
 (a) 1 year (b) 2 years
 (c) $1\frac{1}{2}$ years (d) cannot be determined
 (e) None of the above
23. The average age of a group of person going for picnic is 16 years. Twenty new persons with an average age of 15 years join the group on the spot due to which their average becomes 15.5 years. Find the number of persons initially going for picnic.
 (a) 20 (b) 18
 (c) 22 (d) 19
 (e) None of the above
24. A batsman in his 12th innings makes a score of 65 and thereby increases his average by 2 runs. What is his average after the 12th innings if he had never been 'not out'?
 (a) 42 (b) 43
 (c) 44 (d) 45
 (e) None of the above
25. A pupil's marks were wrongly entered as 83 instead of 63. Due to that the average marks for the class got increased by half. The number of pupils in the class is:
 (a) 10 (b) 20
 (c) 40 (d) 73
 (e) None of the above
26. In the first 10 overs of a cricket game, the run rate was only 3.2. What should be the run rate in the remaining 40 overs to reach a target of 282 runs ?
 (a) 6.25 (b) 6.50
 (c) 6.75 (d) 7.00
 (e) None of the above
27. The average number of printing error per page in a book of 512 pages is 4. If the total number of printing error in the first 302 pages is 1,208, the average number of printing errors per page in the remaining pages is
 (a) 0 (b) 4
 (c) 840 (d) 90
 (e) None of the above
28. The average attendance in a school for the first 4 days of the week is 30 and for the first 5 days of the week is 32. The attendance on the fifth day is
 (a) 32 (b) 40
 (c) 38 (d) 36
 (e) None of the above
29. The average expenditure of a labourer for 6 months was ₹ 85 and he fell into debt. In the next 4 months by reducing his monthly expenses to ₹ 60 he not only cleared off his debt but also saved ₹ 30. His monthly income is
 (a) ₹ 70 (b) ₹ 72
 (c) ₹ 75 (d) ₹ 78
 (e) None of the above
30. The average of a batsman for 40 innings is 50 runs. His highest score exceeds his lowest score by 172 runs. If these two innings are excluded, his average drops by 2 runs. Find his highest score.
 (a) 172 (b) 173
 (c) 174 (d) 175
 (e) None of the above
31. Last year, a Home Appliance Store sold an average (arithmetic mean) of 42 microwave ovens per month. In the first 10 months of this year, the store has sold an average (arithmetic mean) of only 20 microwave ovens per month. What was the average number of microwave ovens sold per month during the entire 22 months period ?
 (a) 21 (b) 30
 (c) 31 (d) 32
 (e) None of the above
32. The captain of a cricket team of 11 players is 25 years old and the wicket-keeper is 3 years older. If the age of these two players are replaced by that of another two players, the average of the cricket team drops by 2 years. Find the average age of these two players.
 (a) 15 years (b) 15.5 years
 (c) 17 years (d) 16.5 years
 (e) None of the above
33. A batsman makes a score of 87 runs in the 17th inning and thus increases his average by 3. Find his average after 17th inning.
 (a) 36 (b) 39
 (c) 42 (d) 45
 (e) None of the above
34. Nine men went to a hotel. 8 of them spent ₹ 3 each over their meals and the ninth spent ₹ 2 more than the average expenditure of all the nine. The total money spent by all of them was
 (a) ₹ 26 (b) ₹ 40
 (c) ₹ 29.25 (d) ₹ 27
 (e) None of the above

35. The mean of 30 values was 150. It was detected on rechecking that one value 165 was wrongly copied as 135 for the computation of the mean. Find the correct mean.
 (a) 151 (b) 149
 (c) 152 (d) 148
 (e) None of the above
36. A cricketer whose bowling average is 12.4 runs per wicket takes 5 wickets for 26 runs and thereby decreases his average by 0.4. The number of wickets taken by him till the last match was:
 (a) 64 (b) 72
 (c) 80 (d) 85
 (e) None of the above
37. In an examination, a pupil's average marks were 63 per paper. If he had obtained 20 more marks for his Geography paper and 2 more marks for his History paper, his average per paper would have been 65. How many papers were there in the examination?
 (a) 8 (b) 9
 (c) 10 (d) 11
 (e) None of the above
38. A car owner buys petrol at ₹ 7.50, ₹ 8.00 and ₹ 8.50 per litre for three successive years. What approximately is his average cost per litre of petrol if he spends ₹ 4000 each year?
 (a) ₹ 8 (b) ₹ 9
 (c) ₹ 7.98 (d) ₹ 8.50
 (e) None of the above
39. A batsman has scored an average of 46 runs for a certain number of innings played in England. When he came back to India, he played another two test matches of two innings each and scored at an average of 55 runs. For the innings in England and in India taken together, he has improved his average by 2 runs over the matches played in England. Find the number of innings played in England.
 (a) 12 (b) 13
 (c) 14 (d) 15
 (e) None of these
40. There were 35 students in a hostel. Due to the admission of 7 new students, the expenses of mess were increased by ₹ 42 per day while the average expenditure per head diminished by ₹ 1. What was the original expenditure of the mess?
 (a) ₹ 400 (b) ₹ 420
 (c) ₹ 445 (d) ₹ 465
 (e) None of the above
41. A family consists of grandparents, parents and three grandchildren. The average age of the grandparents is 67 years, that of the parents is 35 years and that of the grandchildren is 6 years. What is the average age of the family?
 (a) $28\frac{4}{7}$ years (b) $31\frac{5}{7}$ years
 (c) $32\frac{1}{7}$ years (d) $27\frac{1}{2}$ years
 (e) None of the above
42. In Arun's opinion, his weight is greater than 65 kg but less than 72 kg. His brother does not agree with Arun and he thinks that Arun's weight is greater than 60 kg but less than 70 kg. His mother's view is that his weight cannot be greater than 68 kg. If all of them are correct in their estimation, what is the average of different probable weights of Arun?
 (a) 67 kg (b) 68 kg
 (c) 69 kg (d) 66.5 kg
 (e) None of the above
43. The average age of a board of 8 functional directors in a company is the same as it was 3 years ago, a younger man having been substituted for one of the directors. How much younger was the new man than the director whose place he took.
 (a) 24 years (b) 26 years
 (c) 28 years (d) 27 years
 (e) None of the above
44. A batsman makes a scores of 98 runs in his 19th inning and thus increases his average by 4. What is his average after 19th inning ?
 (a) 22 (b) 24
 (c) 28 (d) 26
 (e) None of the above
45. The average weight of 45 students in a class is 52 kg. 5 of them whose average weight is 48 kg leave the class and other 5 students whose average weight is 54 kg join the class. What is the new average weight (in kg) of the class ?
 (a) $51\frac{1}{3}$ (b) $52\frac{2}{3}$
 (c) $52\frac{1}{3}$ (d) 43.42
 (e) None of the above
46. The average of 10 numbers is 40.2. Later it is found that two numbers have been wrongly copied. The first is 18 greater than the actual number and the second number added is 13 instead of 31. Find the correct average.
 (a) 40.2 (b) 40.4
 (c) 40.6 (d) 40.8
 (e) None of the above

ANSWER KEY

1	(c)	6	(c)	11	(b)	16	(c)	21	(a)	26	(a)	31	(d)	36	(d)	41	(b)	46	(a)
2	(a)	7	(b)	12	(d)	17	(b)	22	(b)	27	(b)	32	(b)	37	(d)	42	(d)		
3	(c)	8	(e)	13	(d)	18	(d)	23	(a)	28	(b)	33	(b)	38	(c)	43	(a)		
4	(c)	9	(e)	14	(a)	19	(b)	24	(b)	29	(d)	34	(c)	39	(c)	44	(d)		
5	(c)	10	(c)	15	(b)	20	(b)	25	(c)	30	(c)	35	(a)	40	(b)	45	(b)		

Hints & Explanations

1. (c) Let the other number is N.
Then, $\frac{X+N}{2} = XY \Rightarrow N = 2XY - X$
2. (a) Let the four consecutive odd nos. be $2x-3, 2x-1, 2x+1$ and $2x+3$.
Now, $2x = 12$ or, $x = 6$
Lowest odd no. = $2 \times 6 - 3 = 9$
3. (c) $\frac{E+H+G+M}{4} - \frac{E+S+M+H}{4} = 15$
 $\Rightarrow G-S = 60$
4. (c) Age of the CT = $25 \times 16 - 24 \times 15 = 400 - 360 = 40$ yrs.
5. (c) Here one boy is excluded and final average of the group decreases.
 \therefore change in average is (-)ve = -0.1 kg.
Using the formula
Sum of the quantities excluded
$$= \left(\frac{\text{Change in no. of quantities}}{\text{Original average}} \times \right) + \left(\frac{\text{Change in average}}{\text{Final no. of quantities}} \times \right)$$

 \Rightarrow weight of the boy who left = $(1 \times 45) - (-0.1 \times 49) = 49.9$ kg
 \therefore weight of the boy who left the class is 49.9 kg.
6. (c) Age of the teacher = $(37 \times 15 - 36 \times 14)$ years = 51 years.
7. (b) total weight increases = $8 \times 1.5 = 12$ kg
so the weight of new person = $65 + 12 = 77$ kg
8. (e) Required persons = $\frac{325000 - 300000}{50} = 500$
9. (e) Set the first, second and third no be F, S and T
Respectively $\frac{F+S}{2} = \frac{S+T}{2} + 15$. Solving, we get F - T = 30.
10. (c) $E+H = (55 \times 2) = 110$;
 $E+S = (65 \times 2) = 130$
 \therefore Reqd difference = $130 - 110 = 20$
11. (b) Let the four consecutive even nos. be $2x, 2x+2, 2x+4$ and $2x+6$ respectively.
Reqd difference = $2x+6 - 2x = 6$
12. (d) Let the three consecutive odd numbers be $x-2, x, x+2$ respectively.
According to question, $x = \frac{x-2}{3} + 14$
 $\therefore 3x - x + 2 = 42 \Rightarrow 2x = 40$
 $\therefore x = 20 =$ an even number, which goes against our supposition.
13. (d) Correct average = $\frac{35 \times 72 + (86 - 36)}{35}$
 $\approx 72 + 1.43 = 73.43$
14. (a) Suppose the consecutive odd numbers are : $x, x+2, x+4, x+6$ and $x+8$
Therefore, the required difference = $x+8 - x = 8$
Note that answering the above question does not require the average of the five consecutive odd numbers.
15. (b) $\frac{(x+2) \times 60 + x \times 120 + (x-2) \times 180}{(x+2) + x + (x-2)} = 100$
 $\Rightarrow \frac{360x - 240}{3x} = 100$
 $\Rightarrow 60x = 240 \Rightarrow x = 4$
16. (c) Since average price of a pencil = ₹ 2
 \therefore Price of 75 pencils = ₹ 150
 \therefore Price of 30 pens = ₹ $(510 - 150) = ₹ 360$
 \therefore Average price of a pen = $\frac{360}{30} = ₹ 12$
17. (b) Required average marks
 $= \frac{40 \times 50 + 35 \times 60 + 45 \times 55 + 42 \times 45}{40 + 35 + 45 + 42}$
 $= \frac{2000 + 2100 + 2475 + 1890}{162} = \frac{8465}{162} = 52.25$
18. (d) Average of 20 numbers = 0.
 \therefore Sum of 20 numbers = $(0 \times 20) = 0$.
It is quite possible that 19 of these numbers may be positive and if their sum is a, then 20th number is (-a).
19. (b) Sum of the remaining two numbers
 $= (3.95 \times 6) - [(3.4 \times 2) + (3.85 \times 2)]$
 $= 23.70 - (6.8 + 7.7) = 23.70 - 14.5 = 9.20$
 \therefore Required average = $\left(\frac{9.2}{2} \right) = 4.6$.
20. (b) Let the average expenditure of all the nine be ₹ x.
Then, $12 \times 8 + (x+8) = 9x$ or $8x = 104$ or $x = 13$.
 \therefore Total money spent = $9x = ₹ (9 \times 13) = ₹ 117$.
21. (a) Given $A+B = 40$... (i)
 $C+B = 38$... (ii)
 $A+C = 42$... (iii)
 $(i) + (ii) + (iii) \Rightarrow A+B+C = 60$... (iv)
from (i) and (iv), we get
 $C = 20$ years
 $\therefore B = 18$ years and $A = 22$ years
22. (b) Sum of present ages of the six members
 $= (17 \times 6)$ years = 102 years.
Sum of present ages of the 5 members (excluding baby)
 $= 5 \times (17+3)$ years = 100 years.
 \therefore Age of the baby = $102 - 100 = 2$ years
23. (a) Let the number of persons, initially going for Picnic = x
 \therefore Sum of their ages = $16x$
Also, $\frac{16x + 15 \times 20}{x+20} = 15.5$
 $\Rightarrow 0.5x = 10 \Rightarrow x = 20$ years
24. (b) Let 'x' be the average score after 12 th innings
 $\Rightarrow 12x = 11 \times (x-2) + 65$
 $\therefore x = 43$
25. (c) Let there be x pupils in the class.
Total increase in marks = $\left(x \times \frac{1}{2} \right) = \frac{x}{2}$.
 $\therefore \frac{x}{2} = (83 - 63) \Rightarrow \frac{x}{2} = 20 \Rightarrow x = 40$.

26. (a) Total runs in the first 10 overs
 $= 10 \times 3.2 = 32$
 Run rate required in the remaining 40 overs
 $= \frac{282 - 32}{40} = \frac{250}{40} = 6.25$ runs per over
27. (b) Remaining pages = $512 - 302 = 210$
 Let average printing error in remaining pages = x
 Then, $\frac{1208 + 210 \times x}{512} = 4$
 $\Rightarrow 210x = 840 \Rightarrow x = 4$
28. (b) Attendance on the fifth day = $32 \times 5 - 30 \times 4$
 $= 160 - 120 = 40$
29. (d) Income of 6 months = ₹ $(6 \times 85) - \text{debt} = ₹ 510 - \text{debt}$
 Income of the man for next 4 months
 $= ₹ 4 \times 60 + \text{debt} + ₹ 30 = ₹ 270 + \text{debt}$
 \therefore Income of 10 months = ₹ 780
 Average monthly income = ₹ $780 \div 10 = ₹ 78$
30. (c) Total runs = $40 \times 50 = 2000$
 Let his highest score be = x
 Then his lowest score = $x - 172$
 Now $\frac{2000 - x - (x - 172)}{38} = 48$
 $\Rightarrow 2x = 2172 - 1824$
 $\Rightarrow x = 174$
31. (d) $\frac{42 \times 12 + 20 \times 10}{12 + 10} = \frac{504 + 200}{22} = \frac{704}{22} = 32$
32. (b) Let average of team = x years
 Then, $25 + 28 + S_9 = 11x \dots (i)$
 where S_9 is the sum of ages of remaining players
 Also, $Np + S_9 = 11(x - 2), \dots (ii)$
 where Np is the sum of ages of new players
 $(i) - (ii) \Rightarrow 53 - Np = 22$
 $\Rightarrow Np = 31$
 \therefore Average age of new two players = $\frac{31}{2} = 15.5$ years
33. (b) Let the average after 17th inning = x .
 Then, average after 16th inning = $(x - 3)$.
 $\therefore 16(x - 3) + 87 = 17x$ or $x = (87 - 48) = 39$.
34. (c) Let the average expenditure of all the nine be ₹ x
 Then, $3 \times 8 + x + 2 = 9x \Rightarrow x = 3.25$
 \therefore Total money spent = $9x = 9 \times 3.25 = ₹ 29.25$
35. (a) Corrected mean = $\frac{150 \times 30 - 135 + 165}{30}$
 $= \frac{4500 - 135 + 165}{30} = \frac{4530}{30} = 151$
36. (d) Let the number of wickets taken till the last match be x .
 Then,
 $\frac{12.4x + 26}{x + 5} = 12 \Rightarrow 12.4x + 26 = 12x + 60$
 $\Rightarrow 0.4x = 34 \Rightarrow x = \frac{34}{0.4} = \frac{340}{4} = 85$.
37. (d) Let the number of papers be x . Then, $63x + 20 + 2 = 65x$
 or $2x = 22$ or $x = 11$.
38. (c) Let average cost of petrol per litre be ₹ x
 Then $x = \frac{12000}{\frac{4000}{7.5} + \frac{4000}{8} + \frac{4000}{8.5}}$
- $= \frac{3}{\frac{2}{15} + \frac{1}{8} + \frac{2}{17}} = \frac{6120}{767} = ₹ 7.98$ per litre
39. (c) Let the number of innings played in England be x .
 \therefore Total runs scored in England = $46x$
 Total runs scored for innings played in India
 $= 55 \times 4 = 220$
 $(\therefore$ the number of innings played in India = 4)
 Also, $\frac{46x + 220}{x + 4} = 48$
 $\Rightarrow 46x + 220 = 48x + 192$
 $\Rightarrow 2x = 28 \Rightarrow x = 14$
40. (b) Let the original average expenditure be ₹ x . Then,
 $42(x - 1) - 35x = 42 \Leftrightarrow 7x = 84 \Rightarrow x = 12$.
 \therefore Original expenditure = ₹ $(35 \times 12) = ₹ 420$.
41. (b) Required average = $\left(\frac{67 \times 2 + 35 \times 2 + 6 \times 3}{2 + 2 + 3} \right)$
 $= \left(\frac{134 + 70 + 18}{7} \right) = \frac{222}{7} = 31\frac{5}{7}$ years.
42. (d) Let Arun's weight be X kg.
 According to Arun, $65 < X < 72$.
 According to Arun's brother, $60 < X < 70$.
 According to Arun's mother, $X < 68$.
 The values satisfying all the above conditions are 66 and 67.
 \therefore Required average = $\left(\frac{66 + 67}{2} \right) = \left(\frac{133}{2} \right) = 66.5$ kg.
43. (a) Let the new man was younger than the director = x years
 and 3 years ago, the sum of ages of board of directors
 $= S - 8 \times 3 = S - 24$
 Then, 3 years ago, average age of board of directors
 $= \frac{S - 24}{8}$
 Now, $\frac{S - 24}{8} = \frac{S - x}{8}$
 $\Rightarrow x = 24$ years
- Or**
- If the new young director would have been not substituted, then total age would have increased at present by $8 \times 3 = 24$ years.
 Therefore, the new man is 24 years younger keeping the average at present same as 3 years ago.
44. (d) Let the average score of 19 innings be x .
 Then, $\frac{18x + 98}{19} = x + 4$
 The average score after 20th innings
 $= x + 4 = 22 + 4 = 26$
45. (b) Total weight of 45 students = $45 \times 52 = 2340$ kg
 Total weight of 5 students who leave = $5 \times 48 = 240$ kg
 Total weight of 5 students who join = $5 \times 54 = 270$ kg
 Therefore, new total weight of 45 students
 $= 2340 - 240 + 270 = 2370$
 \Rightarrow New average weight = $\frac{2370}{45} = 52\frac{2}{3}$ kg
46. (a) Sum of 10 numbers = 402
 Corrected sum of 10 numbers = $402 - 13 + 31 - 18 = 402$
 Hence, new average = $\frac{402}{10} = 40.2$

Percentage

PER CENT

The word “per cent” is derived from the latin words “per centum”, which means “per hundred”.

A **percentage** is a fraction with denominator hundred.

It is denoted by the symbol %.

Numerator of the fraction is called the **rate per cent**.

VALUE OF PERCENTAGE :

Value of percentage always depends on the quantity to which it refers.

Consider the statement :

“65% of the students in this class are boys”. From the context, it is understood that boys form 65% of the total number of students in the class. To know the value of 65% of the total number of students in the class, the value of the total number of boys student should be known.

If the total number of students is 200, then, the number of boys

$$= \frac{200 \times 65}{100} = 130; \text{ It can also be written as } (200) \times (0.65) = 130.$$

If the total number of students is 500, then the number of boys

$$= \frac{500 \times 65}{100} = 325$$

NOTE that the expressions 6%, 63%, 72%, 155% etc. do not have any value to themselves. Their values depend on the quantities to which they refer.

Some Quick Results:

$$5\% \text{ of a number} = \frac{\text{Number}}{20}, \quad 10\% \text{ of a number} = \frac{\text{Number}}{10}$$

$$12\frac{1}{2}\% \text{ of a number} = \frac{\text{Number}}{8}, \quad 20\% \text{ of a number} = \frac{\text{Number}}{5}$$

$$25\% \text{ of a number} = \frac{\text{Number}}{4}, \quad 50\% \text{ of a number} = \frac{\text{Number}}{2}$$

EXAMPLE 1. 20% of 300 = ?

Sol. According to the formula,

$$20\% \text{ of } 300 = 300 \times \frac{20}{100} = 3 \times 20 = 60$$

SHORTCUTS METHOD

Here, number = 300

$$20\% \text{ of number} = \frac{\text{Number}}{5} = \frac{300}{5} = 60$$

To express the fraction equivalent to % :

Express the fraction with the denominator 100, then the numerator is the answer.

EXAMPLE 2. Express the fraction $\frac{11}{12}$ into the per cent.

$$\text{Sol. } \frac{11}{12} = \frac{11}{12} \times \frac{100}{100} = \frac{91\frac{2}{3}}{100} = 91\frac{2}{3}\%$$

To express % equivalent to fraction :

$$a\% = \frac{a}{100}$$

EXAMPLE 3. Express $45\frac{5}{6}\%$ into fraction.

$$\text{Sol. } 45\frac{5}{6}\% = \frac{45\frac{5}{6}}{100} = \frac{275}{6 \times 100} = \frac{11}{24}$$

Fractional Equivalents of % (Percentage)

$$1\% = \frac{1}{100}$$

$$33\frac{1}{3}\% = \frac{1}{3}$$

$$2\% = \frac{1}{50}$$

$$40\% = \frac{2}{5}$$

$$4\% = \frac{1}{25}$$

$$50\% = \frac{1}{2}$$

$$5\% = \frac{1}{20}$$

$$66\frac{2}{3}\% = \frac{2}{3}$$

$$6\frac{1}{4}\% = \frac{1}{16}$$

$$60\% = \frac{3}{5}$$

$$10\% = \frac{1}{10}$$

$$75\% = \frac{3}{4}$$

$$11\frac{1}{2}\% = \frac{17}{100}$$

$$80\% = \frac{4}{5}$$

$$12\frac{1}{2}\% = \frac{1}{8}$$

$$96\% = \frac{24}{25}$$

$$16\% = \frac{4}{25}$$

$$100\% = 1$$

$$16\frac{2}{3}\% = \frac{1}{6}$$

$$115\% = \frac{23}{20}$$

$$20\% = \frac{1}{5}$$

$$133\frac{1}{3}\% = \frac{4}{3}$$

$$25\% = \frac{1}{4}$$

EXPRESSING ONE QUANTITY AS A PERCENT WITH RESPECT TO OTHER

To express a quantity as a per cent with respect to other quantity following formula is used.

$$\frac{\text{The quantity to be expressed in per cent}}{\text{2nd quantity (in respect of which the per cent has to be obtained)}} \times 100\%$$

Note : To apply this formula, both the quantities must be in same unit.

EXAMPLE 4. 60 kg is what per cent of 240 kg?

Sol. According to the formula,
Required percentage

$$= \frac{\text{The quantity to be expressed in per cent}}{\text{2nd quantity (in respect of which the per cent has to be obtained)}} \times 100\%$$

$$= \frac{60}{240} \times 100\% = \frac{100}{4}\% = 25\%$$

PERCENTAGE INCREASE OR DECREASE OF A VALUE

$$\text{Increase \%} = \frac{\text{Increase value}}{\text{Original value}} \times 100\%$$

$$\text{Decrease \%} = \frac{\text{Decrease value}}{\text{Original value}} \times 100\%$$

EXAMPLE 5. Rent of the house is increased from ₹ 7000 to ₹ 7700. Express the increase in price as a percentage of the original rent.

Sol. Increase value = ₹ 7700 – ₹ 7000 = ₹ 700

$$\text{Increase \%} = \frac{\text{Increase value}}{\text{Original value}} \times 100\% = \frac{700}{7000} \times 100\%$$

$$= 10\%$$

∴ Percentage rise = 10%.

EXAMPLE 6. The cost of a bike last year was ₹19000. Its cost this year is ₹ 17000. Find the per cent decrease in its cost.

$$\text{Sol. \% decrease} = \frac{19000 - 17000}{19000} \times 100\%$$

$$= \frac{2000}{19000} \times 100\% = 10.5\%$$

∴ Per cent decrease = 10.5%.

Shortcut Approach

When a number x is increased or decreased by $y\%$, then the

$$\text{new number will be } \frac{100 \pm y}{100} \times x.$$

NOTE : 1. '+' sign is used in case of increase.

2. '-' sign is used in case of decrease.

EXAMPLE 7. The monthly income of a person is ₹ 8000. If his income is increased by 20%, then what will be his new monthly income?

Sol. Monthly income of a person = ₹ 8000

$$\text{Increment in income} = 8000 \times \frac{20}{100} = 1600$$

$$\text{New income} = 8000 + 1600 = ₹ 9600$$

SHORTCUT METHOD

Here, $x = ₹ 8000$ and $y = 20\%$

According to the formula,

$$\text{New income} = \frac{100 + 20}{100} \times 8000$$

['+' sign is used for increase in income]

$$= \frac{120}{100} \times 8000 = ₹ 9600$$

Shortcut Approach

↪ If x is $a\%$ more than y , then y is $\left(\frac{a}{100+a} \times 100\right)\%$ less than x .

↪ If x is $a\%$ less than y , then y is $\left(\frac{a}{100-a} \times 100\right)\%$ more than x .

EXAMPLE 8. If income of Ravi is 20% more than that of Ram, then income of Ram is how much per cent less than that of Ravi?

Sol. Let Ram's income be 100.

Then, Ravi's income = 120

$$\therefore \text{Required percentage} = \frac{120 - 100}{120} \times 100\% = \frac{20}{120} \times 100\%$$

$$= 16\frac{2}{3}\%$$

SHORTCUT METHOD

Here, $a = 20\%$

According to the formula,

$$\begin{aligned} \text{Required percentage} &= \left(\frac{a}{100+a} \times 100 \right) \% \\ &= \left(\frac{20}{100+20} \times 100 \right) \% = \frac{50}{3} \% = 16\frac{2}{3} \% \end{aligned}$$

Shortcut Approach

↗ If A's income is $r\%$ more than that of B, then B's income is less than that of A by

$$\left(\frac{r}{100+r} \times 100 \right) \%$$

↖ If A's income is $r\%$ less than that of B, then B's income is more than that of A by

$$\left(\frac{r}{100-r} \times 100 \right) \%$$

SHORTCUT METHOD

Tara	Ravi	Meena
100	25	100
	40	

Now, Tara : Ravi : Meena
500 : 200 : 800

Meena weight 98 compare to Tara's weight

$$= \frac{800}{500} \times 100 = 160\%$$

Shortcut Approach

If A is $x\%$ of C and B is $y\%$ of C, then A is $\frac{x}{y} \times 100\%$ of B.

EXAMPLE 9. A positive number is divided by 5 instead of being multiplied by 5. By what per cent is the result of the required correct value?

Sol. Let the number be 1, then the correct answer = 5

The incorrect answer that was obtained = $\frac{1}{5}$.

$$\therefore \text{The required \%} = \frac{1}{5 \times 5} \times 100 = 4\%.$$

Shortcut Approach

↗ $x\%$ of a quantity is taken by the first, $y\%$ of the remaining is taken by the second and $z\%$ of the remaining is taken by third person. Now, if A is left in the fund, then the initial amount

$$= \frac{A \times 100 \times 100 \times 100}{(100-x)(100-y)(100-z)} \text{ in the beginning.}$$

↖ $x\%$ of a quantity is added. Again, $y\%$ of the increased quantity is added. Again $z\%$ of the increased quantity is added. Now it becomes A, then the initial amount

$$= \frac{A \times 100 \times 100 \times 100}{(100+x)(100+y)(100+z)}$$

EXAMPLE 10. 3.5% income is taken as tax and 12.5% of the remaining is saved. This leaves ₹ 4,053 to spend. What is the income?

Sol. By direct method,

$$\text{Income} = \frac{4053 \times 100 \times 100}{(100-3.5)(100-12.5)} = ₹ 4800.$$

Shortcut Approach

If the value of a number is first increased by $a\%$ and later decreased by $a\%$, then the net effect is always a decrease

which is equal to $a\%$ of a and is written as $\frac{a^2}{100}\%$ or $\left(\frac{a^2}{10}\right)\%$.

EXAMPLE 11. The salary of a worker is first increased by 5% and then it is decreased by 5%. What is the change in his salary?

Sol. Let the initial salary of the worker be ₹ 100.

Firstly, the salary of worker is increased by 5%.

$$\text{So, increased salary} = 105\% \text{ of } 100 = \frac{105 \times 100}{100} = ₹ 105$$

Now, the salary is reduced by 5% after the increase.

$$\therefore \text{Reduced salary} = 95\% \text{ of } 105 = \frac{95 \times 105}{100} = 99.75$$

\therefore Required change is a decrease

$$\text{i.e., } 100 - 99.75 = 0.25$$

$$\begin{aligned} \text{So, required percentage decrease in salary} &= \frac{0.25 \times 100}{100} \% \\ &= 0.25\% \end{aligned}$$

SHORTCUT METHOD

Here, $a = 5\%$

We know that, change in the salary of worker is a decrease. According to the formula,

$$\text{Decrease percentage} = \frac{a^2}{100} \% = \frac{5^2}{100} \% = \frac{25}{100} \% = 0.25\%$$

Shortcut Approach

↗ If the price of a commodity increases by $r\%$, then reduction in consumption, so as not to increase the expenditure is

$$\left(\frac{r}{100+r} \times 100\right)\%$$

↗ If the price of a commodity decreases by $r\%$, then the increase in consumption so as not to decrease the

$$\text{expenditure is } \left(\frac{r}{100-r} \times 100\right)\%$$

EXAMPLE 12. If the price of coal be raised by 20%, then find by how much a householder must reduce his consumption of this commodity so as not to increase his expenditure ?

Sol. Reduction in consumption = $\left(\frac{20}{100+20} \times 100\right)\%$

$$= \left(\frac{20}{120} \times 100\right)\% = 16.67\%$$

Shortcut Approach

If due to $r\%$ decrease in the price of an item, a person can buy A kg more in ₹ x , then

$$\text{Actual price of that item} = ₹ \frac{r \times x}{(100-r)A} \text{ per kg}$$

EXAMPLE 13. If due to 10% decrease in the price of sugar, Ram can buy 5 kg more sugar in ₹ 100, then find the actual price of sugar.

Sol. Let the actual price of sugar be ₹ y .

$$\text{Amount of sugar bought in ₹ } 100 = \frac{100}{y} \quad \dots(i)$$

$$\text{Price of sugar after 10\% decrease} = 90\% \text{ of } y = \frac{9}{10}y$$

$$\text{Now, amount of sugar bought in ₹ } 100 = \frac{1000}{9y} \quad \dots(ii)$$

According to the question,

$$\frac{1000}{9y} - \frac{100}{y} = 5$$

$$\Rightarrow \frac{1000 - 900}{9y} = 5$$

$$\Rightarrow y = \frac{100}{9 \times 5}$$

$$\Rightarrow y = \frac{20}{9} = ₹ 2\frac{2}{9}$$

SHORTCUT METHOD

Here, $r = 10\%$, $x = ₹ 100$ and $A = 5$ kg

$$\begin{aligned} \therefore \text{Actual price of sugar} &= \frac{r \times x}{(100-r)A} \\ &= \frac{10 \times 100}{(100-10) \times 5} = \frac{1000}{450} = ₹ 2\frac{2}{9} \end{aligned}$$

Shortcut Approach**Population Formula**

↗ If the original population of a town is P , and the annual increase is $r\%$, then the population after n years is

$$P \left(1 + \frac{r}{100}\right)^n \text{ and population before } n \text{ years} = \frac{P}{\left(1 + \frac{r}{100}\right)^n}$$

↗ If the annual decrease be $r\%$, then the population after n

$$\text{years is } P \left(1 - \frac{r}{100}\right)^n \text{ and}$$

$$\text{Population before } n \text{ years} = \frac{P}{\left(1 - \frac{r}{100}\right)^n}$$

EXAMPLE 14. The population of a certain town increased at a certain rate per cent per annum. Now it is 456976. Four years ago, it was 390625. What will it be 2 years hence ?

Sol. Suppose the population increases at $r\%$ per annum. Then,

$$390625 \left(1 + \frac{r}{100}\right)^4 = 456976$$

$$\therefore \left(1 + \frac{r}{100}\right)^2 = \sqrt{\frac{456976}{390625}} = \frac{676}{625}$$

$$\text{Population 2 years hence} = 456976 \left(1 + \frac{r}{100}\right)^2$$

$$= 456976 \times \frac{676}{625} = 494265 \text{ approximately.}$$

EXAMPLE 15. The population of a city increases at the rate of 4% per annum. There is an additional annual increase of 1% in the population due to the influx of job seekers. Therefore, the % increase in the population after 2 years will be :

- (a) 10 (b) 10.25
(c) 10.55 (d) 10.75

Sol. (b) The net annual increase = 5%.

Let the initial population be 100.

$$\begin{aligned} \text{Then, population after 2 years} &= 100 \times 1.05 \times 1.05 \\ &= 110.25 \end{aligned}$$

$$\begin{aligned} \text{Therefore, \% increase in population} \\ &= (110.25 - 100) = 10.25\% \end{aligned}$$

Shortcut Approach

First Increase and then decrease :

If the value is first increased by $x\%$ and then decreased by $y\%$ then there is $\left(x - y - \frac{xy}{100}\right)\%$ increase or decrease, according to the +ve or -ve sign obtained respectively.

EXAMPLE 16. A number is increased by 10%. and then it is decreased by 10%. Find the net increase or decrease per cent.

$$\text{Sol. \% change} = 10 - 10 - \frac{10 \times 10}{100} = -1\%$$

i.e 1% decrease.

Shortcut Approach

↗ Average percentage rate of change over a period.

$$= \frac{(\text{New Value} - \text{Old Value})}{\text{Old Value}} \times \frac{100}{n} \% \text{ where } n = \text{period.}$$

↗ The percentage error = $\frac{\text{The Error}}{\text{True Value}} \times 100\%$

↗ **Successive increase or decrease**

If the value is increased **successively** by $x\%$ and $y\%$ then the final **increase** is given by

$$\left(x + y + \frac{xy}{100}\right)\%$$

If the value is decreased **successively** by $x\%$ and $y\%$ then the final **decrease** is given by

$$\left(-x - y + \frac{xy}{100}\right)\%$$

EXAMPLE 17. The price of a car is decreased by 10% and 20% in two successive years. What per cent of price of a car is decreased after two years?

Sol. Put $x = -10$ and $y = -20$, then

$$-10 - 20 + \frac{(-10)(-20)}{100} = -28\%$$

\therefore The price of the car decreases by 28%.

Shortcut Approach

Student and Marks

The percentage of passing marks in an examination is $x\%$. If a candidate who scores y marks fails by z marks, then

$$\text{the maximum marks } M = \frac{100(y+z)}{x}$$

A candidate scoring $x\%$ in an examination fails by 'a' marks, while another candidate who scores $y\%$ marks gets 'b' marks more than the minimum required passing marks.

$$\text{Then the maximum marks } M = \frac{100(a+b)}{y-x}$$

EXAMPLE 18. Vishal requires 40% to pass. If he gets 185 marks, falls short by 15 marks, what was the maximum he could have got?

Sol. If Vishal has 15 marks more, he could have scored 40% marks.

Now, 15 marks more than 185 is $185 + 15 = 200$

Let the maximum marks be x , then

$$40\% \text{ of } x = 200$$

$$\Rightarrow \frac{40}{100} \times x = 200$$

$$\Rightarrow x = \frac{200 \times 100}{40} = 500$$

Thus, maximum marks = 500

SHORTCUT METHOD

$$\text{Maximum marks} = \frac{100(185+15)}{40} = \frac{100 \times 200}{40} = 500$$

EXAMPLE 19. A candidate scores 15% and fails by 30 marks, while another candidate who scores 40% marks, gets 20 marks more than the minimum required marks to pass the examination. Find the maximum marks of the examination.

Sol. Quicker method :

$$\text{Maximum marks} = \frac{100(30+20)}{40-15} = 200$$

Shortcut Approach

If two candidates contested in an election and one candidate got $x\%$ of total votes and still lose by y votes, then

$$\text{Total number of votes casted} = \frac{100 \times y}{100 - 2x}$$

EXAMPLE 20. In an election contested by two candidates, one candidate got 30% of total votes and still lost by 500 votes, then find the total number of votes casted.

Sol. Let total number of votes casted be x .

$$\text{Number of votes got by first candidate} = \frac{30}{100}x.$$

$$\text{Number of votes got by second candidate} = \frac{70}{100}x.$$

According to the question,

$$\text{Difference in votes} = 500$$

$$\Rightarrow \frac{70}{100}x - \frac{30}{100}x = 500$$

$$\Rightarrow \frac{40}{100}x = 500$$

$$\therefore x = \frac{500 \times 100}{40} = 1250$$

SHORTCUT METHOD

Here, $x = 30$ and $y = 500$

$$\begin{aligned} \therefore \text{Total number of votes} &= \frac{100 \times y}{100 - 2x} \\ &= \frac{500 \times 100}{100 - 2 \times 30} \\ &= \frac{500 \times 100}{40} = 1250 \end{aligned}$$

Shortcut Approach

2-dimensional figure and area

If the sides of a triangle, square, rhombus or radius of a circle are increased by $a\%$, its area is increased by

$$\frac{a(a+200)}{100}\%$$

EXAMPLE 21. If the radius of a circle is increased by 10%, what is the percentage increase in its area?

Sol. Radius is increased by 10%.

$$\text{So, Area is increased by } \frac{10(10+200)}{100} = 21\%.$$

EXAMPLE 22. If the length and width of a rectangular garden were each increased by 20%, then what would be the per cent increase in the area of the garden?

(a) 20% (b) 24%

(c) 36% (d) 44%

Sol. (d) Let the original length and width of the garden be x and y units, respectively.

Then, the original area = $x \times y = xy$ square units

New area = $1.2x \times 1.2y = 1.44xy$ square units

$$\% \text{ increase in area} = \frac{(1.44xy - xy)}{xy} \times 100 = 44\%$$

EXAMPLE 23. If A's salary is 50% more than B's, then by what percent B's salary is less than A's salary?

Sol. By direct method,

B's salary is less than A's salary by

$$\left(\frac{50}{100+50} \times 100 \right) \%$$

$$= \frac{50}{150} \times 100\% = 33.33\%.$$

EXAMPLE 24. Ravi's weight is 25% that of Meena's and 40% that of Tara's. What percentage of Tara's weight is Meena's weight.

Sol. Let Meena's weight be x kg and Tara's weight be y kg.

Then Ravi's weight = 25% of Meena's weight

$$= \frac{25}{100} \times x \quad \dots (i)$$

Also, Ravi's weight = 40% of Tara's weight

$$= \frac{40}{100} \times y \quad \dots (ii)$$

From (i) and (ii), we get

$$\frac{25}{100} \times x = \frac{40}{100} \times y$$

$$\Rightarrow 25x = 40y$$

$$\Rightarrow 5x = 8y \Rightarrow x = \frac{8}{5}y$$

Meena's weight as the percentage of Tara's weight

$$= \frac{x}{y} \times 100 = \frac{\frac{8}{5}y}{y} \times 100 = \frac{8}{5} \times 100 = 160$$

Hence, Meena's weight is 160% of Tara's weight.

EXERCISE

- The income of a company increases 20% per annum. If its income is ₹ 2664000 in the year 1999 what was its income in the year 1997?
 - ₹ 2220000
 - ₹ 2850000
 - ₹ 2121000
 - ₹ 1855000
 - None of these
- If the growth in production of company *A* from 1994 to 1995 was 25% and that from 1995 to 1996 was 60%, then what percentage growth took place from 1994 to 1996?
 - 85%
 - 75%
 - 200%
 - 100%
 - None of these
- A shopkeeper employed a servant at a monthly salary of ₹ 1500. In addition to it, he agreed to pay him a commission of 15% on the monthly sale. How much sale in Rupees should the servant do if he wants his monthly income as ₹ 6000?
 - ₹ 30000
 - ₹ 415000
 - ₹ 31500
 - ₹ 50000
 - None of these
- Mr Yadav spends 60% of his monthly salary on consumable items and 50% of the remaining on clothes and transport. He saves the remaining amount. If his savings at the end of the year were ₹ 48456, how much amount per month would he have spent on clothes and transport?
 - ₹ 4038
 - ₹ 8076
 - ₹ 9691.20
 - ₹ 4845.60
 - None of these
- In a class of 60 children, 30% children can speak only English, 20% Hindi and English both and the rest of the children can speak only Hindi. How many children can speak Hindi?
 - 42
 - 36
 - 30
 - 48
 - None of these
- Somesh bought a microwave oven and paid 10% less than its original price. He sold it at 30% profit on the price he had paid. What percentage of profit did Somesh earn on the original price?
 - 32%
 - 11%
 - 20%
 - 17%
 - None of these
- The price of commodity X increases by 40 paise every year, while the price of commodity Y increases by 15 paise every year. If in 1988, the price of commodity X was ₹ 4.20 and that of Y was ₹ 6.30, in which year will commodity X cost 40 paise more than commodity Y?
 - 1997
 - 1998
 - 1999
 - 2000
 - None of these
- Mr X, a businessman, had income in the year 1995 such that he earned a profit of 20% on his investment in the business. In the year 1996 his investment was less by ₹ 5000 but still had the same income (Income = Investment + Profit) as that in 1995. Thus the per cent profit earned in 1996 increased by 6%. What was his investment in 1995?
 - ₹ 100000
 - ₹ 100500
 - ₹ 105000
 - Data inadequate
 - None of these
- The strength of a school increases and decreases every alternate year. It starts with increase by 10% and there-after the percentage of increase/decrease is the same. Which of the following is **definitely true** about the strength of the school in 2001 as compared to that in 1996?
 - Increase approximately by 2%
 - Decrease approximately by 2%
 - Increase approximately by 20%
 - Decrease approximately by 20%
 - None of these
- Milk contains 5% water. What quantity of pure milk should be added to 10 litres of milk to reduce this to 2%?
 - 5 litres
 - 7 litres
 - 15 litres
 - Cannot be determined
 - None of these
- $A = 10\%$ of x , $B = 10\%$ of y , $C = 10\%$ of $x + 10\%$ of y . On the basis of the above equalities, what is true in the following?
 - A is equal to B
 - A is greater than B
 - B is greater than A
 - Relation cannot be established between A and B
 - None of these
- If inflation increases at a rate of 8 p.c.p.a. what will a ₹ 20 article cost at the end of two years?
 - Between ₹ 20 and ₹ 21
 - Between ₹ 21 and ₹ 22
 - Between ₹ 22 and ₹ 23
 - Between ₹ 23 and ₹ 24
 - None of these
- In a recent survey 40% houses contained two or more people. Of those houses containing only one person 25% were having only a male. What is the percentage of all houses which contain exactly one female and no males?
 - 75
 - 40
 - 15
 - Cannot be determined
 - None of these
- Sumitra has an average of 56% on her first 7 examinations. How much should she make on her eighth examination to obtain an average of 60% on 8 examinations?
 - 88%
 - 78%
 - 98%
 - Cannot be determined
 - None of these

15. If $3x + 7 = x^2 + M = 7x + 5$, what is the value of 120% of M ?
- (a) 8.90 (b) 9.90
(c) 9.98 (d) Cannot be determined
(e) None of these
16. Four-fifths of three-eighths of a number is 24. What is 250 per cent of that number?
- (a) 100 (b) 160
(c) 120 (d) 200
(e) None of these
17. What **approximate** value should come in place of the question mark (?) in the following equation?
 $159\% \text{ of } 6531.8 + 5.5 \times 1015.2 = ? + 5964.9$
- (a) 10,000 (b) 10,900
(c) 11,000 (d) 10,600
(e) 12,000
18. When 35 per cent of a number is added to another number, the second number increases by its 20 per cent. What is the ratio between the second number and the first number?
- (a) 4 : 7 (b) 7 : 4
(c) 8 : 5 (d) Data inadequate
(e) None of these
19. Two-fifths of thirty per cent of one-fourth of a number is 15. What is 20 per cent of that number?
- (a) 90 (b) 150
(c) 100 (d) 120
(e) None of these
20. Jeevan bought an article with 30 per cent discount on the labelled price. He sold the article with 12 per cent profit on the labelled price. What was his per cent profit on the price he bought?
- (a) 40 (b) 50
(c) 60 (d) Data inadequate
(e) None of these
21. Naresh's monthly income is 30% more than that of Raghu. Raghu's monthly income is 20% less than that of Vishal. If the difference between the monthly incomes of Naresh and Vishal is ₹ 800, what is the monthly income of Raghu?
- (a) ₹ 16,000 (b) ₹ 20,000
(c) ₹ 12,000 (d) Data inadequate
(e) None of these
22. In a certain year, the population of a certain town was 9000. If in the next year the population of males increases by 5% and that of the females by 8% and the total population increases to 9600, then what was the ratio of population of males and females in that given year?
- (a) 4:5 (b) 5:4
(c) 2:3 (d) Data inadequate
(e) None of these
23. A petrol pump owner mixed leaded and unleaded petrol in such a way that the mixture contains 10% unleaded petrol. What quantity of leaded petrol should be added to 1 litre mixture so that the percentage of unleaded petrol becomes 5%?
- (a) 1000ml (b) 900ml
(c) 1900ml (d) 1800ml
(e) None of these
24. Out of a total 85 children playing badminton or table tennis or both, total number of girls in the group is 70% of the total number of boys in the group. The number of boys playing only badminton is 50% of the number of boys and the total number of boys playing badminton is 60% of the total number of boys. The number of children playing only table tennis is 40% of the total number of children and a total of 12 children play badminton and table tennis both. What is the number of girls playing only badminton?
- (a) 16 (b) 14
(c) 17 (d) Data inadequate
(e) None of these
25. When the price of a product was increased by 15%, the number sold was decreased by 20%. What was the net effect?
- (a) 8% gain (b) 5% loss
(c) 8% loss (d) Cannot be determined
(e) None of these
26. If $\frac{1}{8}$ of $\frac{2}{3}$ of $\frac{4}{5}$ of a number is 12 then 30 per cent of the number will be
- (a) 48 (b) 64
(c) 54 (d) 42
(e) None of these
27. Venkat purchased twenty dozens of toys at the rate of ₹ 375 per dozen. He sold each one of them at the rate of ₹ 33. What was his percentage profit?
- (a) 6.5 (b) 5.6
(c) 3.5 (d) 4.5
(e) None of these
28. A speaks truth in 75% and B in 80% cases. In what percentage of cases are they likely to contradict each other when narrating the same incident?
- (a) 35 (b) 30
(c) 25 (d) 20
(e) None of these
29. Pradip spends 40 per cent of his monthly income on food items, and 50 per cent of the remaining on clothes and conveyance. He saves one-third of the remaining amount after spending on food, clothes and conveyance. If he saves ₹ 19,200 every year, what is his monthly income?
- (a) ₹ 24,000 (b) ₹ 12,000
(c) ₹ 16,000 (d) ₹ 20,000
(e) None of these
30. When 30 per cent of a number is added to another number the second number increases by its 20 per cent. What is the ratio between the first and the second number?
- (a) 3 : 2 (b) 2 : 3
(c) 2 : 5 (d) Data inadequate
(e) None of these

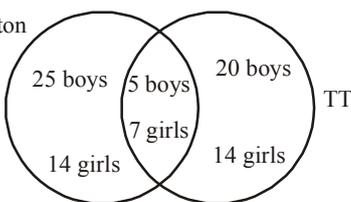
31. Rajesh solved 80 per cent of the questions in an examination correctly. If out of 41 questions solved by Rajesh 37 questions are correct and of the remaining questions out of 8 questions 5 questions have been solved by Rajesh correctly then find the total number of questions asked in the examination.
 (a) 75 (b) 65
 (c) 60 (d) Cannot be determined
 (e) None of these
32. 10% of the inhabitants of a village having died of cholera, a panic set in, during which 25% of the remaining inhabitants left the village. The population is then reduced to 4050. Find the number of original inhabitants.
 (a) 5000 (b) 6000
 (c) 7000 (d) 8000
 (e) None of these
33. Chunilal invests 65% in machinery 20% in raw material and still has ₹ 1,305 cash with him. Find his total investment.
 (a) ₹ 6,500 (b) ₹ 7,225
 (c) ₹ 8,500 (d) ₹ 7,395
 (e) None of these
34. When the price of a pressure cooker was increased by 15%, the sale of pressure cookers decreased by 15%. What was the net effect on the sales?
 (a) 15% decrease (b) no effect
 (c) 2.25% increase (d) 2.25% decrease
 (e) None of these
35. When the price of a radio was reduced by 20%, its sale increased by 80%. What was the net effect on the sale?
 (a) 44% increase (b) 44% decrease
 (c) 66% increase (d) 75% increase
 (e) None of these
36. When the price of sugar was increased by 32%, a family reduced its consumption in such a way that the expenditure on sugar was only 10% more than before. If 30 kg were consumed per month before, find the new monthly consumption.
 (a) 20 kg (b) 25 kg
 (c) 30 kg (d) 35 kg
 (e) None of these
37. If 10 % of an electricity bill is deducted, ₹ 45 is still to be paid. How much was the bill?
 (a) ₹ 50 (b) ₹ 60
 (c) ₹ 55 (d) ₹ 70
 (e) None of these
38. The ratio of salary of a worker in July to that in June was $2\frac{1}{2} : 2\frac{1}{4}$, by what % the salary of July more than salary of June. Also find by what %, salary of June was less than that of July.
 (a) $11\frac{1}{9}\%$ and 10% (b) 10% and $11\frac{1}{9}\%$
 (c) Both 10% (d) Both $11\frac{1}{9}\%$
 (e) None of these
39. 405 sweets were distributed equally among children in such a way that the number of sweets received by each child is 20% of the total number of children. How many sweets did each child receive?
 (a) 7 (b) 9
 (c) 18 (d) 45
 (e) None of these
40. There is an increase of 30% in the production of milk chocolates in Amul Dairy in one month. If now it is 9,100 milk chocolates per month, what was it one month ago?
 (a) 10,000 chocolates (b) 9000 chocolates
 (c) 8000 chocolates (d) 7000 chocolates
 (e) None of these
41. In a college election between two rivals, a candidate who got 40% of the total votes polled, was defeated by his rival by 160 votes. The total number of votes polled was
 (a) 900 (b) 800
 (c) 700 (d) 600
 (e) None of these
42. A scooter costs ₹ 25,000 when it is brand new. At the end of each year, its value is only 80% of what it was at the beginning of the year. What is the value of the scooter at the end of 3 years?
 (a) ₹ 10,000 (b) ₹ 12,500
 (c) ₹ 12,800 (d) ₹ 12,000
 (e) None of these
43. A number is increased by 11% and then reduced by 10%. After these operations, the number :
 (a) does not change (b) decreases by 1%
 (c) increases by 1% (d) increases by 0.1%
 (e) None of these

ANSWER KEY

1	(e)	6	(d)	11	(d)	16	(d)	21	(a)	26	(c)	31	(b)	36	(b)	41	(b)
2	(d)	7	(b)	12	(d)	17	(a)	22	(a)	27	(b)	32	(b)	37	(a)	42	(c)
3	(a)	8	(c)	13	(e)	18	(b)	23	(a)	28	(a)	33	(d)	38	(a)	43	(b)
4	(a)	9	(e)	14	(d)	19	(c)	24	(b)	29	(c)	34	(d)	39	(b)		
5	(a)	10	(c)	15	(b)	20	(c)	25	(c)	30	(b)	35	(a)	40	(d)		

Hints & Explanations

1. (e) Let income in 1997 = x
According to the question,
Income in 1998 = $x + \frac{x}{5} = \frac{6x}{5}$
Income in 1999 = $\frac{6x}{5} + \frac{6x}{25} = \frac{36x}{25}$
But given, income in 1999 = 2664000
 $\therefore \frac{36x}{25} = 2664000 \Rightarrow x = 1850000$
2. (d) Percentage growth from 1994 to 1996
 $= +25 + 60 + \frac{25 \times 60}{100} = +100\%$
3. (a) Servant's commission amount
 $= 6000 - 1500 = ₹ 4500$
i.e., $15\% = 4500$
or, $100\% = \frac{4500}{15} \times 100 = ₹ 30000$
4. (a) \therefore Amount, he have spent in 1 month on clothes transport = Amount spent on saving per month
 \therefore Amount, spent on clothes and transport
 $= \frac{48456}{12} = ₹ 4038$
5. (a) Number of students who speak only English
 $= 30\% \text{ of } 60 = 18$
 \therefore Number of students who speak Hindi and English
 $= 20\% \text{ of } 60 = 12$
Number of students who speak only Hindi
 $= (60 - 30 - 12) = 18$
 \therefore No. of students who speak Hindi = $18 + 12 = 30$
6. (d) **Quicker Method:**
% profit which Somesh gets
 $= -10 + 30 - \frac{10 \times 30}{100} = +17\%$
7. (b) Suppose in ' n ' years the price of commodity X will be more by 40 paise than that of commodity Y.
 $\therefore 420 + 40n - 630 - 15n = 40$
or, $25n - 210 = 40$
or, $25n = 250$
or, $n = \frac{250}{25} = 10$ years
8. (c) Let the investment of X in 1995 be ₹ x .
 \therefore Profit = ₹ $\frac{x}{5}$ \therefore Income = ₹ $\left(x + \frac{x}{5}\right) = ₹ \frac{6}{5}x$
Investment of company X in 1996 would be $(x - 5000)$ From the question,
 $(x - 5000) \times \frac{126}{100} = \frac{6}{5}x \Rightarrow x = ₹ 105000$
9. (e) Let the strength of school was x in 1998
 \therefore strength in 2001 will be
 $= x \times \frac{110}{100} \times \frac{90}{100} \times \frac{110}{100} \times \frac{90}{100} \times \frac{110}{100} = 1.07811x$
 \therefore increment = $1.07811x - x = 0.07811x$
 \therefore % increase = $7.811 \approx 8\%$
10. (c) Here required quantity of pure milk = $\frac{10 \times (5 - 2)}{2}$
 $= \frac{10 \times 3}{2} = 15$ litres
11. (d) The given information gives no indication regarding the comparison of x and y .
12. (d) Required sum
 $= 20 \left(1 + \frac{8}{100}\right)^2 = \frac{20 \times 27 \times 27}{25 \times 25} = 23.3$
13. (e) Houses containing only one person = $100 - 40 = 60\%$
Houses containing only a male = $60 \times \frac{25}{100} = 15\%$
 \therefore Houses containing only one female = $60 - 15 = 45\%$
14. (d) Since the weightage of eighth examination is not known, hence can not be determined.
15. (b) If $3x + 7 = x^2 + M = 7x + 5$
ie, $3x + 7 = 7x + 5$
or, $4x = 2 \therefore x = \frac{1}{2}$
and $3x + 7 = x^2 + M$
or, $\frac{1}{4} + M = \frac{3}{2} + 7 \Rightarrow M + \frac{1}{4} = 8 + \frac{1}{2}$
 $\therefore M = 8 + \frac{1}{4} - \frac{1}{4} = \frac{33}{4}$
Now 120% of M
 $= \frac{120}{100} \times \frac{33}{4} = 9.9$
16. (d) Let the number = x .
 $\frac{4}{5} \times \frac{3}{8}x = 24$ or $x = \frac{24 \times 2 \times 5}{3} = 80$
 \therefore 250 per cent of the number = $\frac{250}{100} \times 80 = 200$

17. (a) $? \approx 160\% \text{ of } 6530 + 5.5 \times 1010 - 5965$
 $\approx 10448 + 5555 - 5965 \approx 10,000$
18. (b) $35\% \text{ of } x + y = \frac{120}{100}y$
 or $\frac{35x + 100y}{100} = \frac{120y}{100} \Rightarrow 35x = 20y$
 $\frac{y}{x} = \frac{35}{20} = 7 : 4$
19. (c) Let the number = x
 $\frac{2}{5} \times \frac{30}{100} \times \frac{x}{4} = 15$ or, $x = \frac{15 \times 5 \times 100 \times 4}{2 \times 30} = 500$
 $20\% \text{ of } 500 = 100$
20. (c) Let the labelled price of the article = ₹ 100 then
 $CP = ₹ 70$ and $SP = ₹ 112$.
 \therefore Req'd profit percent = $\frac{112 - 70}{70} \times 100$
 $= \frac{42}{7} \times 10 = 60$
21. (a) $N = R + 30\% \text{ of } R = 1.3R$
 $R = V - 20\% \text{ of } V = 80\% \text{ of } V = 0.8V$
 $\therefore N = 1.3 \times 0.8V = 1.04V$
 Now, $N - V = 1.04V - V = 0.04V = ₹ 800$ (given)
 $\therefore V = ₹ 20000$
 $\therefore R = 0.8 \times 20000 = ₹ 16000$
22. (a) Let the population of males = x ; then the population of
 females = $9000 - x$
 Now, $5\% \text{ of } x + 8\% \text{ of } (9000 - x)$
 $= (9600 - 9000) = 600$
 or $0.05x + 720 - 0.08x = 600$
 or $720 - 600 = 0.08x - 0.05x$
 or, $120 = 0.03x$
 $\therefore x = 4000$
 \therefore Req'd ratio of population of males and females
 $= \frac{4000}{9000 - 4000} = \frac{4000}{5000} = 4 : 5$
23. (a) In 1 lit mixture quantity of unleaded petrol = 100 ml
 Let x ml leaded petrol be added, then
 $5\% \text{ of } (1000 + x) = 100$ ml
 or, $5(1000 + x) = 100 \times 100$
 $\Rightarrow x = \frac{5000}{5} = 1000$ ml
24. (b) Let the number of boys = x
 then $x + \frac{7x}{10} = 85$ or $x = 50$
 No. of girls = $85 - 50 = 35$
- Badminton
- 
25. (c) Net effect = $+15 - 20 - \frac{15 \times 20}{100} = -8\%$
 -ve sign indicates loss.
26. (c) Let the number be x .
 and $\frac{1}{8}$ of $\frac{2}{3}$ of $\frac{4}{5} \times x = 12$
 $\therefore \frac{3x}{10} = 54$
27. (b) Cost price of 20 dozen toys = $20 \times 375 = ₹ 7,500$
 Selling price of 20 dozen toys = $20 \times 33 \times 12 = ₹ 7,920$
 Profit percentage = $\frac{7,920 - 7,500}{7,500} \times 100 = 5.6\%$
28. (a) Let the truth spoken by A and B be p_1 and p_2
 respectively, i.e., $p_1 = \frac{3}{4}$ and $p_2 = \frac{4}{5}$
 They will contradict each other only when one speaks
 truth and the other is lying.
 i.e., $\frac{3}{4} \times \frac{1}{5} + \frac{4}{5} \times \frac{1}{4} = \frac{3}{20} + \frac{4}{20} = \frac{7}{20} = \frac{35}{100}$ i.e., 35%
29. (c) Food items = 40%
 Clothes + conveyance = $\frac{1}{2}$ of 60% = 30%
 $\frac{1}{3}$ of 30% = $\frac{19,200}{12} \Rightarrow 10\% = 1600$
 $\therefore 100\% = ₹ 16,000$
30. (b) $30\% \text{ of } I + II = II \times \frac{120}{100}$
 or, $\frac{3}{10} I = \frac{2}{10} II \Rightarrow I : II = 2 : 3$.
31. (b) Suppose there are $8x$ questions apart from the 41
 questions.
 Then, $\frac{37 + 5x}{41 + 8x} = 80\% = \frac{4}{5}$
 $\Rightarrow 185 + 25x = 164 + 32x \Rightarrow 7x = 21 \Rightarrow x = 3$
 \therefore Total no. of questions = $41 + 8x = 65$
32. (b) Let the total number of original inhabitants be x . Then,
 $(100 - 25)\% \text{ of } (100 - 10)\% \text{ of } x = 4050$
 $\Rightarrow \left(\frac{75}{100} \times \frac{90}{100} \times x \right) = 4050 \Rightarrow \frac{27}{40} x = 4050$
 $\Rightarrow x = \left(\frac{4050 \times 40}{27} \right) = 6000$.
 \therefore Number of original inhabitants = 6000.
33. (d) Let he had originally ₹ x . Then
 $65\% \text{ of } x + 20\% \text{ of } x + 1305 = x$
 $0.65x + 0.2x + 1305 = x$
 $\Rightarrow 0.15x = 1305 \Rightarrow x = ₹ 8700$
 \therefore His total investment = $65\% \text{ of } 8700 + 20\% \text{ of } 8700$
 $= 85\% \text{ of } 8700 = ₹ 7395$

34. (d) Net effect on sale = $-\frac{(\text{common \% change})^2}{100}$
 $= \frac{-(15)^2}{100} = 2.25\% \text{ decrease}$
35. (a) Let the original price be x and sale be of y units.
 Then, the revenue collected initially = $x \times y$
 Now, new price = $0.8x$, new sale = $1.8y$
 Then, new revenue collected = $1.44xy$
 $\% \text{ increase in revenue} = \frac{0.44xy}{xy} \times 100$
 $= 44\% \text{ increase}$
36. (b) Since, expenditure = price \times consumption
 $\therefore 110\% \text{ of } 30 = \frac{132}{100} \times \text{new consumption}$
 $\Rightarrow \frac{110}{100} \times 30 = \frac{132}{100} \times \text{new consumption}$
 $\Rightarrow \text{New consumption} = 25 \text{ kg}$
37. (a) Let the bill be ₹ x . Then
 $90\% \text{ of } x = 45$
 $\Rightarrow x = \frac{45 \times 100}{90} = ₹ 50$
38. (a) Let the salary of July be ₹ $\frac{5}{2}x$
 and the salary of June be ₹ $\frac{9}{4}x$.
 Required percentages

- $$= \frac{\frac{5}{2}x - \frac{9}{4}x}{\frac{9}{4}x} \times 100 \text{ and } \frac{\frac{5}{2}x - \frac{9}{4}x}{\frac{5}{2}x} \times 100$$
- $$= \frac{100}{9}\% \text{ and } \frac{100}{10}\% = 11\frac{1}{9}\% \text{ and } 10\%$$
39. (b) Let the total number of children be x .
 Then, $x \times (20\% \text{ of } x) = 405$
 $\Leftrightarrow \frac{1}{5}x^2 = 405 \Leftrightarrow x^2 = 2025 \Leftrightarrow x = 45$
 \therefore Number of sweets received by each child
 $= 20\% \text{ of } 45 = 9$
40. (d) Let one month ago, production be x chocolates.
 Then, $130\% \text{ of } x = 9100$
 $\Rightarrow x = \frac{9100 \times 100}{130} = 7000 \text{ chocolates}$
41. (b) Let total number of votes polled be x .
 Then, votes polled by other candidate
 $= (100 - 40)\% \text{ of } x = 60\% \text{ of } x$
 Now $60\% \text{ of } x - 40\% \text{ of } x = 160$
 $\Rightarrow \frac{20x}{100} = 160 \Rightarrow x = 800 \text{ votes}$
42. (c) After first year, the value of the scooter = ₹ 20,000
 After second year, the value of scooter = ₹ 16,000
 After third year, the value of scooter = ₹ 12,800
43. (b) Let the original number be 100.
 Then, the new number = $100 \times 1.1 \times 0.9 = 99$
 i.e. the number decreases by 1%.



Ratio & Proportion

RATIO

Ratio is strictly a mathematical term to compare two similar quantities expressed in the same units.

The ratio of two terms 'x' and 'y' is denoted by $x : y$.

In general, the ratio of a number x to a number y is defined as the quotient of the numbers x and y.

COMPARISON OF TWO OR MORE RATIOS

Two or more ratios may be compared by reducing the equivalent fractions to a common denominator and then comparing the magnitudes of their numerator. Thus, suppose $2 : 5$, $4 : 3$ and $4 : 5$

are three ratios to be compared then the fractions $\frac{2}{5}$, $\frac{4}{3}$ and $\frac{4}{5}$ are reduced to equivalent fractions with a common denominator. For this, the denominator of each is changed to 15 equal to the L.C.M. their denominators Hence the given ratios are expressed

$\frac{6}{15}$, $\frac{20}{15}$ and $\frac{12}{15}$ or $2 : 5$, $4 : 3$, $4 : 5$ according to magnitude.

EXAMPLE 1. Which of the ratios $2 : 3$ and $5 : 9$ is greater ?

Sol. In the form of fractions, the given ratios are $\frac{2}{3}$ and $\frac{5}{9}$,

Reducing them to fractions with a common denominator

they are written as $\frac{6}{9}$ and $\frac{5}{9}$.

Hence the greater ratio is $\frac{6}{9}$ or $2 : 3$.

EXAMPLE 2. Are the ratios 3 to 4 and $6:8$ equal ?

Sol. The ratios are equal if $3/4 = 6/8$.

These are equal if their cross products are equal; that is, if $3 \times 8 = 4 \times 6$. Since both of these products equal 24, the answer is yes, the ratios are equal.

Remember to be careful! Order matters!

A ratio of $1 : 7$ is not the same as a ratio of $7 : 1$.

REMEMBER

- ★ In the ratio of two quantities the two quantities must be of the same kind and in same unit.
- ★ The ratio is a pure number, i.e., without any unit of measurement.
- ★ The ratio would stay unaltered even if both the numerator and the denominator are multiplied or divided by the same number.

COMPOUND RATIO

Ratios are compounded by multiplying together the numerators for a new denominator and the denominator for a new denominator.

The compound ratio of $a : b$ and $c : d$ is $\frac{a \times c}{b \times d}$, i.e., $ac : bd$.

EXAMPLE 3. Find the compound ratio of the four ratios :

$4 : 5$, $15 : 13$, $26 : 3$ and $6 : 17$

Sol. The required ratio = $\frac{4 \times 15 \times 26 \times 6}{5 \times 13 \times 3 \times 17} = \frac{48}{17}$
or $48 : 17$

Shortcut Approach

↗ The duplicate ratio of $x : y$ is $x^2 : y^2$.

The triplicate ratio of $x : y$ is $x^3 : y^3$.

The subduplicate ratio of $x : y$ is $\sqrt{x} : \sqrt{y}$.

The subtriplicate ratio of $x : y$ is $\sqrt[3]{x} : \sqrt[3]{y}$.

Reciprocal ratio of $a : b$ is $\frac{1}{a} : \frac{1}{b}$ or $b : a$

Inverse ratio

↗ Inverse ratio of $x : y$ is $y : x$.

PROPERTIES OF RATIOS

1. If $\frac{a}{b} = \frac{c}{d}$ then $\frac{b}{a} = \frac{d}{c}$, i.e., the inverse ratios of two equal ratios are equal. The property is called **Invertendo**.
2. If $\frac{a}{b} = \frac{c}{d}$ then $\frac{a}{c} = \frac{b}{d}$, i.e., the ratio of antecedents and consequents of two equal ratios are equal. This property is called **Alternendo**.
3. If $\frac{a}{b} = \frac{c}{d}$, then $\frac{a+b}{b} = \frac{c+d}{d}$. This property is called **Componendo**.
4. If $\frac{a}{b} = \frac{c}{d}$, then $\frac{a-b}{b} = \frac{c-d}{d}$. This property is called **Dividendo**.
5. If $\frac{a}{b} = \frac{c}{d}$, then $\frac{a+b}{a-b} = \frac{c+d}{c-d}$. This property is called **Componendo and Dividendo**.

6. If $\frac{a}{b} = \frac{c}{d} = \frac{e}{f} = \dots\dots\dots$. Then,

Each ratio = $\frac{\text{sum of Numerators}}{\text{sum of Denominators}}$

i.e. $\frac{a}{b} = \frac{c}{d} = \frac{a+c+e+\dots}{b+d+f+\dots}$

7. If we have two equations containing three unknowns as $a_1x + b_1y + c_1z = 0$ and ... (i)

$a_2x + b_2y + c_2z = 0$... (ii)

then, the values of x, y and z cannot be resolved without having a third equation.

However, in the absence of a third equation, we can find the ratio $x : y : z$.

This will be given by

$b_1c_2 - b_2c_1 : c_1a_2 - c_2a_1 : a_1b_2 - a_2b_1$.

EXAMPLE 7. Find the value of $\frac{x+a}{x-a} + \frac{x+b}{x-b}$, if $x = \frac{2ab}{a+b}$.

Sol. $x = \frac{2ab}{a+b} \Rightarrow \frac{x}{a} = \frac{2b}{a+b}$

By componendo – dividendo,

$\frac{x+a}{x-a} = \frac{3b+a}{b-a}$

Similarly, $\frac{x}{b} = \frac{2a}{a+b}$

$\Rightarrow \frac{x+b}{x-b} = \frac{3a+b}{a-b}$

$\therefore \frac{x+a}{x-a} + \frac{x+b}{x-b} = \frac{3b+a}{b-a} + \frac{3a+b}{a-b}$

$= \frac{-(3b+a)}{a-b} + \frac{3a+b}{a-b} = \frac{2a-2b}{a-b} = 2$.

EXAMPLE 8. Divide ₹ 581 among A, B and C such that four times A's share is equal to 5 times B's share which is equal to seven times C's share.

Sol. 4 times A's share = 5 times B's share
= 7 times C's share.

$\frac{\text{A's share}}{35} = \frac{\text{B's share}}{28} = \frac{\text{C's share}}{20}$

[Dividing by L.C.M. of 4, 5 and 7 i.e. 140]

$\therefore A : B : C = 35 : 28 : 20$

$\therefore \text{Share of A} = \frac{35}{35+28+20} \times 581 = ₹ 245$.

Share of B = $\frac{28}{83} \times 581 = ₹ 196$.

Share of C = $\frac{20}{83} \times 581 = ₹ 140$.

Shortcut Approach

To divide a given quantity into a given ratio.

Suppose any given quantity a, is to be divided in the ratio $m : n$.

Let one part of the given quantity be x then the other part will be $a - x$.

$\therefore \frac{x}{a-x} = \frac{m}{n}$ or $nx = ma - mx$ or $(m+n)x = ma$

\therefore one part is $\frac{ma}{m+n}$ and the other part will be

$a - \frac{ma}{m+n} = \frac{na}{m+n}$

EXAMPLE 4. Divide 70 in the ratio 3 : 7.

Sol. Let one part be x then the other part = $70 - x$

$\therefore \frac{x}{70-x} = \frac{3}{7}$ or $7x = 210 - 3x$

or $x = 21$ and $70 - x = 49$

Hence the two required parts of 70 are 21 and 49.

EXAMPLE 5. What is the least integer which when

subtracted from both the numerator and denominator of $\frac{60}{70}$ will

give a ratio equal to $\frac{16}{21}$?

Sol. Let x be the required integer. Then,

$\frac{60-x}{70-x} = \frac{16}{21}$

$\Rightarrow 1260 - 21x = 1120 - 16x$

$\Rightarrow 5x = 140 \Rightarrow x = 28$.

EXAMPLE 6. If $\frac{x}{y} = \frac{4}{5}$, find the value of $\frac{3x+4y}{4x+3y}$.

Sol. $\frac{3x+4y}{4x+3y} = \frac{\frac{3x}{y} + 4}{\frac{4x}{y} + 3} = \frac{3 \times \frac{4}{5} + 4}{4 \times \frac{4}{5} + 3} = \frac{32}{31}$.

Shortcut Approach

(i) If $A : B = a : b$ and $B : C = m : n$, then $A : B : C = am : mb : nb$ and $A : C = am : bn$

(ii) If $A : B = a : b$, $B : C = c : d$ and $C : D = e : f$, then $A : B : C : D = ace : bce : bde : bdf$

EXAMPLE 9. The ratio of $A : B = 1 : 3$, $B : C = 2 : 5$ and $C : D = 2 : 3$. Find the value of $A : B : C : D$.

Sol. $A : B = 1 : 3$, $B : C = 2 : 5$, $C : D = 2 : 3$

$A : B : C : D = (1 \times 2 \times 2) : (3 \times 2 \times 2) : (3 \times 5 \times 2) : (3 \times 5 \times 3)$
 $= 4 : 12 : 30 : 45$

Shortcut Approach

Two numbers are in ratio $a : b$ and x is subtracted from the numbers, then the ratio becomes $c : d$. The two numbers will

be $\frac{xa(d-c)}{ad-bc}$ and $\frac{xb(d-c)}{ad-bc}$, respectively.

EXAMPLE 10. Two numbers are in the ratio 3 : 5. If 9 is subtracted from each, the ratio becomes 12 : 23. Find the greater number.

Sol. Here $a = 3$, $b = 5$, $c = 12$, $d = 23$ and $x = 9$

$$\begin{aligned} \text{Then, 1st number} &= \frac{xb(d-c)}{ad-bc} = \frac{9 \times 5(23-12)}{3 \times 23 - 5 \times 12} \\ &= \frac{27 \times 11}{69-60} = \frac{297}{9} = 33 \end{aligned}$$

$$\begin{aligned} \text{2nd number} &= \frac{xb(d-c)}{ad-bc} = \frac{9 \times 3(23-12)}{5 \times 23 - 3 \times 12} \\ &= \frac{45 \times 11}{69-60} = \frac{45 \times 11}{9} = 55 \end{aligned}$$

Shortcut Approach

In any 2-dimensional figures, if the corresponding sides are in the ratio $x : y$, then their areas are in the ratio $x^2 : y^2$.

EXAMPLE 11. The ratio of the radius of two circles is 2 : 5.

Find the ratio of their areas.

Sol. Ratio of their areas = $2^2 : 5^2 = 4 : 25$

Shortcut Approach

In any two 3-dimensional similar figures, if the corresponding sides are in the ratio $x : y$, then their volumes are in the ratio $x^3 : y^3$.

If the ratio between two numbers is $a : b$ and if each number is increased by x , the ratio becomes $c : d$. Then, two numbers are given as $\frac{xa(c-d)}{ad-bc}$ and $\frac{xb(c-d)}{ad-bc}$

EXAMPLE 12. The ratio between two numbers is 3 : 4. If each number be increased by 2, the ratio becomes 7 : 9. Find the number.

Sol. Numbers are $\frac{2 \times 3(7-9)}{3 \times 9 - 4 \times 7}$ and $\frac{2 \times 4(7-9)}{3 \times 9 - 4 \times 7}$ or 12 and 16.

Shortcut Approach

If the sum of two numbers is A and their difference is a , then the ratio of numbers is given by $A + a : A - a$.

EXAMPLE 13. The sum of two numbers is 60 and their difference is 6. What is the ratio of the two numbers?

Sol. The required ratio of the numbers

$$= \frac{60+6}{60-6} = \frac{66}{54} = \frac{11}{9} \text{ or } 11 : 9$$

EXAMPLE 14. Three persons A, B, C whose salaries together amount to ₹14400, spend 80, 85 and 75 per cent

of their salaries respectively. If their savings are in the ratio 8 : 9 : 20, find their respective salaries.

Sol. A, B and C spend 80 %, 85 % and 75 % respectively of their salaries.

\Rightarrow A, B and C save 20 %, 15 % and 25 % respectively of their salaries.

So, 20 % of A's salary : 15 % of B's salary : 25 % of C's salary = 8 : 9 : 20

$\Rightarrow \frac{1}{5}$ of A's salary : $\frac{3}{20}$ of B's salary :

$\frac{1}{4}$ of C's salary = 8 : 9 : 20 ... (i)

Now $\frac{\frac{1}{5} \text{ of A's salary}}{\frac{3}{20} \text{ of B's salary}} = \frac{8}{9}$

$\Rightarrow \frac{\text{A's salary}}{\text{B's salary}} = \frac{3}{20} \times 8 \times \frac{5}{9} = \frac{2}{3}$

\therefore A's salary : B's salary = 2 : 3 ... (ii)

Similarly, B's salary : C's salary = 3 : 4 ... (iii)

From (ii) and (iii)

A's salary : B's salary : C's salary = 2 : 3 : 4.

\therefore A's salary = $\frac{2}{2+3+4} \times 14400 = ₹ 3200$

B's salary = $\frac{3}{2+3+4} \times 14400 = ₹ 4800$

C's salary = $\frac{4}{2+3+4} \times 14400 = ₹ 6400$.

Removal and Replacement

Shortcut Approach

(i) Let a vessel contains Q unit of mixture of ingredients A and B. From this, R unit of mixture is taken out and replaced by an equal amount of ingredient B only.

If this process is repeated n times, then after n operations

$$\frac{\text{Quantity of A left}}{\text{Quantity of A originally present}} = \left(1 - \frac{R}{Q}\right)^n$$

and Quantity of B left = $Q - \text{Quantity of A Left}$

EXAMPLE 15. A container contains 40 litres of milk. From this container, 4 litres of milk was taken out and replaced by water. This process was repeated further two times. How much milk is now contained by the container?

Sol.

	Milk	Water
To start with	40 litres	
After 1st operation	36 litres	4 litres
After 2nd operation	$36 - \frac{4}{40} \times 36$	$4 - \frac{4}{40} \times 4 + 4$
	= 32.4 litres	= 4 - 0.4 + 4
		= 7.6 litres

$$\begin{aligned} \text{After 3rd operation} \quad 32.4 - \frac{4}{40} \times 32.4 & \quad 7.6 - \frac{4}{40} \times 7.6 + 4 \\ & = 32.4 - 3.24 \quad = 7.6 - 0.76 + 4 \\ & = 29.16 \quad = 10.84 \end{aligned}$$

∴ The quantity of milk in the container is 29.16 litres.

SHORTCUT METHOD

$$\text{Quantity of milk in container} : 40 \left(1 - \frac{4}{40}\right)^3 = 29.16 \text{ litres}$$

Shortcut Approach

In a container, milk and water are present in the ratio $a : b$. If x L of water is added to this mixture, the ratio becomes $a : c$. Then,

$$\text{Quantity of milk in original mixture} = \frac{ax}{c-b} \text{ L}$$

$$\text{and quantity of water in original mixture} = \frac{bx}{c-b} \text{ L}$$

EXAMPLE  **16. In a container, milk and water are present in the ratio 7 : 5. If 15 L water is added to this mixture, the ratio of milk and water becomes 7 : 8. Find the quantity of water in the new mixture.**

Sol. Let the quantity of milk and water in initial mixture be $7x$ and $5x$ L.

Then, according to the question,

$$\frac{7x}{5x+15} = \frac{7}{8} \Rightarrow 7x \times 8 = 7(5x+15)$$

$$\Rightarrow 56x = 35x + 105 \Rightarrow 56x - 35x = 105$$

$$\Rightarrow 21x = 105 \Rightarrow x = \frac{105}{21} = 5$$

∴ Quantity of water in initial mixture = $5 \times 5 = 25$ L
and quantity of water in new mixture = $25 + 15 = 40$ L

SHORTCUT METHOD

Here, $a = 7$, $b = 5$, $c = 8$ and $x = 15$ L

According to the formula,

$$\text{Quantity of water in original mixture} = \frac{bx}{c-b} = \frac{5 \times 15}{8-5} = 25 \text{ L}$$

∴ Quantity of water in new mixture = $25 + 15 = 40$ L

Shortcut Approach

A container has milk and water in the ratio $a : b$, a second container has milk and water in the ratio $c : d$. If both the mixtures are emptied into a third container, then the ratio of milk of water in third container is given by

$$\left(\frac{a}{a+b} + \frac{c}{c+d}\right) : \left(\frac{b}{a+b} + \frac{d}{c+d}\right)$$

EXAMPLE  **17. 2 containers have milk and water in the ratio 2 : 1 and 3 : 1, respectively. If both containers are emptied into a bigger container, then find the ratio of milk of water in bigger container?**

Sol. Given, ratio of milk and water in 1st container = $2 : 1$

$$\therefore \text{Quantity of milk in 1st container} = \frac{2}{3}$$

$$\text{and quantity of water in 1st container} = \frac{1}{3}$$

Similarly, ratio of milk and water in 2nd container = $3 : 1$

$$\therefore \text{Quantity of milk in 2nd container} = \frac{3}{4}$$

$$\text{and quantity of water in second container} = \frac{1}{4}$$

Now, after pouring both mixture in one container

$$\text{Quantity of milk} = \frac{2}{3} + \frac{3}{4} = \frac{17}{12}$$

$$\text{and quantity of water} = \frac{1}{4} + \frac{1}{3} = \frac{7}{12}$$

Hence, required ratio = $17 : 7$

SHORTCUT METHOD

Here, $a = 2$, $b = 1$, $c = 3$, $d = 1$

Ratio of milk of water in bigger container

$$= \left(\frac{a}{a+b} + \frac{c}{c+d}\right) : \left(\frac{b}{a+b} + \frac{d}{c+d}\right)$$

$$= \left(\frac{2}{2+1} + \frac{3}{3+1}\right) : \left(\frac{1}{2+1} + \frac{1}{3+1}\right) = \frac{17}{12} : \frac{7}{12} = 17 : 7$$

PROPORTION

When two ratios are equal, the four quantities composing them are said to be in proportion.

If $\frac{a}{b} = \frac{c}{d}$, then a, b, c, d are in proportions.

This is expressed by saying that 'a' is to 'b' as 'c' is to 'd' and the proportion is written as

$$a : b :: c : d \quad \text{or} \quad a : b = c : d$$

The terms a and d are called the extremes while the terms b and c are called the means.

REMEMBER

★ If four quantities are in proportion, the product of the extremes is equal to the product of the means.

Let a, b, c, d be in proportion, then

$$\frac{a}{b} = \frac{c}{d} \Rightarrow ad = bc.$$

★ If three quantities a, b and c are in continued proportion, then $a : b = b : c$

$$\therefore ac = b^2$$

b is called mean proportional.

EXAMPLE 18. Find the mean proportional between 3 and 75.

Sol. Let x be the required mean proportional. Then,

$$3 : x :: x : 75$$

$$\therefore x = \sqrt{3 \times 75} = 15$$

EXAMPLE 19. What must be added to each of the four numbers 10, 18, 22, 38 so that they become in proportion ?

Sol. Let the number to be added to each of the four numbers be x

By the given condition, we get

$$(10+x) : (18+x) :: (22+x) : (38+x)$$

$$\Rightarrow (10+x)(38+x) = (18+x)(22+x)$$

$$\Rightarrow 380 + 48x + x^2 = 396 + 40x + x^2$$

Cancelling x^2 from both sides, we get

$$380 + 48x = 396 + 40x$$

$$\Rightarrow 48x - 40x = 396 - 380$$

$$\Rightarrow 8x = 16 \Rightarrow x = \frac{16}{8} = 2$$

Therefore, 2 should be added to each of the four given numbers.

EXAMPLE 20. Find the fourth proportional to

$$p^2 - pq + q^2, p^3 + q^3, p - q$$

Sol. Let x be the fourth proportional

$$\therefore (p^2 - pq + q^2) : (p^3 + q^3) = (p - q) : x$$

$$\Rightarrow (p^2 - pq + q^2) \times x = (p^3 + q^3)(p - q)$$

$$\therefore x = \frac{(p^3 + q^3)(p - q)}{(p^2 - pq + q^2)}$$

$$\Rightarrow x = \frac{(p + q)(p^2 - pq + q^2)(p - q)}{(p^2 - pq + q^2)}$$

$$\Rightarrow x = (p + q)(p - q) = p^2 - q^2$$

\therefore The required fourth proportional is $p^2 - q^2$

EXAMPLE 21. Find third proportional to $a^2 - b^2$ and $a + b$.

Sol. Let x be the required third proportional

$$\text{Then } a^2 - b^2 : a + b = a + b : x$$

$$\therefore (a^2 - b^2)x = (a + b)(a + b)$$

$$\therefore x = \frac{(a + b)(a + b)}{a^2 - b^2} = \frac{a + b}{a - b}$$

INDIRECT PROPORTION (OR INVERSE PROPORTION)

If on the increase of one quantity, the other quantity decreases to the same extent or vice versa, then we say that the given two quantities are indirectly proportional. If A and B are indirectly

proportional then we denote it by $A \propto \frac{1}{B}$.

$$\text{Also, } A = \frac{k}{B} \text{ (k is a constant)}$$

$$\Rightarrow AB = k$$

If b_1, b_2 are the values of B corresponding to the values a_1, a_2 of A respectively, then

$$a_1 b_1 = a_2 b_2$$

Some Examples :

1. More men, less time
2. Less men, more time
3. More speed, less taken time to be covered distance

EXAMPLE 22. A garrison of 3300 men had provision for 32 days, when given at the rate of 850 gm per head. At the end of 7 days, a reinforcement arrived and it was found that the provision would last 17 days more, when given at the rate of 825 gm per head. What was the strength of the reinforcement ?

$$(a) \text{ 1500} \qquad (b) \text{ 1700}$$

$$(c) \text{ 1800} \qquad (d) \text{ 1600}$$

Sol. (b) There is a provision for 2805×32 kg for 3300 men for 32 days @ 850 gm per head per day.

In 7 days, 3300 men consumed

$$\frac{2805 \times 32}{32} \times 7 = 2805 \times 7 \text{ kg.}$$

Let the strength of the reinforcement arrived after 7 days be x .

\therefore $(3300 + x)$ men had provision of 2805×25 kg for 17 days @ 825 gm per head per day, i.e.

$$\therefore \frac{(3300 + x) \times 825 \times 17}{1000} = 2805 \times 25$$

$$\Rightarrow (3300 + x) = \frac{1000 \times 2805 \times 25}{825 \times 17} = 5000$$

$$\Rightarrow x = 1700$$

\therefore Strength of the reinforcement arrived after 7 days = 1700.

DIRECT PROPORTION

If on the increase of one quantity, the other quantity increases to the same extent or on the decrease of one, the other decreases to the same extent, then we say that the given two quantities are directly proportional. If A and B are directly proportional then we denote it by $A \propto B$.

Some Examples :

1. Work done \propto number of men
2. Cost \propto number of Articles
3. Work \propto wages
4. Working hour of a machine \propto fuel consumed
5. Speed \propto distance to be covered

RULE OF THREE

In a problem on simple proportion, usually three terms are given and we have to find the fourth term, which we can solve by using Rule of three. In such problems, two of given terms are of same kind and the third term is of same kind as the required fourth term. First of all we have to find whether given problem is a case of direct proportion or indirect proportion.

For this, write the given quantities under their respective headings and then mark the arrow in increasing direction. If both arrows are in same direction then the relation between them is direct otherwise it is indirect or inverse proportion. Proportion will be made by either head to tail or tail to head.

The complete procedure can be understood by the examples.

EXAMPLE 23. A man completes $\frac{5}{8}$ of a job in 10 days. At this rate, how many more days will it take him to finish the job?

- (a) 5 (b) 6
(c) 7 (d) $7\frac{1}{2}$

Sol. (b) Work done = $\frac{5}{8}$. Balance work = $\left(1 - \frac{5}{8}\right) = \frac{3}{8}$.

Less work, Less days (Direct Proportion)

Let the required number of days be x. Then,

Work	days
↑ $\frac{5}{8}$	10 ↑
$\frac{3}{8}$	x

$$\text{Then, } \frac{5}{8} : \frac{3}{8} :: 10 : x \Rightarrow \frac{5}{8} \times x = \frac{3}{8} \times 10$$

$$\Rightarrow x = \left(\frac{3}{8} \times 10 \times \frac{8}{5}\right) = 6.$$

EXAMPLE 24. A fort had provision of food for 150 men for 45 days. After 10 days, 25 men left the fort. The number of days for which the remaining food will last, is :

- (a) $29\frac{1}{5}$ (b) $37\frac{1}{4}$
(c) 42 (d) 54

Sol. (c) After 10 days : 150 men had food for 35 days.

Suppose 125 men had food for x days. Now,

Less men, More days (Indirect Proportion)

Then,

men	days
↑ 150	35 ↓
125	x ↓

$$\therefore 125 : 150 :: 35 : x \Rightarrow 125 \times x = 150 \times 35$$

$$\Rightarrow x = \frac{150 \times 35}{125} \Rightarrow x = 42.$$

Hence, the remaining food will last for 42 days.

EXAMPLE 25. If the cost of printing a book of 320 leaves with 21 lines on each page and on an average 11 words in each line is ₹ 19, find the cost of printing a book with 297 leaves, 28 lines on each page and 10 words in each line.

- (a) ₹ $22\frac{3}{8}$ (b) ₹ $20\frac{3}{8}$
(c) ₹ $21\frac{3}{8}$ (d) ₹ $21\frac{3}{4}$

Sol. (c) **Less leaves, less cost (Direct Proportion)**
More lines, more cost (Direct Proportion)
Less words, less cost (Direct Proportion)

leaves	320 : 297	}	:: 19 : x
lines	21 : 28		
words	11 : 10		

$$\therefore 320 \times 21 \times 11 \times x = 297 \times 28 \times 10 \times 19$$

$$\Rightarrow x = \frac{171}{8} = 21\frac{3}{8}$$

PARTNERSHIP

A partnership is an association of two or more persons who invest their money in order to carry on a certain business.

A partner who manages the business is called the **working partner** and the one who simply invests the money is called the **sleeping partner**.

Partnership is of two kinds :

- (i) Simple (ii) Compound.

Simple partnership :

If the capitals of the partners are invested for the same period, the partnership is called simple.

Compound partnership :

If the capitals of the partners are invested for different lengths of time, the partnership is called compound.

Shortcut Approach

If the period of investment is the same for each partner, then the profit or loss is divided in the ratio of their investments.

If A and B are partners in a business, then

$$\frac{\text{Investment of A}}{\text{Investment of B}} = \frac{\text{Profit of A}}{\text{Profit of B}} = \frac{\text{Loss of A}}{\text{Loss of B}}$$

If A, B and C are partners in a business, then

$$\begin{aligned} \text{Investment of A} : \text{Investment of B} : \text{Investment of C} \\ = \text{Profit of A} : \text{Profit of B} : \text{Profit of C, or} \\ = \text{Loss of A} : \text{Loss of B} : \text{Loss of C} \end{aligned}$$

EXAMPLE 26. Three partners Rahul, Puneet and Chandan invest ₹ 1600, ₹ 1800 and ₹ 2300 respectively in a business. How should they divide a profit of ₹ 399 ?

Sol. Profit is to be divided in the ratio 16 : 18 : 23

$$\begin{aligned} \text{Rahul's share of profit} &= \frac{16}{16+18+23} \times 399 \\ &= \frac{16}{57} \times 399 = ₹ 112 \end{aligned}$$

$$\text{Puneet's share of profit} = \frac{18}{57} \times 399 = ₹ 126$$

$$\text{Chandan's share of profit} = \frac{23}{57} \times 399 = ₹ 161$$

EXAMPLE 27. A and B invested in the ratio 3 : 2 in a business. If 5% of the total profit goes to charity and A's share is ₹ 855, find the total profit.

Sol. Let the total profit be ₹ 100.

Then, ₹ 5 goes to charity.

Now, ₹ 95 is divided in the ratio 3 : 2.

$$\therefore \text{A's share} = \frac{95}{3+2} \times 3 = ₹ 57$$

But A's actual share is ₹ 855.

$$\therefore \text{Actual total profit} = 855 \left(\frac{100}{57} \right) = ₹ 1500$$

Shortcut Approach

When the amount of capital invested by different partners is same (say ₹ x) for different time periods, t_1, t_2, t_3, \dots , then
Ratio of profit/loss = Ratio of time period for which the capital is invested

$$P_1 : P_2 : P_3 : \dots = t_1 : t_2 : t_3 : \dots$$

EXAMPLE 28. A, B and C start a business with investment of ₹ 50000 each. A remains in partnership for 9 months, B for 6 months and C for 12 months. Then, find the ratio of their profits.

Sol. Ratio of profit of A, B and C will be in the ratio of time period of investment

$$\text{So, A's profit} : \text{B's Profit} : \text{C's profit} = 9 : 6 : 12 = 3 : 2 : 4$$

MONTHLY EQUIVALENT INVESTMENT

It is the product of the capital invested and the period for which it is invested.

If the period of investment is different, then the profit or loss is divided in the ratio of their Monthly Equivalent Investment.

$$\frac{\text{Monthly Equivalent Investment of A}}{\text{Monthly Equivalent Investment of B}}$$

$$= \frac{\text{Profit of A}}{\text{Profit of B}} \text{ or } \frac{\text{Loss of A}}{\text{Loss of B}}$$

$$\text{i.e., } \frac{\text{Investment of A} \times \text{Period of Investment of A}}{\text{Investment of B} \times \text{Period of Investment of B}}$$

$$= \frac{\text{Profit of A}}{\text{Profit of B}} \text{ or } \frac{\text{Loss of A}}{\text{Loss of B}}$$

Shortcut Approach

If A, B and C are partners in a business, then
Monthly Equivalent Investment of A : Monthly Equivalent Investment of B : Monthly Equivalent Investment of C
= Profit of A : Profit of B : Profit of C.
= Loss of A : Loss of B : Loss of C.

EXAMPLE 29. A and B start a business. A invests ₹ 600 more than B for 4 months and B for 5 months. A's share is ₹ 48 more than that of B, out of a total profit of ₹ 528. Find the capital contributed by each.

$$\text{Sol. B's profit} = \frac{528 - 48}{2} = ₹ 240$$

$$\text{A's profit} = 528 - 240 = ₹ 288$$

$$\frac{\text{A's capital} \times 4}{\text{B's capital} \times 5} = \frac{288}{240} = \frac{6}{5}$$

$$\therefore \frac{\text{A's capital}}{\text{B's capital}} = \frac{6}{5} \times \frac{5}{4} = \frac{3}{2}$$

$$\Rightarrow \frac{\text{B's capital} + 600}{\text{B's capital}} = \frac{3}{2}$$

$$\Rightarrow \text{B's capital} = ₹ 1200 \text{ and A's capital} = ₹ 1800$$

EXAMPLE 30. Three persons A, B, C rent the grazing of a park for ₹ 570. A puts in 126 oxen in the park for 3 months, B puts in 162 oxen for 5 months and C puts in 216 oxen for 4 months. What part of the rent should each person pay?

Sol. Monthly equivalent rent of A = $126 \times 3 = 378$

$$\text{Monthly equivalent rent of B} = 162 \times 5 = 810$$

$$\text{Monthly equivalent rent of C} = 216 \times 4 = 864$$

\therefore Rent is to be divided in the ratio

$$378 : 810 : 864, \text{ i.e. } 7 : 15 : 16$$

\therefore A would have to pay $\frac{7}{7+15+16}$ of the rent

$$= \frac{7}{38} \text{ of the rent} = \frac{7}{38} \times 570 = ₹ 105$$

\therefore B would have to pay $\frac{15}{38}$ of the rent = $\frac{15}{38} \times 570 = ₹ 225$

and C would have to pay $\frac{16}{38}$, i.e. $\frac{8}{19}$ of the rent

$$= \frac{8}{19} \times 570 = ₹ 240$$

Shortcut Approach

When capital invested by the partners is given as X_1, X_2, X_3, \dots for different time period t_1, t_2, t_3, \dots in a business, then
Ratio of their profits $P_1 : P_2 : P_3 : \dots = X_1 t_1 : X_2 t_2 : X_3 t_3 : \dots$

EXAMPLE 31. A starts a business with ₹ 4000 and B joins the business 4 months later with an investment of ₹ 5000. After 1 yr. they earn a profit of ₹ 22000. Find the share of A and B.

Sol. A's share : B's share

$$= 4000 \times 12 : 5000 \times (12 - 4) = 4 \times 12 : 5 \times 8 = 6 : 5$$

Now, let the share of A = $6x$, and the share of B = $5x$

$$\text{According to the question, } 6x + 5x = 22000 \Rightarrow 11x = 22000$$

$$\therefore x = ₹ 2000$$

$$\text{Share of A} = 6x = 6 \times 2000 = ₹ 12000,$$

$$\text{and share of B} = 5x = 5 \times 2000 = ₹ 10000$$

SHORTCUT METHOD

$$\text{A's share} : \text{B's share} = 4000 \times 12 : 5000 \times 8 = 6 : 5$$

$$\text{Now, A's share} = \frac{6}{6+5} \times 22000 = ₹ 12000$$

$$\text{and B's share} = \frac{5}{6+5} \times 22000 = ₹ 10000$$

Shortcut Approach

If $P_1 : P_2 : P_3 : \dots$ is the ratio of profit and $t_1 : t_2 : t_3 : \dots$ is the ratio of time periods, then ratio of investments is given by

$$\frac{P_1}{t_1} : \frac{P_2}{t_2} : \frac{P_3}{t_3} : \dots$$

EXAMPLE 32. A, B and C each does certain investments for time periods in the ratio of 5 : 6 : 8. At the end of the business terms, they received the profit in the ratio of 5 : 3 : 12. Find the ratio of investments of A, B and C.

Sol. Here, $t_1 : t_2 : t_3 = 5 : 6 : 8$ and $P_1 : P_2 : P_3 = 5 : 3 : 12$

$$\text{Required ratio} = \frac{P_1}{t_1} : \frac{P_2}{t_2} : \frac{P_3}{t_3} = \frac{5}{5} : \frac{3}{6} : \frac{12}{8} = 1 : \frac{1}{2} : \frac{3}{2} = 2 : 1 : 3$$

MIXTURE

Simple Mixture : When two different ingredients are mixed together, it is known as a simple mixture.

Compound Mixture : When two or more simple mixtures are mixed together to form another mixture, it is known as a compound mixture.

Alligation : Alligation is nothing but a faster technique of solving problems based on the weighted average situation as applied to the case of two groups being mixed together.

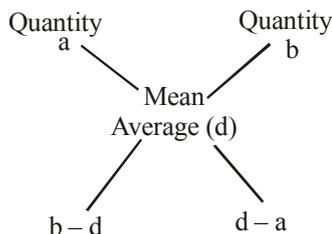
The word 'Alligation' literally means 'linking'.

ALLIGATION RULE

It states that when different quantities of the same or different ingredients of different costs are mixed together to produce a mixture of a mean cost, the ratio of their quantities is inversely proportional to the difference in their cost from the mean cost.

$$\frac{\text{Quantity of Cheaper}}{\text{Quantity of Dearer}} = \frac{\text{Price of Dearer} - \text{Mean Price}}{\text{Mean Price} - \text{Price of Cheaper}}$$

Graphical representation of Alligation Rule :

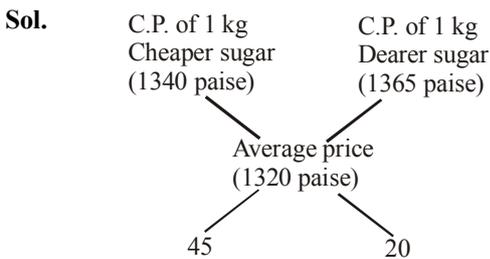


$$\frac{\text{Quantity of a}}{\text{Quantity of b}} = \frac{b - d}{d - a}$$

Applications of Alligation Rule :

- (i) To find the mean value of a mixture when the prices of two or more ingredients, which are mixed together and the proportion in which they are mixed are given.
- (ii) To find the proportion in which the ingredients at given prices must be mixed to produce a mixture at a given price.

EXAMPLE 33. In what proportion must sugar at ₹ 13.40 per kg be mixed with sugar at ₹ 13.65 per kg, so that the mixture be worth ₹ 13.20 a kg ?

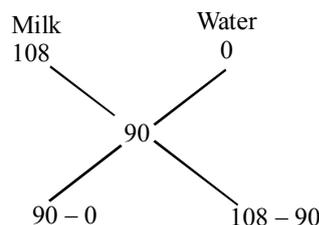


$$\frac{\text{Quantity of cheaper sugar}}{\text{Quantity of dearer sugar}} = \frac{45}{20} = \frac{9}{4}$$

∴ They must be mixed in the ratio 9 : 4.

EXAMPLE 34. A mixture of a certain quantity of milk with 16 litres of water is worth 90 P per litre. If pure milk be worth ₹ 1.08 per litre, how much milk is there in the mixture ?

Sol. The mean value is 90P and the price of water is 0 P.



By the Alligation Rule, milk and water are in the ratio of 5 : 1.

∴ Quantity of milk in the mixture = 5 × 16 = 80 litres.

Shortcut Approach

Price of the Mixture :

When quantities Q_i of ingredients M_i 's with the cost C_i 's are mixed then cost of the mixture C_m is given by

$$C_m = \frac{\sum C_i Q_i}{\sum Q_i}$$

EXAMPLE 35. 5 kg of rice of ₹ 6 per kg is mixed with 4 kg of rice to get a mixture costing ₹ 7 per kg. Find the price of the costlier rice.

Sol. Let the price of the costlier rice be ₹ x.

By direct formula,

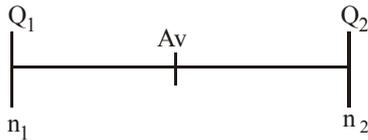
$$7 = \frac{6 \times 5 + 4 \times x}{9}$$

$$\Rightarrow 63 - 30 = 4x \Rightarrow 4x = 33$$

$$\Rightarrow x = \frac{33}{4} = 8.25$$

STRAIGHT LINE APPROACH OF ALLIGATION

Let Q_1 and Q_2 be the two quantities, and n_1 and n_2 are the number of elements present in the two quantities respectively,



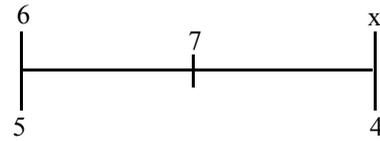
where Av is the average of the new group formed then

n_1 corresponds to $Q_2 - Av$, n_2 corresponds to $Av - Q_1$ and $(n_1 + n_2)$ corresponds to $Q_2 - Q_1$.

Let us consider the previous example.

EXAMPLE 36. 5 kg of rice at ₹ 6 per kg is mixed with 4 kg of rice to get a mixture costing ₹ 7 per kg. Find the price of the costlier rice.

Sol. Using straight line method,



4 corresponds to $7 - 6$ and 5 corresponds to $x - 7$.

i.e. $4 \rightarrow 1$

$5 \rightarrow 1.25$

Hence, $x - 7 = 1.25$

$\Rightarrow x = 8.25$

EXERCISE

- Salaries of A, B and C were in the ratio of 3 : 5 : 7 respectively. If their salaries were increased by 50%, 60% and 50% respectively, what will be the new ratio of their respective salaries?
 - 3 : 6 : 7
 - 4 : 5 : 7
 - 4 : 5 : 8
 - Data inadequate
 - None of these
- If 40% of a number is equal to two-thirds of another number, what is the ratio of the first number to the second?
 - 7 : 3
 - 3 : 7
 - 2 : 5
 - 5 : 3
 - None of these
- Radha started a business, investing ₹ 75,000. After 3 months, Sunidhi joined her with an amount of ₹ 1,25,000 and after another six months Neha joined them with an amount of ₹ 1,50,000. Profit earned at the end of three years from when Radha started the business should be distributed in what ratio among Radha, Sunidhi and Neha respectively?
 - 36 : 55 : 54
 - 18 : 28 : 27
 - 35 : 54 : 55
 - Cannot be determined
 - None of these
- What should come in place of the question mark(?) in the following equation? $\frac{28}{?} = \frac{?}{112}$
 - 70
 - 56
 - 48
 - 64
 - None of these
- An empty fuel tank to a car was filled with A type of petrol. When the tank was half empty, it was filled with B type of petrol. Again when the tank was half empty, it was filled with A type of petrol. When the tank was half empty again, it was filled with B type of petrol. At this time, what was the percentage of A type of petrol in the tank?
 - 50%
 - 40%
 - 33.5%
 - 37.5%
 - None of these
- The ratio of A's and B's salary is 9 : 4. If A's salary is increased by 15%, then his total salary becomes ₹ 5175. What is the salary of B?
 - ₹ 2,000
 - ₹ 4,000
 - ₹ 4,500
 - ₹ 2,500
 - None of these
- Three friends A, B and C started a business by investing a sum of money in the ratio of 5 : 7 : 6. After 6 months C withdraws half of his capital. If the sum invested by 'A' is ₹ 40,000, out of a total annual profit of ₹ 33,000, C's share will be
 - ₹ 9,000
 - ₹ 12,000
 - ₹ 11,000
 - ₹ 10,000
 - None of these
- Seats for Maths, Physics and Biology are in the ratio of 5 : 7 : 8 respectively. There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the respective ratio of increased seats?
 - 2 : 3 : 4
 - 6 : 7 : 8
 - 6 : 8 : 9
 - Cannot be determined
 - None of these
- Mr Sharad started a business investing ₹ 50000. Four months later Mr Praveen joined the business by investing ₹ 90000. If the profit in the business at the end of the year was ₹ 22000 how much amount would Mr Praveen have received as the profit?
 - ₹ 16000
 - ₹ 14000
 - ₹ 12000
 - ₹ 11000
 - None of these
- The ratio of Gomati's and Rashmi's ages is 3 : 5 respectively. After ten years this ratio will become 2 : 3. What is Rashmi's age in years?
 - 50
 - 40
 - 60
 - Cannot be determined
 - None of these
- Salaries of Rajesh and Sunil are in the ratio of 2 : 3. If the salary of each one is increased by ₹ 4000 the new ratio becomes 40 : 57. What is Sunil's present salary?
 - ₹ 17000
 - ₹ 20000
 - ₹ 25500
 - Cannot be determined
 - None of these
- The numbers of students speaking English and Hindi are in the ratio of 4 : 5. If the number of students speaking English increased by 35% and that speaking Hindi increased by 20%, what would be the new respective ratio?
 - 19 : 20
 - 7 : 8
 - 8 : 9
 - Cannot be determined
 - None of these
- Abhijit started a business investing ₹ 70000. Anuja joined him after six months with an amount of ₹ 105000 and Sunil joined them with ₹ 1.4 lakhs after another six months. The amount of profit earned should be distributed in what ratio among Abhijit, Anuja and Sunil respectively, three years after Abhijit started the business?
 - 42 : 45 : 56
 - 7 : 6 : 10
 - 12 : 15 : 16
 - Cannot be determined
 - None of these
- The ratio of males and females in a city is 7 : 8 and the percentage of children among males and females is 25% and 20% respectively. If the number of adult females in the city is 156800 what is the total population?
 - 245000
 - 367500
 - 196000
 - 171500
 - None of these
- Hariprasad and Madhusudan started a business, investing sums in the ratio of 2 : 3. If Hariprasad had invested an additional amount of ₹ 10,000 the ratio of Hariprasad's investment to Madhusudan's investment would have been 3 : 2. What was the amount invested by Hariprasad?
 - ₹ 8000
 - ₹ 12000
 - ₹ 9000
 - Data inadequate
 - None of these

16. The ratio of the present ages of a son and his father is 1 : 5 and that of his mother and father is 4 : 5. After 2 years the ratio of the age of the son to that of his mother becomes 3 : 10. What is the present age of the father?
 (a) 30 years (b) 28 years
 (c) 37 years (d) Data inadequate
 (e) None of these
17. The ratio of the number of students appearing for examination in the year 1998 in the states *A*, *B* and *C* was 3 : 5 : 6. Next year if the number of students in these states increases by 20%, 10% and 20% respectively, the ratio in states *A* and *C* would be 1 : 2. What was the number of students who appeared for the examination in the state *A* in 1998?
 (a) 7200 (b) 6000
 (c) 7500 (d) Data inadequate
 (e) None of these
18. A man spends ₹ 1810 for buying bedsheets at ₹ 200 each and pillows at ₹ 70 each. What will be the ratio of bedsheets to pillows when maximum number of bedsheets are bought?
 (a) 3:8 (b) 8:3
 (c) 9:1 (d) 1:9
 (e) None of these
19. Mr Shivkumar started a business, investing ₹ 25000 in 1996. In 1997 he invested an additional amount of ₹ 10000 and Mr Rakesh joined him with an amount of ₹ 35000. In 1998, Mr Shivkumar invested another additional amount of ₹ 10000 and Mr Suresh joined them with an amount of ₹ 35000. What will be Rakesh's share in the profit of ₹ 150000 earned at the end of three years from the start of the business in 1996?
 (a) ₹ 70000 (b) ₹ 50000
 (c) ₹ 45000 (d) ₹ 75000
 (e) None of these
20. Incomes of two companies *A* and *B* are in the ratio of 5 : 8. Had the income of company *A* been more by ₹ 25 lakh, the ratio of their incomes would have been 5 : 4. What is the income of company *B*?
 (a) ₹ 80 lakh (b) ₹ 50 lakh
 (c) ₹ 40 lakh (d) ₹ 60 lakh
 (e) None of these
21. The ratio of number of students studying Arts, Commerce and Science in a College is 3 : 5 : 8. What is the new ratio of the number of students studying Arts, Commerce and Science respectively if there is an increase of 20%, 40% and 25% in the number of students studying Arts, Commerce and Science?
 (a) 18:35:50 (b) 3:10:10
 (c) 4:8:5 (d) 32:35:25
 (e) None of these
22. Abhishek started a business investing ₹ 50,000. After one year he invested another ₹ 30,000 and Sudin also joined him with a capital of ₹ 70,000. If the profit earned in three years from the starting of business was ₹ 87,500, then find the share of Sudin in the profit.
 (a) ₹ 37,500 (b) ₹ 32,500
 (c) ₹ 38,281 (d) ₹ 52,500
 (e) None of these
23. Weights of two friends Ram and Shyam are in the ratio of 4 : 5. Ram's weight increases by 10% and the total weight of Ram and Shyam together becomes 82.8 kg, with an increase of 15%. By what per cent did the weight of Shyam increase?
 (a) 12.5% (b) 17.5%
 (c) 19% (d) 21%
 (e) None of these
24. When 50% of one number is added to a second number, the second number increases to its four-thirds. What is the ratio between the first number and the second number?
 (a) 3 : 2 (b) 3 : 4
 (c) 2 : 3 (d) Data inadequate
 (e) None of these
25. The ratio of present ages of Nisha and Shilpa is 7:8 respectively. Four years hence this ratio becomes 9:10 respectively. What is Nisha's present age in years?
 (a) 18 (b) 14
 (c) 17 (d) Data inadequate
 (e) None of these
26. When a number is added to another number the total becomes $33\frac{1}{3}$ per cent of the second number. What is the ratio between the first and the second number?
 (a) 3 : 7 (b) 7 : 4
 (c) 7 : 3 (d) Data inadequate
 (e) None of these
27. The ratio between the present ages of *P* and *Q* is 5 : 8. After four years, the ratio between their ages will be 2 : 3. What is *Q*'s age at present?
 (a) 36 years (b) 20 years
 (c) 24 years (d) Data inadequate
 (e) None of these
28. Jaydeep purchased 25 kg of rice at the rate of ₹ 16.50 per kg and 35 kg of rice at the rate of ₹ 24.50 per kg. He mixed the two and sold the mixture. Approximately, at what price per kg did he sell the mixture to make 25 per cent profit?
 (a) ₹ 26.50 (b) ₹ 27.50
 (c) ₹ 28.50 (d) ₹ 30.00
 (e) ₹ 29.00
29. In 1 kg mixture of sand and iron, 20% is iron. How much sand should be added so that the proportion of iron becomes 10%?
 (a) 1 kg (b) 200 gms
 (c) 800 gms (d) 1.8 kg
 (e) None of these
30. The ratio of *P*'s and *Q*'s ages is 5 : 7. If the difference between the present age of *Q* and the age of *P* six years hence is 2 then what is the total of present ages of *P* and *Q*?
 (a) 52 years (b) 48 years
 (c) 56 years (d) Data inadequate
 (e) None of these
31. There is a ratio of 5 : 4 between two numbers. If forty percent of the first number is 12 then what would be the 50 percent of the second number?
 (a) 12 (b) 24
 (c) 18 (d) Data inadequate
 (e) None of the above
32. An amount of money is to be distributed among *P*, *Q* and *R* in the ratio of 5 : 8 : 12 respectively. If the total share of *Q* and *R* is four times that of *P*, what is definitely *P*'s share?

- (a) ₹ 3,000 (b) ₹ 5,000
(c) ₹ 8,000 (d) Data inadequate
(e) None of these
33. When 30 per cent of a number is added to another number the second number increases to its 140 per cent. What is the ratio between the first and the second number?
(a) 3 : 4 (b) 4 : 3
(c) 3 : 2 (d) Data inadequate
(e) None of these
34. If 25% of a number is subtracted from a second number the second number reduces to its five-sixths. What is the ratio between the first number and the second number?
(a) 2 : 3 (b) 3 : 2
(c) 1 : 3 (d) Data inadequate
(e) None of these
35. Two friends P & Q started a business investing amounts in the ratio of 5 : 6. R joined them after six months investing an amount equal to that of Q 's amount. At the end of the year 20% profit was earned which was equal to ₹ 98,000. What was the amount invested by R ?
(a) ₹ 2,10,000 (b) ₹ 1,05,000
(c) ₹ 1,75,000 (d) Data inadequate
(e) None of these
36. One year ago the ratio of Yamini's and Gamini's ages was 6 : 7 respectively. Four years hence this ratio would become 7 : 8. How old is Gamini?
(a) 35 years (b) 30 years
(c) 31 years (d) Cannot be determined
(e) None of these
37. Ratio of present age of P and Q is 7 : 3. After four years their ages are in the ratio of 2 : 1. What is the present age of P ?
(a) 24 years (b) 28 years
(c) 32 years (d) Data inadequate
(e) None of these
38. If 40 per cent of a number is added to an other number then it becomes 125 per cent of itself. What will be the ratio of first and second numbers?
(a) 8 : 5 (b) 5 : 7
(c) 5 : 8 (d) Data inadequate
(e) None of these
39. An amount of money is to be divided among P , Q and R in the ratio of 4 : 9 : 16. If R gets 4 times more than P , what is Q 's share in it?
(a) ₹ 1,800 (b) ₹ 2,700
(c) ₹ 3,600 (d) Data inadequate
(e) None of these
40. Jagtap purchases 30 kg of wheat at the rate of ₹ 11.50 per kg and 20 kg of wheat at the rate of ₹ 14.25 per kg. He mixed the two and sold the mixture. **Approximately** at what price per kg should he sell the mixture to make 30 per cent profit?
(a) ₹ 16.30 (b) ₹ 18.20
(c) ₹ 15.60 (d) ₹ 14.80
(e) ₹ 15.40
41. Mr. Gangadhar, Mr. Ramesh and Mr. Shridhar together earned ₹ 19800. The ratio of earnings between Mr. Gangadhar and Mr. Ramesh is 2 : 1 while that between Mr. Ramesh and Mr. Shridhar is 3 : 2. How much did Mr. Ramesh earn?
(a) ₹ 3600 (b) ₹ 5400
(c) ₹ 1800 (d) ₹ 6300
(e) None of these
42. Mr. Kutty has only hens and sheep. If the total number of their heads is 38 and the total number of legs is 100 then what is the ratio between the numbers of hens and sheep?
(a) 2 : 1 (b) 1 : 2
(c) 6 : 13 (d) 13 : 6
(e) None of these
43. If $A : B : C = 2 : 3 : 4$, then $\frac{A}{B} : \frac{B}{C} : \frac{C}{A}$ is equal to :
(a) 4 : 9 : 16 (b) 8 : 9 : 12
(c) 8 : 9 : 16 (d) 8 : 9 : 24
(e) None of these
44. A sum of money is to be distributed among A , B , C , D in the proportion of 5 : 2 : 4 : 3. If C gets ₹ 1000 more than D , what is B 's share?
(a) ₹ 500 (b) ₹ 1500
(c) ₹ 2000 (d) ₹ 1400
(e) None of these
45. The sum of three numbers is 98. If the ratio of the first to the second is 2 : 3 and that of the second to the third is 5 : 8, then the second number is :
(a) 20 (b) 30
(c) 38 (d) 48
(e) None of these
46. The ratio of number of ladies to gents at a party was 1 : 2, but when 2 ladies and 2 gents left, the ratio became 1 : 3. How many people were originally present at the party?
(a) 6 (b) 9
(c) 12 (d) 10
(e) None of these
47. A man divides his property so that his son's share to his wife's and the wife's share to his daughter are both in the ratio 3 : 1. If the daughter gets ₹ 10,000 less than the son, find the total worth of the property.
(a) ₹ 16,200 (b) ₹ 16,250
(c) ₹ 16,500 (d) ₹ 15,300
(e) None of these
48. A bag contains an equal number of one rupee, 50 paise and 25 paise coins respectively. If the total value is ₹ 35, how many coins of each type are there?
(a) 20 coins (b) 30 coins
(c) 28 coins (d) 25 coins
(e) None of these
49. The salaries of A, B, C are in the ratio 2 : 3 : 5. If the increments of 15%, 10% and 20% are allowed respectively in their salaries, then what will be the new ratio of their salaries?
(a) 3 : 3 : 10 (b) 10 : 11 : 20
(c) 23 : 33 : 60 (d) Cannot be determined
(e) None of these
50. In an express train, the passengers travelling in A.C. sleeper class, First class and Sleeper class are in the ratio 1 : 2 : 7, and rate for each class is in the ratio 5 : 4 : 2. If the total income from this train is ₹ 54,000, find the income of Indian Railways from A.C. sleeper class.
(a) ₹ 12,000 (b) ₹ 20,000
(c) ₹ 22,000 (d) ₹ 10,000
(e) None of these

51. What is the ratio whose terms differ by 40 and the measure of which is $\frac{2}{7}$?
- (a) 16 : 56 (b) 14 : 56
(c) 15 : 56 (d) 16 : 72
(e) None of these
52. The average age of three boys is 25 years and their ages are in the proportion 3 : 5 : 7. The age of the youngest boy is:
- (a) 21 years (b) 18 years
(c) 15 years (d) 9 years
(e) None of these
53. A photograph measuring $2\frac{1}{2} \times 1\frac{7}{8}$ is to be enlarged so that the length will be 4". How many inches will the enlarged breadth be?
- (a) $1\frac{1}{2}$ (b) $2\frac{1}{8}$
(c) 3 (d) $3\frac{3}{8}$
(e) None of these
54. In a partnership, A invests $\frac{1}{6}$ of the capital for $\frac{1}{6}$ of the time, B invests $\frac{1}{3}$ of the capital for $\frac{1}{3}$ of the time and C, the rest of the capital for whole time. Find A's share of the total profit of ₹ 2,300.
- (a) ₹ 100 (b) ₹ 200
(c) ₹ 300 (d) ₹ 400
(e) None of these
55. A, B and C start a business each investing ₹ 20,000. After 5 months A withdrew ₹ 5000, B withdrew ₹ 4000 and C invests ₹ 6000 more. At the end of the year, a total profit of ₹ 69,900 was recorded. Find the share of B.
- (a) ₹ 20,000 (b) ₹ 21,200
(c) ₹ 28,200 (d) ₹ 20,500
(e) None of these
56. A is a working partner and B is a sleeping partner in a business. A puts in ₹ 50,000 and B ₹ 60,000. A gets 12.5% of the profit for managing the business, and the rest is divided in proportion to their capitals. Find the share of A in profit of ₹ 8800.
- (a) ₹ 3500 (b) ₹ 4600
(c) ₹ 5400 (d) ₹ 4800
(e) None of these
57. A began business with ₹ 12500 and is joined afterwards by B with ₹ 37500. When did B join, if the profits at the end of the year are divided equally?
- (a) 8 months (b) 9 months
(c) 10 months (d) 7 months
(e) None of these
58. A began business with ₹ 45,000 and was later joined by B with ₹ 54,000. When did B join if the profit at the end of the year were divided in the ratio 2 : 1?
- (a) 5 months after (b) 10 months after
(c) 7 months after (d) 12 months after
(e) None of these
59. A and B enter into partnership with capitals in the ratio 3 : 4. At the end of 10 months A withdraws, and the profits now are divided in the ratio of 5 : 6. Find how long B remained in the business?
- (a) 9 months (b) 8 months
(c) 6 months (d) 7 months
(e) None of these
60. A and B invest ₹ 3,000 and ₹ 4,000 in a business. A receives ₹ 10 per month out of the profit as a remuneration for running the business and the rest of profit is divided in proportion to the investments. If in a year 'A' totally receives ₹ 390, what does B receive?
- (a) ₹ 375 (b) ₹ 360
(c) ₹ 350 (d) ₹ 260
(e) None of these
61. A started a business with ₹ 4500 and another person B joined after some period with ₹ 3000. Determine this period after B joined the business if the profit at the end of the year is divided in the ratio 2 : 1
- (a) After 3 months (b) After 4 months
(c) After 6 months (d) After $2\frac{1}{2}$ months
(e) None of these
62. A and B entered into a partnership with capitals in the ratio of 4 : 5. After 3 months, A withdrew $\frac{1}{4}$ of his capital and B withdrew $\frac{1}{5}$ of his capital. The gain at the end of 10 months was ₹ 760. Find the profit of B.
- (a) ₹ 450 (b) ₹ 430
(c) ₹ 410 (d) ₹ 340
(e) None of these
63. A and B rent a pasture for 10 months; A puts in 80 cows for 7 months. How many can B put in for the remaining 3 months, if he pays half as much again as A?
- (a) 120 (b) 180
(c) 200 (d) 280
(e) None of these
64. In a partnership between X and Y, X's capital is $\frac{2}{5}$ of total and is invested for $\frac{2}{3}$ year. If his share of the profit is $\frac{4}{7}$ of the total, for how long is Y's capital in the business?
- (a) 1 year (b) $\frac{1}{8}$ years
(c) $\frac{1}{3}$ years (d) $\frac{1}{4}$ years
(e) None of these

65. X and Y put in ₹ 3,000 and ₹ 4,000 respectively into a business. X reinvests into the business his share of the first year's profit of ₹ 2,100 whereas Y does not reinvest. In what ratio should they share the second year's profit?
 (a) 39 : 40 (b) 3 : 4
 (c) 3 : 7 (d) 40 : 79
 (e) None of these
66. Gold is 19 times as heavy as water and copper is 9 times heavy. In what ratio must these metals be mixed so that the mixture may be 15 times as heavy as water?
 (a) 2 : 3 (b) 3 : 2
 (c) 1 : 3 (d) 2 : 1
 (e) None of these
67. Six litres of a 20% solution of alcohol in water are mixed with 4 litres of a 60% solution of alcohol in water. The % alcoholic strength of the mixture is
 (a) 80 (b) 40
 (c) 36 (d) 48
 (e) None of these
68. A merchant lent out ₹ 1,000 in two parts, one at 8% and the other at 10% interest. The yearly average comes out to be 9.2%. Find the amount lent in two parts.
 (a) ₹ 400, ₹ 600 (b) ₹ 500, ₹ 500
 (c) ₹ 300, ₹ 700 (d) cannot be determined
 (e) None of these
69. One litre of water was mixed to 3 litres of sugar solution containing 4% of sugar. What is the percentage of sugar in the solution?
 (a) 3 (b) 4
 (c) 6 (d) Insufficient data
 (e) None of these
70. How much water must be added to 60 litres of milk at $1\frac{1}{2}$ litres for ₹ 20 so as to have a mixture worth ₹ $10\frac{2}{3}$ a litre?
 (a) 10 litres (b) 12 litres
 (c) 15 litres (d) 18 litres
 (e) None of these
71. How many kg of salt at 42 paise per kg must a man mix with 25 kg of salt at 24 paise per kg so that he may, on selling the mixture at 40 paise per kg gain 25% on the outlay?
 (a) 15 kg (b) 18 kg
 (c) 20 kg (d) 24 kg
 (e) None of these
72. A trader mixes 80 kg of tea at ₹15 per kg with 20 kg of tea at cost price of ₹ 20 per kg. In order to earn a profit of 25%, what should be the sale price of the mixed tea?
 (a) ₹ 23.75 (b) ₹ 22
 (c) ₹ 20 (d) ₹ 19.20
 (e) None of these
73. A company blends two varieties of tea from two different tea gardens, one variety costing ₹ 20 per kg and other ₹ 25 per kg, in the ratio 5 : 4. He sells the blended tea at ₹ 23 per kg. Find his profit percent :
 (a) 5% profit (b) 3.5% loss
 (c) 3.5% profit (d) No profit, no loss
 (e) None of these
74. Alcohol cost ₹ 3.50 per litre and kerosene oil cost ₹ 2.50 per litre. In what proportion these should be mixed so that the resulting mixture may be ₹ 2.75 per litre?
 (a) 2 : 5 (b) 1 : 3
 (c) 4 : 7 (d) 2 : 3
 (e) None of these
75. Pure milk costs ₹ 3.60 per litre. A milkman adds water to 25 litres of pure milk and sells the mixture at ₹ 3 per litre. How many litres of water does he add?
 (a) 2 litres (b) 5 litres
 (c) 7 litres (d) 11 litres
 (e) None of these

ANSWER KEY

1	(e)	9	(c)	17	(d)	25	(b)	33	(b)	41	(b)	49	(c)	57	(a)	65	(a)	73	(c)
2	(d)	10	(a)	18	(b)	26	(c)	34	(a)	42	(d)	50	(d)	58	(c)	66	(b)	74	(b)
3	(a)	11	(e)	19	(b)	27	(e)	35	(b)	43	(d)	51	(a)	59	(a)	67	(c)	75	(b)
4	(b)	12	(e)	20	(c)	28	(a)	36	(e)	44	(c)	52	(c)	60	(b)	68	(a)		
5	(d)	13	(c)	21	(a)	29	(a)	37	(b)	45	(b)	53	(c)	61	(a)	69	(a)		
6	(a)	14	(b)	22	(e)	30	(d)	38	(e)	46	(c)	54	(a)	62	(b)	70	(c)		
7	(a)	15	(a)	23	(c)	31	(a)	39	(d)	47	(b)	55	(b)	63	(d)	71	(c)		
8	(a)	16	(e)	24	(c)	32	(d)	40	(a)	48	(a)	56	(b)	64	(c)	72	(c)		

Hints & Explanations

1. (e) Suppose the salaries of A, B and C were 300k, 500k and 700k respectively.
After increment salary of
A = 300k + 50% of 300k = 450k
B = 500k + 60% of 500k = 800k
C = 700k + 50% of 700k = 1050k
Hence, new ratio of the respective salaries of A, B and C = 450k : 800k : 1050k = 9 : 16 : 21
2. (d) Suppose the first number is x and the second number y .
Therefore, 40% of $x = \frac{2}{3}$ of y
$$\therefore \frac{x}{y} = \frac{2}{3} \times \frac{100}{40} = \frac{5}{3}$$
3. (a) Ratio of their profits (Radha's : Sunidhi's : Neha's)
= 75 × 36 : 125 × 33 : 150 × 27
= 3 × 36 : 5 × 33 : 6 × 27
= 3 × 12 : 5 × 11 : 6 × 9
= 36 : 55 : 54
4. (b) $\frac{28}{?} = \frac{?}{112} \therefore ? = \sqrt{28 \times 112} = 56$
5. (d)

	Petrol
A	B
I: A	0
II: $\frac{A}{2}$	$\frac{B}{2}$
III: $\frac{A}{4} + \frac{A}{2}$	$\frac{B}{4}$
IV: $\frac{A}{8} + \frac{A}{4}$	$\frac{B}{8} + \frac{B}{2}$

Now, amount of petrol A = $\frac{A}{4} + \frac{A}{8} = \frac{3A}{8}$
 \therefore required % = $\frac{3A}{8 \times A} \times 100 = 37.50\%$

6. (a) Let the salaries of A and B be $9x$ and $4x$.
 $9x \times \frac{115}{100} = 5175$
 $\therefore x = 500$
 \therefore salary of B = $500 \times 4 = ₹ 2000$

7. (a) Sum invested by A, B and C is
 $5 \times 12 : 7 \times 12 : 6 \times 6 + 3 \times 6$
or, 60 : 84 : 54 or, 10 : 14 : 9
 \therefore Share of C = $\frac{9}{33} \times 33,000 = ₹ 9,000$

8. (a) Reqd ratio $5 \times \frac{140}{100} : 7 \times \frac{150}{100} : 8 \times \frac{175}{100}$
= $5 \times 140 : 7 \times 150 : 8 \times 175 = 2 : 3 : 4$

9. (c) Ratio of their investment
= $50000 \times 12 : 90000 \times 8 = 5 : 6$
 \therefore Amount received by Praveen = $\frac{6}{11} \times 22,000$
= ₹ 12000

10. (a) After 10 years, the ratio of Gomati and Rashmi's ages is 2 : 3. We can also write 2 : 3 as 4 : 6. Now, difference in the ratio is 1 in both the cases. Therefore, $1 = 10$
 $\therefore 5 \rightarrow 5 \times 10 = 50$ years.

11. (e) Let the salaries of Rajesh and Sunil be ₹ $2x$ and ₹ $3x$ respectively.
Then, $\frac{2x + 4000}{3x + 4000} = \frac{40}{57}$
or, $114x + 228000 = 120x + 160000$
or, $6x = 68000$
or, $3x = ₹ 34000$

12. (e) Reqd ratio = $\frac{4 \times 135}{5 \times 120} = 9 : 10$

13. (c) Ratio of their investments
= $70 \times 36 : 105 \times 30 : 140 \times 24 = 12 : 15 : 16$

14. (b) Number of females = $156800 \times \frac{100}{80} = 196000$
 \therefore Number of males = $\frac{7}{8} \times 196000 = 171500$
 \therefore Total population = $196000 + 171500 = 367500$

15. (a) Let the initial investments of Hariprasad and Madhusudan be $2x$ and $3x$, respectively.
From the question,
 $\frac{2x + 10000}{3x} = \frac{3}{2}$
or, $4x + 20000 = 9x$
 $\therefore x = 4000$
 \therefore Amount invested by Hariprasad = $2x = ₹ 8000$

16. (e) $\frac{S}{F} = \frac{1}{5} \Rightarrow F = 5S$
 $\frac{M}{F} = \frac{4}{5} \Rightarrow M = \frac{4}{5} F$
 $\frac{S + 2}{M + 2} = \frac{3}{10}$
 $\Rightarrow 10S + 20 = 30M + 6 = 3 \times \frac{4}{5} \times 5S + 6 = 12S + 6$
 $\therefore 2S = 14 \Rightarrow S = 7$ years
 $\therefore F = 5S = 35$ years

17. (d) Let the number of students appearing for examination in the year 1998 in the states A , B and C be $3x$, $5x$ and $6x$ respectively.

According to the question,

$$\frac{3x \times \frac{120}{100}}{6x \times \frac{120}{100}} = \frac{1}{2}$$

Hence data inadequate.

18. (b) The man can't purchase more than 8 bedsheets
 \therefore cost of 8 bedsheets = $8 \times 200 = ₹ 1600$
 Remaining amount = $1810 - 1600 = ₹ 210$
 And in ₹ 210, the man can purchase

$$\frac{210}{70} = 3 \text{ pillows}$$

Reqd ratio = $8 : 3$

19. (b) Ratio of their investments = $25,000 \times 1 + 35000 \times 1 + 45000 \times 1 : 35000 \times 2 : 35000 \times 1 = 3 : 2 : 1$.

$$\therefore \text{Rakesh's share} = \frac{2}{6} \times 150000 = ₹ 50000$$

20. (c) Let the incomes of two companies A and B be $5x$ and $8x$ respectively.

From the question,

$$\frac{5x + 25}{8x} = \frac{5}{4} \Rightarrow 20x + 100 = 40x \therefore x = 5$$

\therefore Income of company $B = 8x = ₹ 40$ lakh

21. (a) Suppose the number of students studying Arts, Commerce and Science be $3x$, $5x$ and $8x$ respectively. When their numbers are increased by 20%, 40% and 25% respectively the new ratio becomes

$$3x \times 120\% : 5x \times 140\% :$$

$$8x \times 125\% = 36 : 70 : 100$$

$$= 18 : 35 : 50$$

22. (e) Ratio of Abhishek and Sudin for one month = $(50,000 \times 36) + (30,000 \times 24) : (70,000 \times 24)$
 $= (18,00,000 + 7,20,000) : 16,80,000 = 3 : 2$

Hence share of Sudin in the profit earned from the business.

$$= \frac{87,500}{(3+2)} \times 2 = ₹ 35,000.$$

23. (c) Let the weights of Ram and Shyam be $4x$ and $5x$. Now, according to question,

$$\frac{4x \times 110}{100} + \text{Shyam's new wt} = 82.8 \quad \dots\dots (i)$$

$$\text{and } (4x + 5x) = \frac{9x \times 115}{100} = 82.8 \quad \dots\dots (ii)$$

From (ii), $x = 8$

Putting in (i), we get

$$\text{Shyam's new wt} = (82.8 - 35.2) = 47.6$$

$$\% \text{ increase in Shyam's wt} = \left(\frac{47.6 - 40}{40} \times 100 \right) = 19\%$$

24. (c) Let the numbers be y and x respectively

$$x + 50\% \text{ of } y = \frac{4x}{3} \text{ or, } \frac{y}{2} = \frac{4x}{3} - x$$

$$\text{or, } \frac{y}{2} = \frac{x}{3} \quad \text{or, } \frac{y}{x} = \frac{2}{3}$$

25. (b) Nisha Shilpa
 $\frac{7}{4}$ $\frac{8}{10}$

$$\text{Present age of Nisha} = \frac{4 \times (10 - 9)}{9 \times 8 - 10 \times 7} \times 7$$

$$= 14 \text{ years}$$

26. (c) Let the first and second numbers be x and y respectively.

$$\text{Then, } x + y = \frac{10}{3} y$$

$$\text{or, } x = \frac{7}{3} y$$

$$\therefore x : y = 7 : 3$$

27. (e) $\frac{P}{Q} = \frac{5}{8}$ or $P = \frac{5Q}{8}$ (i)

$$\frac{P+4}{Q+4} = \frac{2}{3}$$

$$\text{or, } 3P + 12 = 2Q + 8 \quad \text{or, } 2Q - 3P = 4 \quad \dots (ii)$$

Putting value of P from eq. (i),

$$2Q - 3 \times \frac{5}{8} Q = 4 \Rightarrow Q = 32$$

28. (a) $CP = 25 \times 16.50 + 35 \times 24.50 = ₹ 1270$

$$SP = 1270 \times \frac{125}{100} = ₹ 1587.50$$

$$\text{Price per kg} = \frac{1587.50}{60} \approx 26.50$$

29. (a) In 1 kg mixture quantity of iron = 200 gm

Let x gm sand should be added, then

$$10\% \text{ of } (1000 + x) = 200$$

$$\therefore x = 1000 \text{ gm} = 1 \text{ kg}$$

30. (d) $\frac{P}{Q} = \frac{5}{7}$

$$\text{or, } Q = \frac{7}{5} P$$

$$\text{Case I : } Q - (P + 6) = 2$$

$$\text{or, } Q = P + 8$$

$$\therefore \frac{7}{5} P = P + 8$$

$$\text{or, } 7P = 5P + 40$$

$$\therefore P = \frac{40}{2} = 20 \text{ and } Q = \frac{7}{5} \times 20 = 28$$

$$\therefore P + Q = 20 + 28 = 48$$

$$\text{Case II : } (P + 6) - Q = 2$$

$$\text{or, } P + 6 - \frac{7}{5} P = 2$$

$$\text{or, } P = -10 \text{ and } Q = 14$$

$$\therefore P + Q = 10 + 14 = 24 \text{ years}$$

31. (a) $\frac{a}{b} = \frac{5}{4}$, $b = \frac{4}{5}a$ Given (40% of $a = \frac{2}{5}a = 12$)
 $\therefore a = 5 \times 6$ and $b = \frac{4}{5} \times 5 \times 6 = 24$
 $\therefore 50\% \text{ of } b = \frac{24}{2} = 12$
32. (d) $P : Q : R = 5 : 8 : 12$
 $\frac{\text{Total share of } Q \text{ and } R}{\text{share of } P} = \frac{8+12}{5} = \frac{20}{5} = 4$
 So, we see that no new information has been given in the question and P 's share can't be determined.
33. (b) Let the first and the second numbers be x and y respect then
 $y + 30\% \text{ of } x = 140\% \text{ of } y$
 or, $y + 0.3x = 1.4y$
 or, $0.3x = 0.4y$
 $\therefore x : y = 0.4 : 0.3 = 4 : 3$
34. (a) Let the first and second number be x and y respectively.
 $x - y \times \frac{25}{100} = y \times \frac{5}{6}$
 or, $y - \frac{x}{4} = \frac{5}{6}y$
 or, $\frac{1}{6}y = \frac{x}{4}$
 $\therefore x : y = 2 : 3$
35. (b) Ratio for amount invested by P, Q & R
 $= 5x \times 12 : 6x \times 12 : 6x \times 6$
 $= 60x : 72x : 36x$
 $= 5x : 6x : 3x$
 Profit = 98000 = 20% of T
 where, T = Total amount
 $T = ₹ 490000$
 Amount received by
 $R = \frac{3x}{3x+6x+5x} (490000)$
 $= ₹ 105000$
36. (e) $Y : G = 6 : 7$; One year before
 $Y : G = 7 : 8$; After 4 years
 Now, $1 \rightarrow 5$ $\therefore 7 \rightarrow 35$
 Therefore, the age of Gamini now is $35 + 1 = 36$ years
37. (b) $\frac{P}{Q} = \frac{7}{3} \Rightarrow Q = \frac{3}{7}P$ (i)
 also, $2Q + 8 = P + 4$
 or, $2Q - P = -4$ (ii)
 Combining equations (i) and (ii), we get
 $P = 28$ years
38. (e) $40 \frac{x}{100} + y = \frac{125x}{100} \Rightarrow \frac{x}{y} = \frac{20}{17}$
39. (d) Here, neither the total amount nor the individual amount is given. So the share of Q cannot be determined.
40. (a) $CP = 30 \times 11.50 + 20 \times 14.25 = ₹ 630$
 $SP = 630 \times \frac{130}{100} \times \frac{1}{50} \approx ₹ 16.30$
41. (b) Ratio of investment = 6 : 3 : 2
 \therefore Share of Mr. Ramesh = $\frac{3}{11} \times 19800 = ₹ 5400$
42. (d) Let the total number of hens and sheep be x and y respectively.
 i.e., $x + y = 38$ and $2x + 4y = 100$ \therefore Ratio = 13 : 6
43. (d) Let $A = 2x$, $B = 3x$ and $C = 4x$. Then,
 $\frac{A}{B} = \frac{2x}{3x} = \frac{2}{3}$, $\frac{B}{C} = \frac{3x}{4x} = \frac{3}{4}$ and $\frac{C}{A} = \frac{4x}{2x} = \frac{2}{1}$
 $\Rightarrow \frac{A}{B} : \frac{B}{C} : \frac{C}{A} = \frac{2}{3} : \frac{3}{4} : \frac{2}{1} = 8 : 9 : 24$.
44. (c) Let the shares of A, B, C and D be ₹ 5x, ₹ 2x, ₹ 4x, ₹ 3x respectively.
 Then, $4x - 3x = 1000 \Rightarrow x = 1000$
 \therefore B's Share = ₹ 2x = ₹ 2000
45. (b) $A : B = 2 : 3 = 2 \times 5 : 3 \times 5 = 10 : 15$
 and $B : C = 5 : 8 = 5 \times 3 : 8 \times 3 = 15 : 24$
 Therefore, $A : B : C = 10 : 15 : 24$
 $\therefore A : B : C = 10 : 15 : 24$
 Let the number be $10x, 15x$ and $24x$.
 Then, $10x + 15x + 24x = 98$
 or $49x = 98$ or $x = 2$
 \Rightarrow Second number = $15x = 15 \times 2 = 30$
46. (c) Let number of ladies = x
 then, number of gents = $2x$
 Now, $\frac{x-2}{2x-2} = \frac{1}{3} \Rightarrow 3x - 6 = 2x - 2$
 $\Rightarrow x = 4$
 \therefore Total number of people originally present
 $= 4 + 8 = 12$
47. (b) Let Son's share = ₹ S;
 Daughter's share = ₹ D;
 and Wife's share = ₹ W.
 Also, $S : W = W : D = 3 : 1$
 $\therefore S : W : D = 9 : 3 : 1$
 then $S = 9x, D = x$
 and $9x - x = 10,000 \Rightarrow x = ₹ 1250$
 \therefore Total worth of the property = $(9 + 3 + 1)x = 13x$
 $= 13 \times 1250 = ₹ 16,250$
48. (a) Let number of each type of coin = x . Then,
 $1 \times x + .50 \times x + .25x = 35$
 $\Rightarrow 1.75x = 35 \Rightarrow x = 20$ coins
49. (c) Let $A = 2k$, $B = 3k$ and $C = 5k$.
 A 's new salary = $\frac{115}{100}$ of $2k = \left(\frac{115}{100} \times 2k\right) = \frac{23}{10}k$
 B 's new salary = $\frac{110}{100}$ of $3k = \left(\frac{110}{100} \times 3k\right) = \frac{33}{10}k$

$$C's \text{ new salary} = \frac{120}{100} \text{ of } 5k = \left(\frac{120}{100} \times 5k \right) = 6k$$

$$\therefore \text{ New ratio} = \frac{23k}{10} : \frac{33k}{10} : 6k = 23 : 33 : 60.$$

50. (d) Let number of passengers = $x, 2x, 7x$
and Rate = $5y, 4y, 2y$
Now, since income = Rate \times Number of passengers
 \therefore Income = $5xy, 8xy, 14xy$
 \therefore Income in ratio = $5 : 8 : 14$
- $$\therefore \text{ Income from A.C. sleeper class} = \frac{5}{5+8+14} \times 54,000$$
- $$= ₹ 10,000$$
51. (a) Let the ratio be $x : (x + 40)$. Then,
- $$\frac{x}{(x + 40)} = \frac{2}{7} \Rightarrow 7x = 2x + 80 \Rightarrow x = 16.$$
- \therefore Required ratio = $16 : 56$.
52. (c) Total age of 3 boys = (25×3) years = 75 years. Ratio of their ages = $3 : 5 : 7$.
- Age of the youngest = $\left(75 \times \frac{3}{15} \right)$ years = 15 years.
53. (c) Let enlarged breadth be x inches. Then,
- $$\frac{5}{2} : 4 :: \frac{15}{8} : x$$
- $$\Rightarrow \frac{5}{2}x = 4 \times \frac{15}{8} \Rightarrow x = 3 \text{ inches}$$
54. (a) Remaining capital = $1 - \left(\frac{1}{6} + \frac{1}{3} \right) = \frac{1}{2}$
- Ratio of their profit
- $$= \frac{1}{6} \times \left[\frac{1}{6} \times 12 \right] : \frac{1}{3} \times \left[\frac{1}{3} \times 12 \right] : \frac{1}{2} \times 12$$
- $$= \frac{1}{3} : \frac{4}{3} : 6 = 1 : 4 : 18$$
- \therefore A's share = $\frac{1}{1+4+18} \times 2300 = ₹ 100$
55. (b) Ratio of the capitals of A, B and C
- $$= 20000 \times 5 + 15000 \times 7 : 20000 \times 5 + 16000 \times 7 : 20000 \times 5 + 26000 \times 7$$
- $$= 205000 : 212000 : 282000 = 205 : 212 : 282.$$
- B's share = $₹ \left(69900 \times \frac{212}{699} \right) = ₹ 21200$;
56. (b) The amount A gets for managing
- $$= 12.5\% \text{ of } ₹ 8800 = ₹ 1100$$
- Remaining profit = $₹ 8800 - ₹ 1100 = ₹ 7700$
- This is to be divided in the ratio $5 : 6$.
- Share of A = $5/11$ of $₹ 7700 = ₹ 3500$
- $$\Rightarrow \text{ Total share of A} = ₹ 3500 + ₹ 1100 = ₹ 4600.$$

57. (a) Let B join after x months of the start of the business so that B's money is invested for $(12-x)$ months.
- \therefore Profit ratio is $12 \times 12500 : (12-x) \times 37500$
or $12 : 3(12-x)$
- Since profit is equally divided so
- $$12 = 3(12-x) \text{ or } x = 8. \text{ Thus B joined after 8 months.}$$
58. (c) Let B join after ' x ' month of the start of the business.
- $$\Rightarrow (45,000 \times 12) : 54,000 \times (12-x) = 2 : 1$$
- $$\therefore (45,000 \times 12) \times 1 = 54,000 \times (12-x) \times 2$$
- $$\Rightarrow x = 7$$
59. (a) Initially A's investment = $3x$ and B's investment = $4x$
Let B remain in the business for ' n ' months.
- $$\Rightarrow 3x \times 10 : 4x \times n = 5 : 6$$
- $$\therefore 3x \times 10 \times 6 = 4x \times n \times 5 \Rightarrow n = 9$$
60. (b) In a year, for A, total amount as a remuneration
- $$= 10 \times 12 = ₹ 120$$
- \therefore Amount of A's profit = $390 - 120 = ₹ 270$
- Ratio of investment = $3 : 4$
- Let total profit = $₹ x$
- Then, B's profit = $₹ (x - 270)$
- $$\therefore \frac{3}{3+4} \times x = 270 \Rightarrow x = 630$$
- \therefore B's profit = $630 - 270 = ₹ 360$
61. (a) Let B joined after x months.
- Then, $4500 \times 12 : 3000(12-x) = 2 : 1$
- Ratio of their investments
- $$= \frac{4500 \times 12}{3000(12-x)} = \frac{2}{1} \Rightarrow x = 3$$
62. (b) Let A's capital = $₹ 4x$ and B's capital = $₹ 5x$
- \therefore Ratio of profit
- $$= 4x \times 3 + \frac{3}{4}(4x) \times 7 : 5x \times 3 + \frac{4}{5}(5x) \times 7$$
- $$= 33 : 43$$
- \therefore Profit of B = $\frac{43}{33+43} \times 760 = ₹ 430$
63. (d) Let B puts = x cows
- then amount paid by B = $\frac{3}{2} \times$ amount paid by A.
- $$\therefore \frac{80 \times 7}{x \times 3} = \frac{\text{amount paid by A}}{3/2 \times \text{amount paid by A}}$$
- $$\Rightarrow x = \frac{80 \times 7 \times 3}{3 \times 2} = 280 \text{ cows}$$

64. (c) $\therefore X$'s capital = $\frac{2}{5}$ of total

$\therefore Y$'s capital = $1 - \frac{2}{5} = \frac{3}{5}$ of total

Let Y invested capital for t years.

$$\begin{aligned} \therefore \text{Ratio of profit} &= \frac{2}{5} \times \frac{2}{3} : \frac{3}{5} \times t \\ &= \frac{4}{15} : \frac{3t}{5} \quad \dots (i) \end{aligned}$$

Share of Y 's profit = $1 - \frac{4}{7} = \frac{3}{7}$ of the total

Actual ratio of profit = 4 : 3

\therefore By (i), $\frac{4/15}{3t/5} = \frac{4}{3} \Rightarrow t = \frac{1}{3}$ year.

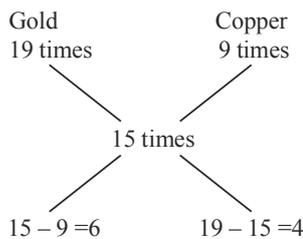
65. (a) For first year, ratio of profit = 3 : 4

X 's profit of first year = $\frac{3}{7} \times 2100 = ₹ 900$

Now, for second year,

ratio of profit = $3000 \times 12 + 900 \times 12 : 4000 \times 12$
 $= 46800 : 48000 = 39 : 40$

66. (b) By the rule of alligation, we have



\therefore Required ratio = $\frac{6}{4} = 3 : 2$

67. (c) % alcoholic strength in mixture = $\frac{6 \times 20 + 4 \times 60}{6 + 4} = 36\%$

68. (a) $\frac{\text{Quantity lent at } 8\%}{\text{Quantity lent at } 10\%} = \frac{10 - 9.2}{9.2 - 8} = \frac{0.8}{1.2} = \frac{2}{3}$

\therefore Quantity of money lent at 8%

$$= \frac{2}{2+3} \times 1000 = ₹ 400$$

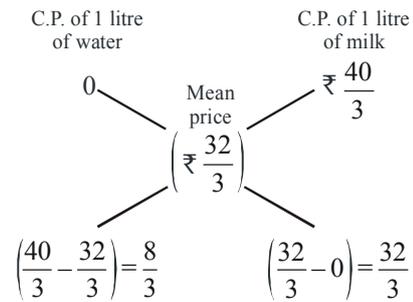
and quantity of money lent at 10%

$$= \frac{3}{2+3} \times 1000 = ₹ 600$$

69. (a) New % of sugar in (3 + 1) litre solution

$$= \frac{0.04 \times 3}{(3+1)} = 0.03 = 3\%$$

70. (c) C.P. of 1 litre of milk = ₹ $\left(20 \times \frac{2}{3}\right) = ₹ \frac{40}{3}$.



\therefore Ratio of water and milk = $\frac{8}{3} : \frac{32}{3} = 8 : 32 = 1 : 4$.

\therefore Quantity of water to be added to 60 litres of milk
 $= \left(\frac{1}{4} \times 60\right)$ litres = 15 litres.

71. (c) Here, cost price of mixture = $40 \times \frac{100}{100+25} = 32$ paise

$$\therefore \frac{q_1}{q_2} = \frac{32 - 24}{42 - 32} = \frac{8}{10} = \frac{4}{5}$$

and hence $q_1 = \frac{4}{5} \times 25 = 20$ kg

72. (c) C.P. of mixture = $\frac{80 \times 15 + 20 \times 20}{80 + 20} = ₹ 16$

\therefore S.P. = $\frac{(100 + 25)}{100} \times 16 = ₹ 20$

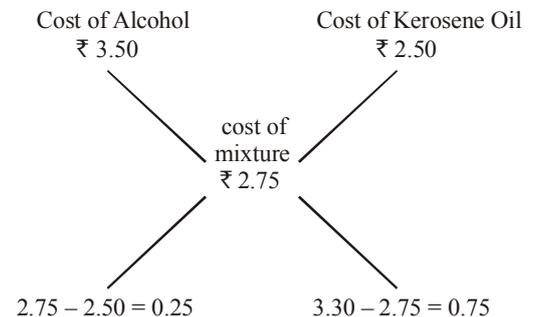
73. (c) Let the quantity of two varieties of tea be $5x$ kg and $4x$ kg, respectively.

Now, SP = $23 \times 9x = 207x$

and CP = $20 \times 5x + 25 \times 4x = 200x$

Profit % = $\frac{7x}{200x} \times 100 = 3.5\%$

74. (b) By the rule of alligation, we have



\therefore Required ratio = $\frac{0.25}{0.75} = \frac{1}{3}$ i.e. 1 : 3

75. (b) In mixture,

$$\frac{\text{Quantity of pure milk}}{\text{Quantity of water}} = \frac{3 - 0}{3.6 - 3} = \frac{3}{0.6} = \frac{5}{1}$$

Since in every 5 litres of milk, he adds 1 litre of water.

\therefore in every 25 litres of milk, he adds 5 litres of water.

Profit and Loss

INTRODUCTION

Cost Price

The amount paid to purchase an article or the price at which an article is made, is known as its cost price.

The cost price is abbreviated as C.P.

Selling Price

The price at which an article is sold, is known as its selling price. The selling price is abbreviated as S.P.

Profit

If the selling price (S.P.) of an article is greater than the cost price (C.P.), then the difference between the selling price and cost price is called profit.

Thus, If $S.P. > C.P.$, then

$$\text{Profit} = S.P. - C.P.$$

$$\Rightarrow S.P. = C.P. + \text{Profit}$$

$$\Rightarrow C.P. = S.P. - \text{Profit}$$

Loss

If the selling price (S.P.) of an article is less than the cost price (C.P.), then the difference between the cost price (C.P.) and the selling price (S.P.) is called loss.

Thus, if $S.P. < C.P.$, then

$$\text{Loss} = C.P. - S.P.$$

$$\Rightarrow C.P. = S.P. + \text{Loss}$$

$$\Rightarrow S.P. = C.P. - \text{Loss}$$

EXAMPLE 1. An article was bought for ₹ 2000 and sold for ₹ 2200. Find the gain or loss.

Sol. C.P. of the article = ₹ 2000

S.P. of the article = ₹ 2200

Since $S.P. > C.P.$ So there is gain.

Gain (profit) = $S.P. - C.P.$

$$= ₹ 2200 - ₹ 2000 = ₹ 200$$

Profit and Loss percentage

The profit per cent is the profit that would be obtained for a C.P. of ₹ 100.

Similarly, the loss per cent is the loss that would be made for a C.P. of ₹ 100.

$$\text{Profit per cent} = \frac{\text{Profit}}{C.P.} \times 100$$

$$\text{Loss per cent} = \frac{\text{Loss}}{C.P.} \times 100$$

REMEMBER

$$\star \text{ Profit} = \frac{C.P. \times \text{Profit \%}}{100}$$

$$\star \text{ Loss} = \frac{C.P. \times \text{Loss \%}}{100}$$

$$\star S.P. = \left(\frac{100 + \text{Profit \%}}{100} \right) \times C.P.$$

$$\star S.P. = \left(\frac{100 - \text{Loss \%}}{100} \right) \times C.P.$$

$$\star C.P. = \frac{100 \times S.P.}{100 + \text{Profit \%}}$$

$$\star C.P. = \frac{100 \times S.P.}{100 - \text{Loss \%}}$$

NOTE

(i) If an article is sold at a certain gain (say 45%), then $SP = 145\%$ of CP

(ii) If an article is sold at certain loss (say 25%), then $SP = 75\%$ of CP.

EXAMPLE 2. A cycle was purchased for ₹ 1600 and sold for ₹ 1400. Find the loss and loss %.

Sol. C.P. of the cycle = ₹ 1600

S.P. of the cycle = ₹ 1400

Since $S.P. < C.P.$, so there is a loss.

Loss = $C.P. - S.P.$

$$= ₹ 1600 - ₹ 1400 = ₹ 200.$$

$$\text{Loss \%} = \frac{\text{Loss}}{C.P.} \times 100 = \frac{200}{1600} \times 100 = 12\frac{1}{2}\%$$

EXAMPLE 3. By selling a table for ₹ 330, a trader gains 10%. Find the cost price of the table.

Sol. S.P. = ₹ 330, Gain = 10%

$$\begin{aligned}\therefore \text{C.P.} &= \left(\frac{100}{100 + \text{Gain \%}} \right) \times \text{S.P.} \\ &= ₹ \frac{100}{100 + 10} \times 330 = \frac{100}{110} \times 330 = ₹ 300.\end{aligned}$$

EXAMPLE 4. A sells a bicycle to B at a profit of 20% and B sells it to C at a profit of 25%. If C pays ₹ 225 for it, what did A pay for it.

Sol. C.P. of A = $225 \times \frac{100}{100 + 20} \times \frac{100}{100 + 25}$

$$= 225 \times \frac{100}{120} \times \frac{100}{125} = ₹ 150.$$

EXAMPLE 5. A mobile phone is sold for ₹ 5060 at a gain of 10%. What would have been the gain or loss per cent if it had been sold for ₹ 4370 ?

Sol. S.P. = ₹ 5060, gain = 10%

$$\therefore \text{C.P.} = \frac{5060 \times 100}{100 + 10} = ₹ 4600.$$

2nd S.P. = ₹ 4370

Since, S.P. < C.P., so there is loss.

$$\therefore \text{Loss \%} = \frac{(4600 - 4370) \times 100}{4600} = 5\%$$

Shortcut Approach

Dishonest dealing

$$\text{Gain \%} = \frac{\text{Error}}{\text{True value} - \text{Error}} \times 100$$

$$\frac{\text{True Scale}}{\text{False Scale}} = \frac{100 + \text{gain\%}}{100 - \text{loss\%}}$$

EXAMPLE 6. A cloth merchant says that due to slump in the market, he sells the cloth at 10% loss, but he uses a false metre-scale and actually gain 15%. Find the actual length of the scale.

- (a) 78 cm (b) 78.25 cm
(c) 78.5 cm (d) 78.75 cm

Sol. (b) $\frac{\text{True scale}}{\text{False scale}} = \frac{100 + \text{gain\%}}{100 - \text{loss\%}}$

$$\frac{100}{\text{False scale}} = \frac{100 + 15}{100 - 10}$$

$$\Rightarrow \text{False scale} = \frac{100 \times 90}{115} = 78.26 \text{ cm}$$

Shortcut Approach

Real Profit/Loss percentage :

If the profit or loss is calculated on S.P., then it is not actual profit or loss.

Real profit (loss)% is the profit (loss)% on C.P.

$$\text{Real Profit \%} = \frac{\% \text{ profit on S.P.}}{100 - \% \text{ profit on S.P.}} \times 100$$

EXAMPLE 7. A dishonest dealer professes to sell his goods at cost price, but he uses a weight of 960 g for the kg weight. Find his gain per cent.

Sol. Error = 1 kg - 960 g
= 1000 g - 960 g = 40 g.

$$\therefore \text{Gain \%} = \frac{40}{1000 - 40} \times 100$$

$$= \frac{40}{960} \times 100 = 4\frac{1}{6}\%$$

Shortcut Approach

Goods passing through successive hands

When there are two successive profits of a% and b%, then the resultant profit per cent is given by

$$\left(a + b + \frac{ab}{100} \right) \%$$

When there are two successive loss a% and b%, then the

resultant loss per cent is given by $\left(-a - b + \frac{ab}{100} \right) \%$

When there is a profit of a% and loss by b% in a transaction, then the resultant profit or loss per cent is given by

$\left(a - b - \frac{ab}{100} \right) \%$, according to the +ve or -ve sign respectively.

When cost price and selling price are reduced by the same amount (A) and profit increases then cost price (C.P.)

$$= \frac{[\text{Initial profit \%} + \text{Increase in profit \%}] \times A}{\text{Increase in profit \%}}$$

EXAMPLE 8. A table is sold at a profit of 20%. If the cost price and selling price are ₹ 200 less, the profit would be 8% more. Find the cost price.

Sol. C.P. = ₹ $\frac{(20 + 8) \times 200}{8} = ₹ 28 \times 25 = ₹ 700.$

Shortcut Approach

If cost price of x articles is equal to the selling price of y articles, then profit/loss percentage = $\frac{x-y}{y} \times 100\%$, according to +ve or -ve sign respectively.

EXAMPLE 9. If the C.P. of 15 tables be equal to the S.P. of 20 tables, find the loss per cent.

Sol. Profit/Loss% = $\frac{-5}{20} \times 100 = 25\%$ loss, since it is -ve.

EXAMPLE 10. If the cost price of 20 articles is equal to the selling price of 18 articles, then find the profit per cent.

Sol. Here, $x = 20$ and $y = 18$
According to the formula,

$$\begin{aligned} \text{Profit \%} &= \left(\frac{x-y}{y} \times 100 \right) \% = \left(\frac{20-18}{18} \times 100 \right) \% \\ &= \frac{100}{9} \% = 11\frac{1}{9} \% \end{aligned}$$

EXAMPLE 11. If the C.P. of 6 articles is equal to the S.P. of 4 articles. Find the gain per cent.

Sol. Let C.P. of an article be ₹ x ; then,
C.P. of 6 articles = ₹ $6x$
C.P. of 4 articles = ₹ $4x$
But S.P. of 4 articles = C.P. of 6 articles
 \therefore S.P. of 4 articles = $6x$
Thus, gain = S.P. - C.P. = ₹ $(6x - 4x) = ₹ 2x$
 \therefore Gain % = $\frac{2x}{4x} \times 100 = 50$
Thus, gain in the transaction = 50%

EXAMPLE 12. By selling 33 metres of cloth, a man gains the sale price of 11 metres. The gain % is

- (a) 50% (b) 25%
(c) $33\frac{1}{3}$ % (d) 20%

Sol. (a) Gain = S.P. of 33 metres - C.P. of 33 metres
= S.P. of 11 metres
 \Rightarrow S.P. of 22 metres = C.P. of 33 metres
 \therefore % gain = $\frac{\text{gain}}{\text{C.P. of metres}} \times 100$
 $= \frac{\text{S.P. of 11 metres}}{\text{C.P. of 33 metres}} \times 100$

$$= \frac{\text{S.P. of 11 metres}}{\text{S.P. of 22 metres}} \times 100 = \frac{11}{22} \times 100 = 50\%$$

SHORTCUT METHOD

If on selling 'x' articles a man gains equal to the S.P. of y articles. Then,

$$\% \text{ gain} = \frac{y}{x-y} \times 100 = \frac{11}{33-11} \times 100 = \frac{11}{22} \times 100 = 50\%$$

Shortcut Approach

A man purchases a certain number of articles at x a rupee and the same number at y a rupee. He mixes them together and sells them at z a rupee. Then his gain or loss %

$$= \left[\frac{2xy}{z(x+y)} - 1 \right] \times 100 \text{ according as the sign is +ve or -ve.}$$

If two items are sold, each at ₹. x , one at a gain of $p\%$ and the other at a loss of $p\%$, there is an overall loss given by $\frac{p^2}{100}\%$. The absolute value of the loss is given by

$$\frac{2p^2x}{100^2 - p^2}$$

If CP of two items is the same and % Loss and % Gain on the two items are equal, then net loss or net profit is zero.

EXAMPLE 13. A shopkeeper sold two radio sets for ₹ 792 each, gaining 10% on one, and losing 10% on the other. Then he

- (a) neither gains nor loses (b) gains 1%
(c) loses 1% (d) gains 5%

Sol. (c) When selling price of two articles is same and % gain = % loss
then there will be always loss.

$$\text{and overall \% loss} = \frac{(10)^2}{100} \% = 1\%$$

EXAMPLE 14. A man bought two housing apartments for ₹ 2 lakhs each. He sold one at 20% loss and the other at 20% gain. Find his gain or loss.

- (a) 4% loss (b) 4% gain
(c) No loss, no gain (d) 10% loss

Sol. (c) When C.P. of two articles is same and % gain = % loss

Then, on net, there is no loss, no gain

when two different articles sold at same S.P. and x_1 and x_2 are % gain (or loss) on them. Then, overall % gain or loss

$$= \left[\frac{100 - 2(100 \pm x_1)(100 \pm x_2)}{(100 \pm x_1) + (100 \pm x_2)} \right] \%$$

(Taking + or - according to gain or loss)

EXAMPLE 15. A man sold two watches for ₹ 1000 each. On one he gains 25% and on the other 20% loss. Find how much % does he gain or lose in the whole transaction?

- (a) $\frac{100}{41}$ % loss (b) $\frac{100}{41}$ % gain
 (c) No gain, no loss (d) Cannot be determined

Sol. (b) When $S_1 = S_2$, then

overall % gain or % loss

$$= \left[100 - \frac{2(100 + x_1)(100 - x_2)}{(100 + x_1) + (100 - x_2)} \right] \%$$

$$= \left(100 - \frac{2(125)(80)}{(125) + (80)} \right) \% = \left(100 - \frac{2 \times 125 \times 80}{205} \right) \%$$

$$= \frac{100}{41} \% \text{ gain } (\because \text{it is +ve})$$

Shortcut Approach

A businessman sells his items at a profit/loss of a%. If he had sold it for ₹ R more, he would have gained/lost b%. Then,

$$\text{CP of items} = \frac{R}{b \pm a} \times 100$$

'-' = When both are either profit or loss

'+' = When one is profit and other is loss

EXAMPLE 16. A person sold a table at a profit of $6\frac{1}{2}$ %. If he had sold it for ₹ 1250 more, he would have gained 19%. Find the CP of the table.

Sol. Here, $a = 6\frac{1}{2}\% = \frac{13}{2}\%$

$b = 19\%$ and $R = ₹ 1250$

According to the formula,

$$\text{CP of table} = \frac{R}{b - a} \times 100$$

$$= \frac{1250}{19 - \frac{13}{2}} \times 100 = \frac{1250 \times 2}{25} \times 100$$

$$= ₹ 10000$$

Shortcut Approach

If A sold an article to B at a profit (loss) of $r_1\%$ and B sold this article to C at a profit (loss) of $r_2\%$, then cost price of article for

C is given by (cost price for A) $\times \left(1 \pm \frac{r_1}{100} \right) \left(1 \pm \frac{r_2}{100} \right)$.

EXAMPLE 17. Nikunj sold a machine to Sonia at a profit of 30%. Sonia sold this machine to Anu at a loss of 20%. If Nikunj paid ₹ 5000 for this machine, then find the cost price of machine for Anu.

Sol. Here $r_1 = 30\%$ and $r_2 = 20\%$

CP of a machine for Nikunj = ₹ 5000

\therefore CP of machine for Anu = CP of machine for Nikunj

$$\left(1 + \frac{r_1}{100} \right) \left(1 - \frac{r_2}{100} \right)$$

$$= 5000 \left(1 + \frac{30}{100} \right) \left(1 - \frac{20}{100} \right) = 5000 \times \frac{130}{100} \times \frac{80}{100} = ₹ 5200$$

Shortcut Approach

If a man purchases m items for ₹ x and sells n items for ₹ y, then

Profit or loss per cent is given by $\frac{my - nx}{nx} \times 100\%$

[Positive result means profit and negative result means loss].

EXAMPLE 18. If Karan purchases 10 oranges for ₹ 25 and sells 9 oranges for ₹ 25, then find the gain percentage.

Sol. Here, $m = 10$, $x = 25$, $n = 9$ and $y = 25$

$$\therefore \text{Profit per cent} = \frac{my - nx}{nx} \times 100\%$$

$$= \frac{25 \times 10 - 9 \times 25}{9 \times 25} \times 100\%$$

$$= \frac{250 - 225}{225} \times 100\%$$

$$= \frac{25}{225} \times 100\% = \frac{100}{9}\% = 11\frac{1}{9}\%$$

Marked Price

The price on the label is called the marked price or list price.

The marked price is abbreviated as M.P.

Discount

The reduction made on the 'marked price' of an article is called the discount.

NOTE : When no discount is given, 'selling price' is the same as 'marked price'.

- Discount = Marked price \times Rate of discount.
- S.P. = M.P. - Discount.
- Discount % = $\frac{\text{Discount}}{\text{M.P.}} \times 100$.
- Buy x get y free i.e., if x + y articles are sold at cost price of x articles, then the percentage discount = $\frac{y}{x+y} \times 100$.

EXAMPLE 19. How much % must be added to the cost price of goods so that a profit of 20% must be made after throwing off a discount of 10% from the marked price?

(a) 20% (b) 30%

(c) $33\frac{1}{3}$ % (d) 25%

Sol. (c) Let C.P. = ₹ 100, then S.P. = ₹ 120

Also, Let marked price be ₹ x. Then

90% of x = 120

$$\Rightarrow x = \frac{120 \times 100}{90} = 133\frac{1}{3}$$

\therefore M.P. should be ₹ $133\frac{1}{3}$

or M.P. = $33\frac{1}{3}$ % above C.P.

EXAMPLE 20. At a clearance sale, all goods are on sale at 45% discount. If I buy a skirt marked ₹ 600, how much would I need to pay?

Sol. M.P. = ₹ 600, Discount = 45%

$$\text{Discount} = \frac{\text{M.P.} \times \text{Discount \%}}{100} = \frac{600 \times 45}{100} = ₹ 270.$$

$$\therefore \text{S.P.} = \text{M.P.} - \text{Discount} \\ = ₹ 600 - ₹ 270 = ₹ 330.$$

Hence, the amount I need to pay is ₹ 330.

EXAMPLE 21. After allowing a discount of 12% on the marked price of an article, it is sold for ₹ 880. Find its marked price.

Sol. S.P. = ₹ 880 and Discount % = 12

Let M.P. = x

$$\text{Discount} = \frac{\text{M.P.} \times \text{Discount \%}}{100} = \frac{x \times 12}{100} = \frac{3}{25}x$$

Now, M.P. = S.P. + Discount

$$x = 880 + \frac{3}{25}x$$

$$\Rightarrow x - \frac{3}{25}x = 880 \Rightarrow \frac{22x}{25} = 880$$

$$\Rightarrow x = \frac{880 \times 25}{22} = 40 \times 25 = ₹ 1000$$

\therefore Marked price of the article is ₹ 1000.

EXAMPLE 22. A shopkeeper offers his customers 10% discount and still makes a profit of 26%. What is the actual cost to him of an article marked ₹ 280?

Sol. M.P. = ₹ 280 and Discount % = 10

$$\text{Discount} = \frac{\text{M.P.} \times \text{Discount \%}}{100} = \frac{280 \times 10}{100} = ₹ 28$$

$$\text{S.P.} = \text{M.P.} - \text{Discount} = ₹ 280 - ₹ 28 = ₹ 252$$

Now, S.P. = ₹ 252 and profit = 26%

$$\therefore \text{C.P.} = \frac{100}{100 + \text{gain \%}} \times \text{S.P.}$$

$$= \frac{100}{100 + 26} \times 252 = ₹ 200$$

Hence, the actual cost of the article is ₹ 200.



REMEMBER

- ★ In **successive discounts**, first discount is subtracted from the marked price to get net price after the first discount. Taking this price as the new marked price, the second discount is calculated and it is subtracted from it to get net price after the second discount. Continuing in this manner, we finally obtain the final selling price. In case of successive discounts a% and b%, the effective

$$\text{discount is } \left(a + b - \frac{ab}{100} \right) \%$$

EXAMPLE 23. Find the single discount equivalent to successive discounts of 15% and 20%.

Sol. By direct formula,

$$\text{Single discount} = \left(a + b - \frac{ab}{100} \right) \%$$

$$= \left(15 + 20 - \frac{15 \times 20}{100} \right) \% = 32 \%$$

NOTE : If the list price of an item is given and discounts d_1 and d_2 are given successively on it then,

$$\text{Final price} = \text{list price} \left(1 - \frac{d_1}{100} \right) \left(1 - \frac{d_2}{100} \right)$$

EXAMPLE 24. An article is listed at ₹ 65. A customer bought this article for ₹ 56.16 and got two successive discounts of which the first one is 10%. The other rate of discount of this scheme that was allowed by the shopkeeper was :

- (a) 3% (b) 4%
(c) 6% (d) 2%

Sol. (b) Price of the article after first discount

$$65 - 6.5 = ₹ 58.5$$

Therefore, the second discount

$$= \frac{58.5 - 56.16}{58.5} \times 100 = 4\%$$

EXAMPLE 25. A shopkeeper offers 5% discount on all his goods to all his customers. He offers a further discount of 2% on the reduced price to those customers who pay cash. What will you actually have to pay for an article in cash if its M.P. is ₹ 4800?

Sol. M.P. = ₹ 4800

First discount = 5% of M.P.

$$= \frac{5}{100} \times 4800 = ₹ 240$$

Net price after discount = ₹ 4800 - ₹ 240

$$= ₹ 4560$$

Second discount = 2% of ₹ 4560

$$= \frac{2}{100} \times 4560 = ₹ 91.20$$

Net price after discount = ₹ 4560 - ₹ 91.20

$$= ₹ 4468.80$$

SHORTCUT METHOD

$$\text{S.P.} = 4800 \left(1 - \frac{5}{100}\right) \left(1 - \frac{2}{100}\right) = ₹ 4468.80$$

SALES TAX

To meet government's expenditures like construction of roads, railway, hospitals, schools etc. the government imposes different types of taxes. Sales tax (S.T.) is one of these tax.

Sales tax is calculated on selling price (S.P.)

NOTE : If discount is given, selling price is calculated first and then sales tax is calculated on the selling price of the article.

EXAMPLE 26. Sonika bought a V.C.R. at the list price of ₹ 18,500. If the rate of sales tax was 8%, find the amount she had to pay for purchasing the V.C.R.

Sol. List price of V.C.R. = ₹ 18,500

Rate of sales tax = 8%

∴ Sales tax = 8% of ₹ 18,500

$$= \frac{8}{100} \times 18500 = ₹ 1480$$

So, total amount which Sonika had to pay for purchasing the V.C.R. = ₹ 18,500 + ₹ 1480

$$= ₹ 19,980.$$

EXAMPLE 27. The sale price of an article including the sales tax is ₹ 616. The rate of sales tax is 10%. If the shopkeeper has made a profit of 12%, then the cost price of the article is :

- (a) ₹ 500 (b) ₹ 515
(c) ₹ 550 (d) ₹ 600

Sol. (a) Let the CP of the article be ₹ x

Then, SP = $x \times 1.12 \times 1.1$

Now, $x \times 1.12 \times 1.1 = 616$

$$\Rightarrow x = \frac{616}{1.232} = ₹ 500$$

Shortcut Approach

If 'a' th part of some items is sold at x% loss, then required gain per cent in selling rest of the items in order that there is neither

gain nor loss in whole transaction, is $\frac{ax}{1-a}\%$

EXAMPLE 28. A medical store owner purchased medicines worth ₹ 6000 from a company. He sold 1/3 part of the medicine at 30% loss. On which gain he should sell his rest of the medicines, so that he has neither gain nor loss?

Sol. Given, $a = \frac{1}{3}$ and $x = 30\%$

According to the formula,

$$\text{Required gain \%} = \frac{ax}{1-a}\% = \frac{\frac{1}{3} \times 30}{1 - \frac{1}{3}}\% = \frac{10 \times 3}{2}\% = 15\%$$

EXERCISE

1. If by selling twelve note-books, the seller earns profit equal to the selling price of two note-books, what is his percentage profit?
 - (a) 20%
 - (b) 25%
 - (c) $16\frac{2}{3}\%$
 - (d) Data inadequate
 - (e) None of these
2. A grocer purchased 20 kg of rice at the rate of ₹ 15 per kg and 30 kg of rice at the rate of ₹ 13 per kg. At what price per kg should he sell the mixture to earn $33\frac{1}{3}\%$ profit on the cost price?
 - (a) ₹ 28.00
 - (b) ₹ 20.00
 - (c) ₹ 18.40
 - (d) ₹ 17.40
 - (e) None of these
3. By selling an article for ₹ 96, double profit is obtained than the profit that would have been obtained by selling it for ₹ 84. What is the cost price of the article?
 - (a) ₹ 72.00
 - (b) ₹ 75.00
 - (c) ₹ 70.00
 - (d) ₹ 68.00
 - (e) None of these
4. A shopkeeper sold a TV set for ₹ 17940, at a discount of 8% and gained 19.6%. If no discount is allowed, what will be his gain per cent?
 - (a) 25%
 - (b) 36.4%
 - (c) 24.8%
 - (d) Can't be determined
 - (e) None of these
5. Deepa bought a calculator at 30% discount on the listed price. Had she not got the discount, she would have paid ₹ 82.50 extra. At what price did she buy the calculator?
 - (a) ₹ 192.50
 - (b) ₹ 275
 - (c) ₹ 117.85
 - (d) Cannot be determined
 - (e) None of these
6. A shopkeeper sells a TV set for ₹ 16560 at 10% discount on its marked price and earns 15% profit. If no discount is offered, then what will be his present per cent profit?
 - (a) $27\frac{7}{9}$
 - (b) $22\frac{7}{9}$
 - (c) $25\frac{7}{9}$
 - (d) Data inadequate
 - (e) None of these
7. A builder purchased a plot of land for ₹ 80 lakh and constructed a five-storey building inclusive of ground floor on it. How much should he charge for each flat to make 25% profit on his investment on land, if there are five flats on each storey?
 - (a) ₹ 50000
 - (b) ₹ 100000
 - (c) ₹ 500000
 - (d) ₹ 2000000
 - (e) None of these
8. A trader purchased an old bicycle for ₹ 480. He spent 20% of the cost on its repair. If he wants to earn ₹ 144 as net profit on it, how much percentage should he add to the purchase price of the bicycle?
 - (a) 50%
 - (b) 48%
 - (c) 96%
 - (d) 100%
 - (e) None of these
9. The price of 2 sarees and 4 shirts is ₹ 16000. With the same money one can buy 1 saree and 6 shirts. If one wants to buy 12 shirts, how much shall one have to pay?
 - (a) ₹ 2,400
 - (b) ₹ 4,800
 - (c) ₹ 1,200
 - (d) Cannot be determined
 - (e) None of these
10. A shopkeeper bought 150 calculators at the rate of ₹ 250 per calculator. He spent ₹ 2500 on transportation and packing. If the marked price of calculator is ₹ 320 per calculator and the shopkeeper gives a discount of 5% on the marked price then what will be the percentage profit gained by the shopkeeper?
 - (a) 20%
 - (b) 14%
 - (c) 15%
 - (d) 16%
 - (e) None of these
11. A garment company declared 15% discount for whole sale buyers. Mr Sachdev bought garments from the company for ₹ 25,000 after getting discount. He fixed up the selling price of garments in such a way that he earned a profit of 8% on original company price. What is the **approximate** total selling price?
 - (a) ₹ 28,000
 - (b) ₹ 29,000
 - (c) ₹ 32,000
 - (d) ₹ 28,500
 - (e) ₹ 29,500
12. A shopkeeper sold an article for ₹ 720 after giving 10% discount on the labelled price and made 20% profit on the cost price. What would have been the percentage profit, had he not given the discount?
 - (a) 25%
 - (b) 30%
 - (c) 23%
 - (d) 28%
 - (e) None of these
13. The difference between a discount of 35% and two successive discounts of 20% and 20% on a certain bill was ₹ 22. Find the amount of the bill.
 - (a) ₹ 1,100
 - (b) ₹ 200
 - (c) ₹ 2,200
 - (d) Data inadequate
 - (e) None of these
14. A shopkeeper labels the price of articles 20% above the cost price. If he allows ₹ 31.20 off on a bill of ₹ 312, find his profit per cent on the article?
 - (a) 8
 - (b) $12\frac{1}{3}$
 - (c) $11\frac{2}{3}$
 - (d) $8\frac{1}{3}$
 - (e) None of these

15. A shopkeeper sold an article offering a discount of 5% and earned a profit of 23.5%. What would have been the percentage of profit earned if no discount had been offered?
 (a) 28.5 (b) 27.675
 (c) 30 (d) Data inadequate
 (e) None of these
16. A shopkeeper sold sarees at ₹ 266 each after giving 5% discount on labelled price. Had he not given the discount, he would have earned a profit of 12% on the cost price. What was the cost price of each saree?
 (a) ₹ 280 (b) ₹ 260
 (c) ₹ 38 mph (d) Data inadequate
 (e) None of these
17. The profit earned by selling an article for ₹ 832 is equal to the loss incurred when the same article is sold for ₹ 448. What should be the sale price of the article for making 50 per cent profit?
 (a) ₹ 960 (b) ₹ 1060
 (c) ₹ 1,200 (d) ₹ 920
 (e) None of these
18. Prabhu purchased 30 kg of rice at the rate of ₹ 17.50 per kg and another 30 kg rice at a certain rate. He mixed the two and sold the entire quantity at the rate of ₹ 18.60 per kg and made 20 per cent overall profit. At what price per kg did he purchase the lot of another 30 kg rice?
 (a) ₹ 14.50 (b) ₹ 12.50
 (c) ₹ 15.50 (d) ₹ 13.50
 (e) None of these
19. An article when sold for ₹ 200 fetches 25 per cent profit. What would be the percentage profit/loss if 6 such articles are sold for ₹ 1,056?
 (a) 10 per cent loss (b) 10 per cent profit
 (c) 5 per cent loss (d) 5 per cent profit
 (e) None of these
20. A shopkeeper gave an additional 20 per cent concession on the reduced price after giving 30 per cent standard concession on an article. If Arun bought that article for ₹ 1,120, what was the original price?
 (a) ₹ 3,000 (b) ₹ 4,000
 (c) ₹ 2,400 (d) ₹ 2,000
 (e) None of these
21. What per cent of selling price would be 34% of cost price if gross profit is 26% of the selling price?
 (a) 17.16 (b) 74.00
 (c) 25.16 (d) 88.40
 (e) None of these
22. A man sold 10 eggs for 5 rupees and gained 20%. How many eggs did he buy for 5 rupees?
 (a) 10 eggs (b) 12 eggs
 (c) 14 eggs (d) 16 eggs
 (e) None of these
23. A person sells 36 oranges per rupee and suffers a loss of 4%. Find how many oranges per rupee to be sold to have a gain of 8%?
 (a) 30 (b) 31
 (c) 32 (d) 33
 (e) None of these
24. Coconuts were purchased at ₹ 150 per hundred and sold at ₹ 2 per coconut. If 2000 coconuts were sold, what was the total profit made?
 (a) ₹ 500 (b) ₹ 1000
 (c) ₹ 1500 (d) ₹ 2000
 (e) None of these
25. A shopkeeper's price is 50% above the cost price. If he allows his customer a discount of 30% what profit does he make?
 (a) 5% (b) 10%
 (c) 15% (d) 20%
 (e) None of these
26. A shopkeeper purchases 10 kg of rice at ₹ 600 and sells at a loss as much the selling price of 2 kg of rice. Find the sale rate of rice/kg.
 (a) ₹ 60 per kg (b) ₹ 50 per kg
 (c) ₹ 80 per kg (d) ₹ 70 per kg
 (e) None of these
27. If 15 oranges are bought for a rupee, how many must be sold for a rupee to gain 25%?
 (a) 12 (b) 10
 (c) 20 (d) 18
 (e) None of these
28. A man buys milk at ₹ 6 per litre and adds one third of water to it and sells mixture at ₹ 7.20 per litre. The gain is
 (a) 40% (b) 80%
 (c) 60% (d) 25%
 (e) None of these
29. A milk man makes a profit of 20% on the sale of milk. If he were to add 10% water to the milk, by what % would his profit increase?
 (a) 30 (b) $\frac{40}{3}$
 (c) 22 (d) 10
 (e) None of these
30. A grocer purchased 80 kg of sugar at ₹ 13.50 per kg and mixed it with 120 kg sugar at ₹ 16 per kg. At what rate should he sell the mixture to gain 16%?
 (a) ₹ 17 per kg (b) ₹ 17.40 per kg
 (c) ₹ 16.5 per kg (d) ₹ 16 per kg
 (e) None of these
31. A dishonest fruit seller professes to sell his goods at the cost price but weighs 800 grams for a kg weight. Find his gain percent.
 (a) 100% (b) 150%
 (c) 50% (d) 200%
 (e) None of these
32. A shopkeeper purchased 150 identical pieces of calculators at the rate of ₹ 250 each. He spent an amount of ₹ 2500 on transport and packing. He fixed the labelled price of each calculator at ₹ 320. However, he decided to give a discount of 5% on the labelled price. What is the percentage profit earned by him ?
 (a) 14% (b) 15%
 (c) 16% (d) 20%
 (e) None of these

33. A dishonest dealer sells his goods at the cost price but still earns a profit of 25% by underweighing. What weight does he use for a kg?
- (a) 750 g (b) 800 g
(c) 825 g (d) 850 g
(e) None of these
34. A shopkeeper marks up his goods to gain 35%. But he allows 10% discount for cash payment. His profit on the cash transaction therefore, in percentage, is
- (a) $13\frac{1}{2}$ (b) 25
(c) $21\frac{1}{2}$ (d) $31\frac{1}{2}$
(e) None of these
35. A man sold two steel chairs for ₹ 500 each. On one he gains 20% and on other, he loses 12%. How much does he gain or lose in the whole transaction?
- (a) 1.5% gain (b) 2% gain
(c) 1.5% loss (d) 2% loss
(e) None of these
36. A firm of readymade garments makes both men's and women's shirts. Its average profit is 6% of the sales. Its profit in men's shirts average 8% of the sales and women's shirts comprise 60% of the output. The average profit per sale rupee in women shirts is
- (a) 0.0466 (b) 0.0666
(c) 0.0166 (d) 0.0366
(e) None of these
37. A man purchases two watches at ₹ 560. He sells one at 15% profit and other at 10% loss. Then he neither gains nor lose. Find the cost price of each watch.
- (a) ₹ 224, ₹ 300 (b) ₹ 200, ₹ 300
(c) ₹ 224, ₹ 336 (d) ₹ 200, ₹ 336
(e) None of these
38. A man bought a horse and a carriage for ₹ 3000. He sold the horse at a gain of 20% and the carriage at a loss 10%, thereby gaining 2% on the whole. Find the cost of the horse.
- (a) ₹ 1000 (b) ₹ 1200
(c) ₹ 1500 (d) ₹ 1700
(e) None of these
39. Two electronic musical instruments were purchased for ₹ 8000. The first was sold at a profit of 40% and the second at loss of 40%. If the sale price was the same in both the cases, what was the cost price of two electronic musical instruments?
- (a) ₹ 2000, ₹ 5000 (b) ₹ 2200, ₹ 5500
(c) ₹ 2400, ₹ 5000 (d) ₹ 2400, ₹ 5600
(e) None of these
40. A man sells an article at a gain 15%. If he had bought it at 10% less and sold it for ₹ 4 less, he would have gained 25%. Find the cost price of the article.
- (a) ₹ 150 (b) ₹ 160
(c) ₹ 170 (d) ₹ 180
(e) None of these
41. A man sells an article at 5% profit. If he had bought it at 5% less and sold it for ₹ 1 less, he would have gained 10%. The cost price of the article is :
- (a) ₹ 200 (b) ₹ 150
(c) ₹ 240 (d) ₹ 280
(e) None of these
42. Five kg of butter was bought by a shopkeeper for ₹ 300. One kg becomes unsaleable. He sells the remaining in such a way that on the whole he incurs a loss of 10%. At what price per kg was the butter sold?
- (a) ₹ 67.50 (b) ₹ 52.50
(c) ₹ 60 (d) ₹ 72.50
(e) None of these
43. A fruitseller sells 8 oranges at a cost price of 9. The profit per cent is
- (a) $12\frac{1}{2}$ (b) $11\frac{1}{9}$
(c) $5\frac{15}{17}$ (d) $8\frac{2}{3}$
(e) None of these
44. The cost price of 20 articles is equal to the selling price of 25 articles. The loss percent in the transaction is
- (a) 5 (b) 20
(c) 25 (d) 30
(e) None of these
45. By selling 66 metres of cloth a person gains the cost price of 22 metres. Find the gain per cent.
- (a) 22% (b) $22\frac{1}{2}$ %
(c) 33% (d) $33\frac{1}{3}$ %
(e) None of these
46. By selling 66 metres of cloth a man loses the selling price of 22 metres. Find the loss per cent.
- (a) 20% (b) 25%
(c) 30% (d) 35%
(e) None of these
47. A single discount equal to a discount series of 10% and 20% is
- (a) 25% (b) 28%
(c) 30% (d) 35%
(e) None of these
48. The list price of a watch is ₹ 160. A retailer bought the same watch ₹ 122.40. He got two successive discounts one at 10% and the other at a rate which was not legible. What is the second discount rate?
- (a) 12% (b) 14%
(c) 15% (d) 18%
(e) None of these

49. A tradesman is marketing his goods 20% above the cost price of the goods. He gives 10% discount on cash payment, find his gain percent.
- (a) 12% (b) 8%
(c) 15% (d) 18%
(e) None of these
50. For a certain article, if discount is 25%, the profit is 25%. If the discount is 10%, then the profit is
- (a) 10% (b) 20%
(c) 35% (d) 50%
(e) None of these
51. A trader marks his goods at such a price that he can deduct 15% for cash and yet make 20% profit. Find the marked price of an item which costs him ₹ 90 :
- (a) ₹ $135\frac{11}{13}$ (b) ₹ $105\frac{3}{21}$
(c) ₹ $127\frac{1}{17}$ (d) ₹ $95\frac{1}{21}$
(e) None of these
52. A trader wants 10% profit on the selling price of a product whereas his expenses amount to 15% on sales. What should be his rate of mark up on an article costing ₹ 9?
- (a) 20% (b) $66\frac{2}{3}\%$
(c) 30% (d) $\frac{100}{3}\%$
(e) None of these

ANSWER KEY

1	(a)	7	(e)	13	(c)	19	(b)	25	(a)	31	(a)	37	(c)	43	(a)	49	(b)
2	(c)	8	(a)	14	(a)	20	(d)	26	(b)	32	(a)	38	(b)	44	(c)	50	(d)
3	(a)	9	(a)	15	(c)	21	(c)	27	(a)	33	(b)	39	(d)	45	(d)	51	(c)
4	(e)	10	(b)	16	(e)	22	(b)	28	(b)	34	(c)	40	(b)	46	(b)	52	(d)
5	(a)	11	(c)	17	(a)	23	(c)	29	(b)	35	(a)	41	(a)	47	(b)		
6	(a)	12	(e)	18	(d)	24	(b)	30	(b)	36	(a)	42	(a)	48	(c)		

Hints & Explanations

1. (a) Percentage profit = $\frac{2}{12-2} \times 100 = 20\%$
2. (c) $CP = 20 \times 15 + 30 \times 13 = ₹ 690$
 $\therefore SP = \frac{4}{3}$ of $690 \times \frac{1}{50} = ₹ 18.40$
3. (a) Let the cost price of the article be ₹ x .
 Then, $2(84 - x) = 96 - x$
 $168 - 2x = 96 - x \quad \therefore x = ₹ 72$
4. (e) If no discount is given, selling price of TV
 $= 17940 \times \frac{100}{92} = ₹ 19500$
 Cost price of TV = $17940 \times \frac{100}{119.60} = ₹ 15000$
 Gain % = $\frac{19500 - 15000}{15000} \times 100 = 30\%$
5. (a) List price of calculator
 $= \frac{82.50}{30} \times 100 = ₹ 275$
 Deepa bought calculator in
 $275 \times 0.70 = ₹ 192.50$
6. (a) Original selling price of TV set
 $= ₹ \frac{16560 \times 100}{90} = ₹ 18400$
 Cost price of the TV = $\frac{16560 \times 100}{115} = ₹ 14400$
 at no discount, % profit will be
 $= \frac{(18400 - 14400) \times 100}{14400} = 27\frac{7}{9}\%$
7. (e) We do not know the total investment of builder, because in the question construction cost is not given. Hence, 'None of these' is the answer.
8. (a) Purchase price = ₹ 480
 Repair cost = 20% of ₹ 480 = ₹ 96
 \therefore Total cost = ₹ 480 + ₹ 96 = ₹ 576
 Net profit = ₹ 144
 \therefore Selling price = Total cost + Net profit
 $= ₹ 576 + 144 = ₹ 720$
 Now, Selling price - Purchase price
 $= ₹ 720 - ₹ 480 = ₹ 240$
 \therefore Req'd percentage = $\frac{₹ 240}{₹ 480} \times 100 = 50\%$
9. (a) Let the price of one saree and one shirt be ₹ x and ₹ y respectively.
 Then, $2x + 4y = 1600$
 or, $x + 2y = 800$... (i)
 Also, $x + 6y = 1600$... (ii)
 Solving equations (i) and (ii), we get
 $4y = 800$ or, $y = 200$
 \therefore cost of 12 shirts = $12 \times 200 = ₹ 2400$
10. (b) CP of 150 calculators = $150 \times 250 = ₹ 37,500$.
 \therefore total CP = $37,500 + 2500 = ₹ 40,000$
 Marked price of 150 calculators = $150 \times 320 = ₹ 48,000$
 Selling price after discount = $48000 \times \frac{95}{100}$
 $= ₹ 45,600$
 \therefore Percentage profit = $\frac{45,600 - 40,000}{40,000} \times 100 = 14\%$
11. (c) Original S.P. of company = $\frac{25000 \times 100}{85} = ₹ 29411.8$
 \therefore Approximate total S.P. = $\frac{29411.8 \times 108}{100} \approx ₹ 32000$
12. (e) Cost price = $\frac{720 \times 100}{120} = ₹ 600$;
 S.P. at no discount = $\frac{720 \times 100}{90} = ₹ 800$
 \therefore % profit = $\frac{200 \times 100}{600} = 33\frac{1}{3}\%$
13. (c) Successive discount = $20\% + \frac{20 \times 80}{100}$
 $= 20 + 16 = 36\%$
 Difference in discount = $36 - 35 = 1\%$
 \therefore Bill amount = $22 \times 100 = ₹ 2200$
14. (a) Let the CP = ₹ 100 Marked price = ₹ 120
 Discount = $\frac{312}{31.2} \times \frac{1}{100} = 10\% = ₹ 12$
 $SP = 120 - 12 = ₹ 108$ Profit% = $108 - 100 = 8\%$
15. (c) Discount is calculated on marked price (M.P.) and profit is calculated on cost price (C.P).
 According to the question,
 $C.P. \times \frac{100 + 23.5}{100} = M.P. \times \frac{95}{100}$
 $C.P. = \frac{M.P. \times 95}{123.5}$
 When no discount is given, then

$$\begin{aligned}\text{Profit} &= \text{M.P.} - \frac{\text{M.P.} \times 95}{123.5} \\ &= \frac{28.5 \times \text{M.P.}}{123.5} \\ \text{Profit} &= \frac{28.5 \times \text{M.P.}}{\frac{123.5}{\text{M.P.} \times 95}} \times 100 \\ &= \frac{28.5}{9} \times 100 = 30\%\end{aligned}$$

16. (e) Marked price = $266 \times \frac{100}{95}$ ₹ 280

$$\text{Cost price} = 280 \times \frac{100}{112} = ₹ 250$$

17. (a) Let the profit or loss be ₹ x

$$\text{and } 832 - x = 448 + x \text{ or, } x = \frac{384}{2} = ₹ 192$$

$$\therefore \text{Cost price of the article} = 832 - x = 448 + x = ₹ 640$$

$$\therefore \text{SP of the article} = 640 \times \frac{150}{100} = ₹ 960$$

18. (d) Let he purchase of ₹ x /kg.

$$\therefore (525 + 30x) \times \frac{120}{100} = 60 \times 18.60$$

$$\Rightarrow x = ₹ 13.5 / \text{kg.}$$

19. (b) $CP = \frac{200}{125} \times 100 = ₹ 160$

$$\therefore \text{CP of 6 articles} = 6 \times 160 = ₹ 960$$

$$\therefore \text{profit} = 1056 - 960 = 96$$

$$\text{Percentage profit} = \frac{96}{960} \times 100 = 10\%$$

20. (d) Original price = $1120 \times \frac{100}{70} \times \frac{100}{80} = ₹ 2000$

21. (c) Let the selling price of the article be ₹ 100.

$$\therefore \text{Profit} = ₹ 26$$

$$\therefore \text{Cost price of the article} = 100 - 26 = ₹ 74$$

$$\therefore \text{Reqd. \%} = \frac{34 \times 74}{100} = 25.16\%$$

22. (b) S.P. for 1 egg = ₹ $\frac{5}{10} = ₹ \frac{1}{2}$

$$\therefore \text{C.P. for 1 egg} = \frac{100}{(100 + 20)} \times \frac{1}{2} = ₹ \frac{5}{12}$$

\Rightarrow He bought 12 eggs for 5 rupees.

23. (c) $\frac{1}{36} : (100 - 4) :: x : (100 + 8)$

$$\Rightarrow x = \frac{108}{96 \times 36} = \frac{1}{32}$$

He sells 32 oranges per rupee.

24. (b) C.P. for one coconut = ₹ $\frac{150}{100} = ₹ \frac{3}{2}$

$$\text{S.P. for one coconut} = ₹ 2$$

$$\text{Profit on one coconut} = 2 - \frac{3}{2} = ₹ \frac{1}{2}$$

$$\therefore \text{Profit on 2000 coconut} = \frac{1}{2} \times 2000 = ₹ 1000$$

25. (a) Let C.P. = ₹ 100, then M.P. = ₹ 150

$$\text{S.P.} = 70\% \text{ of } 150 = ₹ 105$$

$$\therefore \% \text{ profit} = \frac{105 - 100}{100} \times 100 = 5\%$$

26. (b) Let S.P. = ₹ x per kg

$$\therefore \text{S.P. of 2 kg of rice} = ₹ 2x = \text{Loss}$$

$$\text{Now, Loss} = \text{C.P.} - \text{S.P.}$$

$$2x = 600 - 10x$$

$$\Rightarrow x = ₹ 50 \text{ per kg}$$

27. (a) C.P. for one orange = ₹ $\frac{1}{15}$

$$\text{Then S.P.} = \frac{(100 + 25)}{100} \times \frac{1}{15} = \frac{125}{100 \times 15} = \frac{1}{12}$$

$$\text{Hence S.P. for one orange} = ₹ \frac{1}{12}$$

\therefore 12 oranges must be sold for a rupee

28. (b) C.P. of one litre = ₹ 6

After adding water to it

One has to pay ₹ 7.20 for $\frac{2}{3}$ litre of milk.

$$\text{So S.P. of } \frac{2}{3} \text{ litre of milk} = ₹ 7.20$$

$$\Rightarrow \text{S.P. of 1 litre of milk} = ₹ \frac{7.20 \times 3}{2} = ₹ 10.80$$

\therefore S.P. > C.P.

$$\text{Hence gain} = \frac{10.80 - 6}{6} \times 100 = \frac{4.80}{6} \times 100$$

$$= 0.80 \times 100 = 80\%$$

29. (b) Let profit per litre = ₹ 20

$$\text{So, C.P. / litre} = ₹ 100$$

$$\text{S.P. / litre} = ₹ 120$$

On adding 10% water to the milk

$$\text{C.P. / } \frac{9}{10} \text{ litre} = ₹ 100$$

$$\text{S.P. / } \frac{9}{10} \text{ litre} = ₹ 120$$

$$\text{S.P. / litre} = ₹ \frac{120 \times 10}{9} = ₹ \frac{400}{3}$$

- \Rightarrow Profit / litre = $\frac{400}{3} - 100 = 33.33$
 % by which profit increases = $33.33 - 20 = 13.3$
30. (b) C.P. of 200 kg of mixture = $\text{₹}(80 \times 13.50 + 120 \times 16)$
 = ₹ 3000.
 S.P. = 116% of ₹ 3000 = $\text{₹} \left(\frac{116}{100} \times 3000 \right) = \text{₹} 3480$.
 \therefore Rate of S.P. of the mixture = $\text{₹} \left(\frac{3480}{200} \right)$ per kg
 = ₹ 17.40 per kg.
31. (a) He gives 800 grams but charges the price of 1000 grams (1 kg) \Rightarrow on every 800 grams, he gains (1000 - 800) grams i.e. 200 grams.
 \therefore His gain % = $\frac{200}{800} \times 100\% = 25\%$
- Short cut : Gain % = $\frac{\text{error}}{\text{true weight} - \text{error}} = 100\%$
32. (a) C.P. of 150 calculators
 = $150 \times 250 + 2500 = 37500 + 2500 = \text{₹} 40000$
 Labelled price of 150 calculators
 = $150 \times 320 = \text{₹} 48000$
 Discount allowed = 5%
 \therefore S.P. of 150 calculators
 = $48000 - 5\% = \text{₹} 45600$
 \therefore Profit % = $\frac{5600}{40000} \times 100 = 14\%$
33. (b) $\frac{\text{True weight}}{\text{False weight}} = \frac{100 + \text{gain}\%}{100 + x}$
 Here S.P. = C.P. $\therefore x = 0$
 \Rightarrow False weight = $\frac{1000 \times 100}{125} = 800$ gm
34. (c) Let cost Price = ₹ 100
 \therefore Marked price = ₹ 135
 After discount, selling price = $135 - 13.5 = 121.5$
 \therefore Profit% = $121.5 - 100 = 21.5\%$
35. (a) S.P. of the 1st chair = ₹ 500
 Gain = 20%
 \therefore C.P. of the 1st chair = $\frac{500 \times 100}{100 + 20} = \frac{500 \times 100}{120}$
 $= \frac{1250}{3}$
 S.P. of the 2nd chair = ₹ 500
 Loss = 12%
 \therefore C.P. of the 2nd chair = $\frac{500 \times 100}{100 - 12} = \frac{500 \times 100}{88}$
 $= \frac{500 \times 25}{22} = \frac{250 \times 25}{11} = \frac{6250}{11}$
 Now S.P. of both the chairs = ₹ 1000

- C.P. of both the chairs
 = $\frac{1250}{3} + \frac{6250}{11} = \frac{13750 + 18750}{33} = \frac{32500}{33}$
 \therefore Net gain = $1000 - \frac{32500}{33} = \frac{500}{33}$
 \Rightarrow Gain % = $\frac{500/33}{32500/33} \times 100 = \frac{500}{32500} \times 100$
 $= \frac{100}{65} = \frac{20}{13} = 1.5\%$ (To one place of decimal)
36. (a) Women's shirt comprise 60% of the output.
 \therefore Men's shirts comprise (100 - 60) = 40% of the output.
 \therefore Average profit from men's shirt = 8% of 40 = 3.2 out of 40
 Overall average profit = 6 out of 100
 \therefore Average profit from women's shirts = 2.8 out of 60 i.e. 0.0466 out of each shirt.
37. (c) Here, in whole transaction, there is neither gains nor loss, therefore,
 Amount of gain in one watch
 = Amount of loss in other watch
 $\Rightarrow 0.15 \times CP_1 = 0.10 \times CP_2$
 $\Rightarrow \frac{CP_1}{CP_2} = \frac{0.10}{0.15} = \frac{2}{3}$
 Also $CP_1 + CP_2 = 560$
 $\therefore CP_1 = \frac{2}{(2+3)} \times 560 = \text{₹} 224$
 and $CP_2 = 560 - 224 = \text{₹} 336$
38. (b) Let the C.P. of horse = ₹ x
 Then the C.P. of carriage = ₹ (3000 - x)
 20% of x - 10% of (3000 - x) = 2% of 3000
 $\Rightarrow \frac{x}{5} - \frac{(3000 - x)}{10} = 60$
 $\Rightarrow 2x - 3000 + x = 600$
 $\Rightarrow 3x = 3600 \Rightarrow x = 1200$
39. (d) Here, $SP_1 = SP_2$
 $\Rightarrow 140 CP_1 = 60 CP_2 \Rightarrow \frac{CP_1}{CP_2} = \frac{6}{14} = \frac{3}{7}$
 $\therefore CP_1 = \frac{3}{(3+7)} \times 8000 = \text{₹} 2400$
 and $CP_2 = 8000 - 2400 = \text{₹} 5600$
40. (b) Let the C.P. be ₹ 100
 First S.P. = ₹ 115
 Second C.P. = ₹ 90
 Second S.P. = 125% of ₹ 90 = ₹ 112.50
 Difference of two selling prices is ₹ 115 - ₹ 112.50 = ₹ 2.50 and C.P. of the article is ₹ 100
 But actual difference is ₹ 4.
 \therefore C.P. = $\frac{100}{2.50} \times ₹ 4 = ₹ 160$.

41. (a) Let the CP of the article be ₹ x.

$$\text{Then, SP} = ₹ \frac{105x}{100}$$

$$\text{Now, new CP} = ₹ \frac{95x}{100} \text{ and new SP} = \frac{105x}{100} - 1$$

According to the question

$$\frac{105x}{100} - 1 - \frac{95x}{100} = \frac{10 \times 95x}{100 \times 100}$$

$$\therefore x = ₹ 200$$

42. (a) Let S.P. = ₹ x per kg

$$\therefore \text{S.P. of 4 kg} = ₹ 4x$$

$$\therefore 4x = \frac{100 - 40}{100} \times 300$$

$$\Rightarrow x = \frac{270}{4} = ₹ 67.50$$

43. (a) Let C.P. of one orange = ₹ 1

$$\text{Then C.P. of 8 oranges} = ₹ 8$$

$$\text{S.P. of 8 oranges} = ₹ 9$$

$$\therefore \text{Gain \%} = \frac{9 - 8}{8} \times 100 = \frac{100}{8} = 12\frac{1}{2}\%$$

44. (c) Let C.P. of 1 article = ₹ 1

$$\text{then C.P. of 25 articles} = ₹ 25$$

$$\text{and S.P. of 25 articles} = ₹ 20$$

$$\therefore \text{loss \%} = \frac{25 - 20}{20} \times 100 = 25\%$$

45. (d) Let C.P. of one metre of cloth = ₹ 1

$$\text{then C.P. of 66 metres of cloth} = ₹ 66$$

$$\text{Gain} = \text{C.P. of 22 metres} = ₹ 22$$

$$\% \text{ gain} = \frac{22}{66} \times 100 = 33\frac{1}{3}\%$$

OR

If on selling 'x' articles, a man gains equal to the C.P. of

$$'y' \text{ articles, then } \% \text{ gain} = \frac{y}{x} \times 100$$

$$\therefore \% \text{ gain} = \frac{22}{66} \times 100 = 33\frac{1}{3}\%$$

46. (b) Loss = C.P. of 66 metres - S.P. of 66 metres

$$= \text{S.P. of 22 metres}$$

$$\Rightarrow \text{C.P. of 66 metres} = \text{S.P. of 88 metres}$$

$$\% \text{ loss} = \frac{\text{loss}}{\text{C.P. of 66 metres}} \times 100$$

$$= \frac{\text{S.P. of 22 metres}}{\text{C.P. of 66 metres}} \times 100$$

$$= \frac{\text{S.P. of 22 metres}}{\text{S.P. of 88 metres}} \times 100$$

$$= \frac{22}{88} \times 100 = 25\%$$

* Try to solve by shortcut method

47. (b) Equivalent discount = $10 + 20 - \frac{10 \times 20}{100}$

$$= 30 - 2 = 28\%$$

48. (c) Retailer price = list price $\left(1 - \frac{d_1}{100}\right) \left(1 - \frac{d_2}{100}\right)$

$$\Rightarrow 122.40 = 160 \left(1 - \frac{10}{100}\right) \left(1 - \frac{d_2}{100}\right)$$

$$\Rightarrow 1 - \frac{d_2}{100} = \frac{122.40 \times 100}{160 \times 90} = 0.85$$

$$\Rightarrow d_2 = (1 - 0.85) \times 100 = 15\%$$

49. (b) Let the C.P. of the goods be ₹ 100

$$\Rightarrow \text{Marked price of the goods} = ₹ 120$$

$$\text{Discount} = 10\% \Rightarrow \text{S.P. is } 90\% \text{ of } ₹ 120 = ₹ 108$$

$$\therefore \text{Gain} = (108 - 100) \text{ i.e. } 8\%$$

50. (d) For same article, $\frac{100 - d_1}{100 - d_2} = \frac{100 + g_1}{100 + g_2}$

$$\Rightarrow \frac{100 - 25}{100 - 10} = \frac{100 + 25}{100 + g_2} \Rightarrow \frac{75}{90} = \frac{125}{100 + g_2}$$

$$\Rightarrow 100 + g_2 = \frac{90 \times 125}{75} = 150 \Rightarrow g_2 = 50\%$$

51. (c) SP = $90 \times 1.2 = ₹ 108$

$$\text{Marked price} = \frac{108}{0.85} = ₹ 127.05$$

52. (d) Let the SP of the article be ₹ x

$$\text{Expenses} = 15\% \text{ of } x = ₹ 0.15x$$

$$\text{Profit} = 10\% \text{ of } x = ₹ 0.10x$$

$$\text{CP} = ₹ 9 \text{ (given)}$$

$$\text{Therefore, } 9 + 0.15x + 0.10x = x \Rightarrow x = 12$$

$$\therefore \% \text{ increase for marked price} = \frac{12 - 9}{9} \times 100$$

$$= \frac{100}{3}\%$$

Simple & Compound Interest

INTEREST

Interest is the fixed amount paid on borrowed money.

The sum lent is called the **Principal**.

The sum of the principal and interest is called the **Amount**.

Interest is of two kinds :

- (i) Simple interest
- (ii) Compound interest

(I) SIMPLE INTEREST

When interest is calculated on the original principal for any length of time, it is called simple interest.



REMEMBER

★ Simple interest = $\frac{\text{Principal} \times \text{Time} \times \text{Rate}}{100}$

i.e. S.I. = $\frac{P \times R \times T}{100}$

★ Principal (P) = $\frac{100 \times \text{S.I.}}{R \times T}$

★ Rate (R) = $\frac{100 \times \text{S.I.}}{T \times P}$

★ Time (T) = $\frac{100 \times \text{S.I.}}{P \times R}$

★ If rate of simple interest differs from year to year, then

$$\text{S.I.} = P \times \frac{(R_1 + R_2 + R_3 + \dots)}{100}$$

★ Amount = Principal + Interest

i.e. $A = P + I = P + \frac{PRT}{100} = P \left(1 + \frac{RT}{100} \right)$

EXAMPLE 1. Find the interest to be paid on a loan of ₹ 6000 at 5% per year for 5 years

Sol. P = ₹ 6000, R = 5% and T = 5 years

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{6000 \times 5 \times 5}{100} = ₹ 1500$$

EXAMPLE 2. Find the amount to be paid back on a loan of ₹ 18,000 at 5.5% per annum for 3 years

Sol. P = ₹ 18000, R = 5.5%, T = 3 years

$$\text{S.I.} = \frac{P \times R \times T}{100} = \frac{18000 \times 5.5 \times 3}{100} = ₹ 2970$$

$$\text{Amount} = P + I = 18000 + 2970 = ₹ 20970$$

EXAMPLE 3. In how many years will a sum of money triple itself, at 25% per annum simple interest.

Sol. Let the sum of money be ₹ P. So, A = 3P

$$\text{and S.I.} = A - P = 3P - P = 2P$$

$$R = 25\%$$

$$\therefore T = \frac{100 \times \text{S.I.}}{P \times R} = \frac{100 \times 2P}{P \times 25} = 8 \text{ years}$$

EXAMPLE 4. What rate per cent per annum will produce ₹ 250 as simple interest on ₹ 6000 in 2.5 years

Sol. P = ₹ 6000; Time (T) = 2.5 years; S.I. = ₹ 250

$$\therefore \text{Rate} = \frac{\text{S.I.} \times 100}{P \times T} = \frac{250 \times 100}{6000 \times 2.5} = \frac{10}{6} = \frac{5}{3} = 1\frac{2}{3}\%$$

EXAMPLE 5. To buy furniture for a new apartment, Sylvia Chang borrowed ₹ 5000 at 11% simple interest for 11 months. How much interest will she pay?

Sol. From the formula, $I = Prt$, with P = 5000, r = 0.11, and t = 11/12 (in years). The total interest she will pay is

$$I = 5000(0.11)(11/12) = 504.17$$

or ₹ 504.17

Shortcut Approach

If $\frac{1}{x}$ part of a certain sum P is lent out at $R_1\%$ SI, $\frac{1}{y}$ part is lent

out at $R_2\%$ SI and the remaining $\frac{1}{z}$ part at $R_3\%$ SI and this

way the interest received by 1, then $P = \frac{1 \times 100}{\frac{R_1}{x} + \frac{R_2}{y} + \frac{R_3}{z}}$

EXAMPLE 6. Alok lent out a certain sum. He lent $\frac{1}{3}$ part of his sum at 7% SI, $\frac{1}{4}$ part at 8% SI and remaining part at 10% SI. If ₹ 510 is his total interest, then find the money lent out.

Sol. Here, $R_1 = 7\%$, $R_2 = 8\%$, $R_3 = 10\%$

$$\text{and } \frac{1}{z} = \frac{1}{3}, \frac{1}{y} = \frac{1}{4}, I = ₹ 510$$

$$\therefore \frac{1}{x} = \left[1 - \left(\frac{1}{3} + \frac{1}{4} \right) \right] = \frac{5}{12}$$

According to the formula,

$$P = \frac{I \times 100}{\frac{R_1}{x} + \frac{R_2}{y} + \frac{R_3}{z}} = \frac{510 \times 100}{\frac{7}{3} + \frac{8}{4} + \frac{50}{12}}$$

$$= \frac{51000}{\frac{7}{3} + 2 + \frac{25}{6}} = \frac{51000}{51} \times 6 = ₹ 6000$$

Shortcut Approach

If a sum of money becomes n times in T yr at simple interest, then formula for calculating rate of interest will be given as

$$R = \frac{100(n-1)}{T} \%$$

EXAMPLE 7. A sum of money becomes four times in 20 yr at SI. Find the rate of interest.

Sol. Here, $T = 20$ yr, $n = 4$

$$\therefore R = \frac{100(n-1)}{T} = \frac{100(4-1)}{20} = \frac{100 \times 3}{20} = 15\%$$

Shortcut Approach

If a sum of money at a certain rate of interest becomes n times in T_1 yr and m times in T_2 yr, then formula for T_2 will be given as

$$T_2 = \left(\frac{m-1}{n-1} \right) \times T_1$$

EXAMPLE 8. A sum becomes two times in 5 yr at a certain rate of interest. Find the time in which the same amount will be 8 times at the same rate of interest.

Sol. Here, $n = 2$, $m = 8$, $T_1 = 5$, $T_2 = ?$

$$\therefore T_2 = \left(\frac{m-1}{n-1} \right) \times T_1 = \left(\frac{8-1}{2-1} \right) \times 5 = 35 \text{ yr}$$

(II) COMPOUND INTEREST

Money is said to be lent at compound interest when at the end of a year or other fixed period, the interest that has become due is not paid to the lender, but is added to the sum lent, and the amount thus obtained becomes the principal in the next year or period. The process is repeated until the amount for the last period has been found. Hence,

When the interest charged after a certain specified time period is added to form new principal for the next time period, the interest is said to be compounded and the total interest accrued is compound interest.

REMEMBER

$$\star \text{ C.I.} = P \left[\left(1 + \frac{r}{100} \right)^n - 1 \right];$$

$$\star \text{ Amount (A)} = P \left(1 + \frac{r}{100} \right)^n$$

★ If rate of compound interest differs from year to year, then

$$\text{Amount} = P \left(1 + \frac{r_1}{100} \right) \left(1 + \frac{r_2}{100} \right) \left(1 + \frac{r_3}{100} \right) \dots$$

Compound interest – when interest is compounded annually but time is in fraction

If time = $t \frac{p}{q}$ years, then

$$A = P \left(1 + \frac{r}{100} \right)^t \left(1 + \frac{\frac{p}{q}r}{100} \right)$$

Compound interest – when interest is calculated half-yearly
Since r is calculated half-yearly therefore the rate per cent will become half and the time period will become twice, i.e.,

Rate per cent when interest is paid half-yearly = $\frac{r}{2} \%$

and time = $2 \times$ time given in years

Hence,

$$A = P \left(1 + \frac{r}{2 \times 100} \right)^{2n}$$

Compound interest – when interest is calculated quarterly
Since 1 year has 4 quarters, therefore rate of interest will become $\frac{1}{4}$ th of the rate of interest per annum, and the time period will be 4 times the time given in years
Hence, for quarterly interest

$$A = P \left(1 + \frac{r/4}{100} \right)^{4 \times n} = P \left(1 + \frac{r}{400} \right)^{4n}$$

EXAMPLE 9. Find the compound interest on ₹ 70000 for 4 years at the rate of 14% per annum compounded annually.

Sol. $P = ₹ 70000$, $n = 4$, $r = 14\%$

$$A = P \left(1 + \frac{r}{100} \right)^n = 70000 \left(1 + \frac{14}{100} \right)^4 = ₹ 118227.20$$

$$\text{C.I.} = A - P = 118227.20 - 70000 = ₹ 48227.20$$

EXAMPLE 10. If ₹ 60000 amounts to ₹ 68694 in 2 years then find the rate of interest.

Sol. Given : $A = ₹ 68694$

$P = ₹ 60000$

$n = 2$ years

$r = ?$

$$\therefore A = P \left(1 + \frac{r}{100} \right)^n$$

$$\therefore 68694 = 60000 \left(1 + \frac{r}{100} \right)^2$$

$$\Rightarrow \frac{68694}{60000} = \left(1 + \frac{r}{100} \right)^2 \Rightarrow \frac{11449}{10000} = \left(1 + \frac{r}{100} \right)^2$$

$$\Rightarrow 1 + \frac{r}{100} = \sqrt{\frac{11449}{10000}} = \sqrt{1.1449}$$

$$\Rightarrow 1 + \frac{r}{100} = 1.07$$

$$\Rightarrow \frac{r}{100} = 1.07 - 1 = 0.07$$

$$\therefore r = 0.07 \times 100 = 7\%$$

EXAMPLE 11. In how many years, the sum of ₹ 10000 will become ₹ 10920.25 if the rate of compound interest is 4.5% per annum?

Sol. A = ₹ 10920.25
P = ₹ 10000
Rate of interest = 4.5%
Time (n) = ?

$$\therefore A = P \left(1 + \frac{r}{100} \right)^n$$

$$\therefore 10920.25 = 10000 \left(1 + \frac{4.5}{100} \right)^n$$

$$\frac{10920.25}{10000} = \left(1 + \frac{0.9}{20} \right)^n = \left(\frac{20.9}{20} \right)^n$$

$$\Rightarrow \frac{436.81}{400} = \left(\frac{20.9}{20} \right)^n \Rightarrow \left(\frac{20.9}{20} \right)^2 = \left(\frac{20.9}{20} \right)^n$$

Hence ₹ 10000 will become ₹ 10920.25 in 2 years at 4.5%.

EXAMPLE 12. Suppose ₹ 1000 is deposited for 6 years in an account paying 8.31% per year compounded annually.

- (a) Find the compound amount.
In the formula above, P = 1000, i = .0831, and n = 6.
The compound amount is
 $A = P(1+i)^n$
 $A = 1000(1.0831)^6$
 $A = ₹ 1614.40$.
- (b) Find the amount of interest earned.
Subtract the initial deposit from the compound amount.
Amount of interest = ₹ 1614.40 - ₹ 1000 = ₹ 614.40.

EXAMPLE 13. Find the compound interest on ₹ 8000 at 15% per annum for 2 years 4 months, compound annually.

Sol. Time = 2 years 4 months = $2\frac{4}{12}$ years = $2\frac{1}{3}$ years

$$\text{Amount} = ₹ \left[8000 \left\{ \left(1 + \frac{15}{100} \right) \right\}^2 \left(1 + \frac{\frac{1}{3} \times 15}{100} \right) \right]$$

$$= ₹ \left(8000 \times \frac{23}{20} \times \frac{23}{20} \times \frac{21}{20} \right) = ₹ 11109$$

$$\therefore \text{C.I.} = ₹ (11109 - 8000) = ₹ 3109.$$

EXAMPLE 14. What will be the compound interest on ₹ 4000 in 4 years at 8 per cent annum. If the interest is calculated half-yearly.

Sol. Given : P = ₹ 4000, r = 8%, n = 4 years
Since interest is calculated half-yearly, therefore,

$$r = \frac{8}{2}\% = 4\% \text{ and } n = 4 \times 2 = 8 \text{ half years}$$

$$\therefore A = 4000 \left(1 + \frac{4}{100} \right)^8 = 4000 \times \left(\frac{26}{25} \right)^8$$

$$= 4000 \times 1.3685 = 5474.2762$$

Amount = ₹ 5474.28

$$\therefore \text{Interest} = \text{Amount} - \text{Principal} \\ = ₹ 5474.28 - ₹ 4000 = ₹ 1474.28$$

EXAMPLE 15. Find the compound interest on ₹ 25625 for 12 months at 16% per annum, compounded quarterly.

Sol. Principal (P) = ₹ 25625

$$\text{Rate (r)} = 16\% = \frac{16}{4}\% = 4\%$$

Time = 12 months = 4 quarters

$$A = 25625 \left(1 + \frac{4}{100} \right)^4 = 25625 \left(\frac{26}{25} \right)^4$$

$$25625 \times \frac{26}{25} \times \frac{26}{25} \times \frac{26}{25} \times \frac{26}{25} = ₹ 29977.62$$

$$\text{C.I.} = A - P = 29977.62 - 25625 = ₹ 4352.62$$

Shortcut Approach

Difference between Compound Interest and Simple Interest

When T = 2

$$(i) \text{ C.I.} - \text{S.I.} = P \left(\frac{R}{100} \right)^2$$

$$(ii) \text{ C.I.} - \text{S.I.} = \frac{R \times \text{S.I.}}{2 \times 100}$$

When T = 3

$$(i) \text{ C.I.} - \text{S.I.} = \frac{PR^2}{10^4} \left(\frac{300 + R}{100} \right)$$

$$(ii) \text{ C.I.} - \text{S.I.} = \frac{\text{S.I.}}{3} \left[\left(\frac{R}{100} \right)^2 + 3 \left(\frac{R}{100} \right) \right]$$

NOTE: SI and CI for one year on the same sum and at same rate are equal.

EXAMPLE 16. The difference between compound interest and simple interest on a certain amount of money at 5% per annum for 2 years is ₹ 15. Find the sum :

- (a) ₹ 4500 (b) ₹ 7500
(c) ₹ 5000 (d) ₹ 6000

Sol. (d) Let the sum be ₹ 100.

$$\text{Therefore, SI} = \frac{100 \times 5 \times 2}{100} = ₹ 10$$

$$\text{and CI} = 100 \left(1 + \frac{5}{100}\right)^2 - 100$$

$$= 100 \times \frac{21 \times 21}{20 \times 20} - 100 = ₹ \frac{41}{4}$$

$$\text{Difference of CI and SI} = \frac{41}{4} - 10 = \frac{1}{4}$$

If the difference is $\frac{1}{4}$, the sum = 100

⇒ If the difference is ₹ 15, the sum = $400 \times 15 = ₹ 6000$

EXAMPLE 17. The difference between the simple interest and the compound interest compounded annually at the rate of 12% per annum on ₹ 5000 for two years will be :

- (a) ₹ 47.50 (b) ₹ 63
(c) ₹ 45 (d) ₹ 72

Sol. (d) Required difference

$$= \left[5000 \left(1 + \frac{12}{100}\right)^2 - 5000 \right] - \frac{5000 \times 12 \times 2}{100}$$

$$= 5000 \left(\frac{28}{25} \times \frac{28}{25} - 1 \right) - 1200$$

$$= 5000 \left(\frac{784 - 625}{625} \right) - 1200 = ₹ 72$$

EXAMPLE 18. The difference between CI and SI for 3 yr at the rate of 20% pa is ₹ 152. What is the principal lent ?

Sol. Difference between CI and SI for 3 yr = 152

$$\therefore P \left(\frac{R}{100} \right)^2 \left(\frac{R}{100} + 3 \right) = 152$$

$$\Rightarrow P \left(\frac{20}{100} \right)^2 \left(\frac{20}{100} + 3 \right) = 152$$

$$\Rightarrow P \left(\frac{1}{25} \right) \left(\frac{16}{5} \right) = 152 \Rightarrow P = \frac{152 \times 25 \times 5}{16}$$

$$\Rightarrow P = 9.5 \times 25 \times 5 \Rightarrow P = 1187.5$$

EXAMPLE 19. Subash purchased a refrigerator on the terms that he is required to pay ₹1,500 cash down payment followed by ₹1,020 at the end of first year, ₹1,003 at the end of second year and ₹990 at the end of third year. Interest is charged at the rate of 10% per annum. Calculate the cash price :

- (a) ₹ 3,000 (b) ₹ 2,000
(c) ₹ 4,000 (d) ₹ 5,000

Sol. (c) Cash down payment = ₹ 1500

Let ₹ x becomes ₹ 1020 at the end of first year.

$$\text{Then, } 1020 = x \left(1 + \frac{10}{100}\right)$$

$$\text{or } x = \frac{1020 \times 100}{110} = ₹ 927.27$$

$$\text{Similarly, } 1003 = y \left(1 + \frac{10}{100}\right)^2$$

$$\text{or } y = \frac{1003 \times 20 \times 20}{22 \times 22} = ₹ 828.92$$

$$\text{and } z = \frac{990 \times 20 \times 20 \times 20}{22 \times 22 \times 22} = ₹ 743.80$$

$$\text{Hence, CP} = 1500 + 927.27 + 828.92 + 743.80 = 3999.99 \text{ or } ₹ 4000.$$

EXAMPLE 20. The difference between the interest received from two different banks on ₹ 500 for 2 yrs is ₹ 2.5. Find the difference between their rates.

$$\text{Sol. } I_1 = \frac{500 \times 2 \times r_1}{100} = 10r_1$$

$$I_2 = \frac{500 \times 2 \times r_2}{100} = 10r_2$$

$$I_1 - I_2 = 10r_1 - 10r_2 = 2.5$$

$$\text{Or, } I_1 - I_2 = \frac{2.5}{10} = 0.25\%$$

SHORTCUT METHOD

When $t_1 = t_2$,

$$(r_1 - r_2) = \frac{I_d \times 100}{\text{sum} \times t} = \frac{2.5 \times 100}{500 \times 2} = 0.25\%$$

Shortcut Approach

If a certain sum at compound interest becomes x times in n_1 yr

and y times in n_2 yr, then $x^{\frac{1}{n_1}} = y^{\frac{1}{n_2}}$

EXAMPLE 21. If a certain sum at compound interest becomes double in 5 yr, then in how many years, it will be 16 times at the same rate of interest ?

Sol. Here, $n_1 = 5$ yr, $x = 2$, $y = 16$ and $n_2 = ?$

According to the formula,

$$x^{\frac{1}{n_1}} = y^{\frac{1}{n_2}} \Rightarrow 2^{\frac{1}{5}} = 16^{\frac{1}{n_2}}$$

$$\Rightarrow 2^{\frac{1}{5}} = (2)^{\frac{4 \times 1}{n_2}}$$

$$\Rightarrow \frac{1}{5} = \frac{4}{n_2} \quad [\text{on comparing both sides}]$$

$$\therefore n_2 = 5 \times 4 = 20 \text{ yr}$$

Alternative method:

If sum = x, then

x becomes 2x in 5 yr.

2x becomes 4x in 10 yr.

4x becomes 8x in 15 yr.

8x becomes 16x in 20 yr.

EXAMPLE 22. At what rate per cent compound interest does a sum of money becomes nine - fold in 2 years?**Sol.** Let the sum be ₹ x and the of compound interest be r% per annum; then

$$9x = x \left(1 + \frac{r}{100}\right)^2 \quad \text{or, } 9 = \left(1 + \frac{r}{100}\right)^2$$

$$\text{or, } 3 = 1 + \frac{r}{100}; \quad \text{or, } \frac{r}{100} = 2$$

$$\therefore r = 200\%$$

SHORTCUT METHOD

The general formula of compound interest can be changed to the following form :

If a certain sum becomes 'm' times in 't' years, the rate of

compound interest r is equal to $100 \left[(m)^{1/t} - 1 \right]$

$$\text{In this case, } r = 100 \left[(9)^{1/2} - 1 \right] = 100(3 - 1) = 200\%$$

EXAMPLE 23. The simple interest on a certain sum of money at 4% per annum for 4 years is ₹ 80 more than the interest on the same sum for 3 years at 5% per annum. Find the sum.**Sol.** Let the sum be ₹ x, then at 4% rate for 4 years the simple

$$\text{Interest} = \frac{x \times 4 \times 4}{100} = ₹ \frac{4x}{25}$$

$$\text{At 5% rate for 3 yrs the simple interest} = \frac{x \times 5 \times 3}{100} = ₹ \frac{3x}{20}$$

$$\text{Now, we have, } \frac{4x}{25} = \frac{3x}{20} = 80$$

$$\text{or } \frac{16x - 15x}{100} = 80 \quad \therefore x = ₹ 8000$$

SHORTCUT METHOD

For this type of question

$$\text{Sum} = \frac{\text{Difference} \times 100}{[r_2 t_1 - r_1 t_2]} = \frac{80 \times 100}{4 \times 4 - 3 \times 5} = ₹ 8000$$

EXAMPLE 24. Some amount out of ₹ 7000 was lent at 6% per annum and the remaining at 4% per annum. If the total simple interest from both the fractions in 5 years was ₹ 1600, find the sum lent at 6% per annum.**Sol.** Suppose ₹ x was lent at 6% per annum.

$$\text{Thus, } \frac{x \times 6 \times 5}{100} + \frac{(7000 - x) \times 4 \times 5}{100} = 1600$$

$$\text{or, } \frac{3x}{10} + \frac{7000 - x}{5} = 1600$$

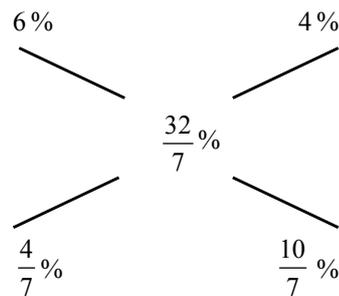
$$\text{or, } \frac{3x + 14,000 - 2x}{10} = 16000$$

$$\therefore x = 16000 - 14000 = ₹ 2000$$

SHORTCUT METHOD

$$\text{Overall rate of interest} = \frac{1600 \times 100}{5 \times 7000} = \frac{32}{7} \%$$

$$\therefore \text{ratio of two amounts} = 2 : 5$$



$$\therefore \text{Amount lent at } 6\% = \frac{7000}{7} \times 2 = ₹ 2000$$

EXAMPLE 25. As n amount of money grows upto ₹ 4840 in 2 years and upto ₹ 5324 in 3 years on compound interest. Find the rate percent**Sol.** We have,

$$P + \text{CI of 3 yrs} = ₹ 5324 \dots (1)$$

$$P + \text{CI of 2 yrs} = ₹ 4840 \dots (2)$$

Subtracting (2) from (1), we get

$$\text{CI of 3rd year} = 5324 - 4840 = ₹ 484.$$

Thus, the CI calculated in the third year which is ₹ 484 is basically the amount of interest on the amount generated after 2 years which is ₹ 4840.

$$\therefore r = \frac{484 \times 100}{4840 \times 1} = 10\%$$

SHORTCUT METHOD

$$\frac{\text{Difference of amount after n years and (n+1) years} \times 100}{\text{Amount after 2 years}}$$

In this, n = 2.

$$\therefore \text{rate} = \frac{\text{Difference of amount after 2 years and 3 years} \times 100}{\text{Amount after 2 years}}$$

$$= \frac{(5324 - 4840)}{4840} \times 100 = \frac{484 \times 100}{4840} = 10\%$$

EXAMPLE 26. A certain amount of money at compound interest grows upto ₹ 51168 in 15 yrs and upto ₹ 51701 in 16 years. Find the rate per cent per annum.

$$\text{Sol. Rate} = \frac{(51701 - 51168) \times 100}{51168} = \frac{533 \times 100}{51168}$$

$$= \frac{100}{96} = \frac{25}{24} = 1\frac{1}{24} \%$$

EXAMPLE 27. Find the compound interest on ₹ 18,750 in 2 years the rate of interest being 4% for the first year and 8% for the second year.

Sol. After first year the amount

$$= 18750 \left(1 + \frac{4}{100}\right) = 18750 \left(\frac{104}{100}\right)$$

$$\text{After 2nd year the amount} = 18750 \left(\frac{104}{100}\right) \left(\frac{108}{100}\right)$$

$$= 18750 \left(\frac{26}{25}\right) \left(\frac{27}{25}\right) = 21060$$

$$\therefore \text{CI} = 21060 - 18,750 = ₹ 2310.$$

Shortcut Approach

If the population of a city is P and it increases with the rate of R% per annum, then

$$(i) \text{ Population after } n \text{ yr} = P \left(1 + \frac{R}{100}\right)^n$$

$$(ii) \text{ Population } n \text{ yr ago} = \frac{P}{\left(1 + \frac{R}{100}\right)^n}$$

Note: • If population decreases with the rate of R%, then (-) sign will be used in place of (+) in the above mentioned formula

- If the rate of growth per year is $R_1\%$, $R_2\%$, $R_3\%$,, $R_n\%$, then

Population after n yr

$$= P \left(1 + \frac{R_1}{100}\right) \left(1 + \frac{R_2}{100}\right) \left(1 + \frac{R_3}{100}\right) \dots \dots \left(1 + \frac{R_n}{100}\right)$$

(This formula can also be used, if there is increase/decrease in the price of an article.)

EXAMPLE  **28.** The population of a particular area A of a city is 5000. It increases by 10% in 1st yr. It decreases by 20% in the 2nd yr because of some reason. In the 3rd yr, the population increases by 30%. What will be the population of area A at the end of 3 yr?

Sol. Given that, $P = 5000$, $R_1 = 10\%$, $R_2 = -20\%$ (decrease) and $R_3 = 30\%$

\therefore Population at the end of 3rd year

$$= P \left(1 + \frac{R_1}{100}\right) \left(1 + \frac{R_2}{100}\right) \left(1 + \frac{R_3}{100}\right)$$

$$= 5000 \left(1 + \frac{10}{100}\right) \left(1 - \frac{20}{100}\right) \left(1 + \frac{30}{100}\right)$$

$$= 5000 \times \frac{11}{10} \times \frac{4}{5} \times \frac{13}{5} = 10 \times 11 \times 4 \times 13 = 5720$$

A computer gives the following results for various values of n.

Interest is compounded	n	$\left(1 + \frac{1}{n}\right)^n$
Annually	1	$\left(1 + \frac{1}{1}\right)^1 = 2$
Semiannually	2	$\left(1 + \frac{1}{2}\right)^2 = 2.25$
Quarterly	4	$\left(1 + \frac{1}{4}\right)^4 \approx 2.4414$
Monthly	12	$\left(1 + \frac{1}{12}\right)^{12} \approx 2.6130$

EXERCISE

- Arun borrowed a sum of money from Jayant at the rate of 8% per annum simple interest for the first four years, 10% per annum for the next six years and 12% per annum for the period beyond ten years. If he pays a total of ₹ 12,160 as interest only at the end of 15 years, how much money did he borrow?
 - ₹ 8000
 - ₹ 10,000
 - ₹ 12,000
 - ₹ 9,000
 - None of these
- A sum fetched total simple interest of ₹ 4016.25 at the rate of 9 p.c.p.a. in 5 years. What is the sum?
 - ₹ 8925
 - ₹ 8032.50
 - ₹ 4462.50
 - ₹ 8900
 - None of these
- At a simple interest ₹ 800 becomes ₹ 956 in three years. If the interest rate, is increased by 3%, how much would ₹ 800 become in three years?
 - ₹ 1020.80
 - ₹ 1004
 - ₹ 1028
 - Data inadequate
 - None of these
- On ₹ 3,000 invested at a simple interest rate 6 p.c.p.a, ₹ 900 is obtained as interest in certain years. In order to earn ₹ 1,600 as interest on ₹ 4,000 in the same number of years, what should be the rate of simple interest?
 - 7 p.c.p.a.
 - 8 p.c.p.a.
 - 9 p.c.p.a.
 - Data inadequate
 - None of these
- The difference between CI and SI on a certain sum of money at 10% per annum for 3 years is ₹ 620. Find the principal if it is known that the interest is compounded annually.
 - ₹ 200,000
 - ₹ 20,000
 - ₹ 10,000
 - ₹ 100,000
 - None of these
- A certain amount earns simple interest of ₹ 1750 after 7 years. Had the interest been 2% more, how much more interest would it have earned?
 - ₹ 35
 - ₹ 350
 - ₹ 245
 - Cannot be determined
 - None of these
- What will be the difference in simple and compound interest on ₹ 2000 after three years at the rate of 10 percent per annum?
 - ₹ 160
 - ₹ 42
 - ₹ 62
 - ₹ 20
 - None of these
- Nikhilesh invested certain amount in three different schemes *A*, *B* and *C* with the rate of interest 10 p.c.p.a., 12 p.c.p.a. and 15 p.c.p.a. respectively. If the total interest accrued in one year was ₹ 3200 and the amount invested in scheme *C* was 150% of the amount invested in scheme *A* and 240% of the amount invested in scheme *B*, what was the amount invested in scheme *B*?
 - ₹ 8000
 - ₹ 5000
 - ₹ 6500
 - Cannot be determined
 - None of these
- Aniket deposited two parts of a sum of ₹ 25000 in different banks at the rates of 15% per annum and 18% per annum respectively. In one year he got ₹ 4050 as the total interest. What was the amount deposited at the rate of 18% per annum?
 - ₹ 9000
 - ₹ 18000
 - ₹ 15000
 - Data inadequate
 - None of these
- Mr *X* invested an amount for 2 years @ 15 p.c.p.a at simple interest. Had the interest been compounded, he would have earned ₹ 450/- more as interest. What was the amount invested?
 - ₹ 22000
 - ₹ 24000
 - ₹ 25000
 - Data inadequate
 - None of these
- Difference between the compound interest and the simple interest accrued on an amount of ₹ 18000, in two years was ₹ 405. What was the rate of interest p.c.p.a?
 - 16
 - 12
 - 15
 - Cannot be determined
 - None of these
- Anish borrowed ₹ 15000 at the rate of 12% and an other amount at the rate of 15% for two years. The total interest paid by him was ₹ 9000. How much did he borrow?
 - ₹ 32,000
 - ₹ 33,000
 - ₹ 30,000
 - ₹ 35,000
 - None of these
- The compound interest on any sum at the rate of 5% for two years is ₹ 512.50. Find the sum.
 - ₹ 5200
 - ₹ 4800
 - ₹ 5000
 - ₹ 5500
 - None of these
- Mr Amin borrowed some money from Mr Vishwas. The rate of interest for first two years is 8% p.a., for the next three years is 11 % p.a. and for the period beyond 5 years 14% p.a. Mr Vishwas got an amount of ₹ 10920 as an interest at the end of eight years. Then what amount was borrowed by Mr Amin?
 - ₹ 12000
 - ₹ 15000
 - ₹ 1400
 - Data inadequate
 - None of these

15. The C.I. on a certain sum of money for the 4th year at 8% p.a. is ₹ 486. What was the compound interest for the third year on the same sum at the same rate?
 (a) ₹ 450 (b) ₹ 475
 (c) ₹ 456 (d) ₹ 480
 (e) None of these
16. Seema invested an amount of ₹ 16000 for two years at compound interest and received an amount of ₹ 17640 on maturity. What is the rate of interest?
 (a) 8 pcpa (b) 5 pcpa
 (c) 4 pcpa (d) Data inadequate
 (e) None of these
17. Amit Kumar invested an amount of ₹ 15,000 at compound interest rate of 10 pcpa for a period of two years. What amount will he receive at the end of two years?
 (a) ₹ 18,000 (b) ₹ 18,500
 (c) ₹ 17,000 (d) ₹ 17,500
 (e) None of these
18. In a business *A* and *C* invested amounts in the ratio 2:1. Whereas the ratio between amounts invested by *A* and *B* was 3:2. If ₹ 1,57,300 was their profit, how much amount did *B* receive?
 (a) ₹ 72,600 (b) ₹ 48,400
 (c) ₹ 36,300 (d) ₹ 24,200
 (e) None of these
19. Mr. Sane invested a total amount of ₹ 16,500 for two years in two schemes *A* and *B* with rate of simple interest 10 p.c.p.a. and 12 p.c.p.a. respectively. If the total amount of interest earned was ₹ 3,620, what was the amount invested in scheme *B*?
 (a) ₹ 8,000 (b) ₹ 8,600
 (c) ₹ 8,150 (d) Data inadequate
 (e) None of these
20. The difference between the simple and the compound interest compounded every six months at the rate of 10% p.a. at the end of two years is ₹ 124.05. What is the sum?
 (a) ₹ 10,000 (b) ₹ 6,000
 (c) ₹ 12,000 (d) ₹ 8,000
 (e) None of these
21. Parameshwaran invested an amount of ₹ 12,000 at the simple interest rate of 10 pcpa and another amount at the simple interest rate of 20 pcpa. The total interest earned at the end of one year on the total amount invested became 14 pcpa. Find the total amount invested.
 (a) ₹ 22,000 (b) ₹ 25,000
 (c) ₹ 20,000 (d) ₹ 24,000
 (e) None of these
22. Raviraj invested an amount of ₹ 10,000 at compound interest rate of 10 pcpa for a period of three years. How much amount will Raviraj get after three years?
 (a) ₹ 12,310 (b) ₹ 13,210
 (c) ₹ 13,320 (d) ₹ 13,120
 (e) None of these
23. Nelson borrowed some money at the rate of 6 p.c.p.a. for the first three years, 9 p.c.p.a. for the next five years and 13 p.c.p.a. for the period beyond eight years. If the total interest paid by him at the end of eleven years is ₹ 8,160, how much money did he borrow?
 (a) ₹ 12,000 (b) ₹ 10,000
 (c) ₹ 8,000 (d) Data inadequate
 (e) None of these
24. Amal borrowed a sum of money with simple interest as per the following rate structure:
 (1) 6 p.c. p.a. for the first three years
 (2) 8 p.c. p.a. for the next five years
 (3) 12 p.c. p.a. for the next eight years
 If he paid a total of ₹ 5,040 as interest at the end of twelve years, how much money did he borrow?
 (a) ₹ 8,000 (b) ₹ 10,000
 (c) ₹ 12,000 (d) ₹ 6,000
 (e) None of these
25. The simple interest in 14 months on a certain sum at the rate of 6 per cent per annum is ₹ 250 more than the interest on the same sum at the rate of 8 per cent in 8 months. How much amount was borrowed?
 (a) ₹ 15000 (b) ₹ 25000
 (c) ₹ 7500 (d) ₹ 14500
 (e) None of these
26. On retirement, a person gets 1.53 lakhs of his provident fund which he invests in a scheme at 20% p.a. His monthly income from this scheme will be
 (a) ₹ 2,450 (b) ₹ 2,500
 (c) ₹ 2,550 (d) ₹ 2,600
 (e) None of these
27. A sum was put at simple interest at a certain rate for 4 years. Had it been put at 2% higher rate, it would have fetched ₹ 56 more. Find the sum.
 (a) ₹ 500 (b) ₹ 600
 (c) ₹ 700 (d) ₹ 800
 (e) None of these
28. Simple interest on a certain sum is $\frac{16}{25}$ of the sum. Find the rate per cent and time, if both are equal.
 (a) 8% and 8 years (b) 6% and 6 years
 (c) 10% and 10 years (d) 12% and 12 years
 (e) None of these
29. The simple interest on ₹ 200 for 7 months at 5 paise per rupee per month is
 (a) ₹ 70 (b) ₹ 7
 (c) ₹ 35 (d) ₹ 30.50
 (e) None of these
30. A tree increases annually by $\frac{1}{8}$ th of its height. By how much will it increase after $2\frac{1}{2}$ yearly, if it stands today 10ft high?
 (a) 3 ft (b) 3.27 ft
 (c) 3.44 ft (d) 3.62 ft
 (e) None of these

31. If there are three sum of money P, Q and R so that P is the simple interest on Q and Q is the simple interest of R, rate % and time are same in each case, then the relation of P, Q and R is given by
 (a) $P^2 = QR$ (b) $Q^2 = PR$
 (c) $R^2 = PQ$ (d) $PQR = 100$
 (e) None of these
32. In how many minimum number of complete years, the interest on ₹ 212.50 P at 3% per annum will be in exact number of rupees?
 (a) 6 (b) 8
 (c) 9 (d) 7
 (e) None of these
33. A milk man borrowed ₹ 2,500 from two money lenders. For one loan, he paid 5% p.a. and for the other, he paid 7% p.a. The total interest paid for two years was ₹ 275. How much did he borrow at 7% rate?
 (a) ₹ 600 (b) ₹ 625
 (c) ₹ 650 (d) ₹ 675
 (e) None of these
34. What annual instalment will discharge a debt of ₹ 4,200 due in 5 years at 10% simple interest?
 (a) ₹ 500 per year (b) ₹ 600 per year
 (c) ₹ 700 per year (d) ₹ 800 per year
 (e) None of these
35. Adam borrowed some money at the rate of 6% p.a. for the first two years, at the rate of 9% p.a. for the next three years, and at the rate of 14% p.a. for the period beyond five years. If he pays a total interest of ₹ 11,400 at the end of nine years, how much money did he borrow?
 (a) ₹ 10,000 (b) ₹ 12,000
 (c) ₹ 14,000 (d) ₹ 16,000
 (e) None of these
36. A person borrows ₹ 5000 for 2 years at 4% p.a. simple interest. He immediately lends it to another person at $6\frac{1}{4}$ % p.a. for 2 years. Find his gain in the transaction per year.
 (a) ₹ 112.50 (b) ₹ 125
 (c) ₹ 150 (d) ₹ 167.50
 (e) None of these
37. A certain amount earns simple interest of ₹ 1750 after 7 years. Had the interest been 2% more, how much more interest would it have earned?
 (a) ₹ 35 (b) ₹ 245
 (c) ₹ 350 (d) Cannot be determined
 (e) None of these
38. What will be the ratio of simple interest earned by certain amount at the same rate of interest for 6 years and that for 9 years?
 (a) 1 : 3 (b) 1 : 4
 (c) 2 : 3 (d) Data inadequate
 (e) None of these
39. Two equal sums of money were invested, one at 4% and the other at 4.5%. At the end of 7 years, the simple interest received from the latter exceeded to that received from the former by ₹ 31.50. Each sum was :
 (a) ₹ 1,200 (b) ₹ 600
 (c) ₹ 750 (d) ₹ 900
 (e) None of these
40. The simple interest on a sum of money is $\frac{1}{16}$ th of the principal and the number of years is equal to the rate per cent per annum. The rate per cent annum is _____ .
 (a) $6\frac{1}{4}$ % (b) $6\frac{1}{3}$ %
 (c) $6\frac{1}{5}$ % (d) $4\frac{1}{5}$ %
 (e) None of these
41. An automobile financier claims to be lending money at simple interest, but he includes the interest every six months for calculating the principal. If he is charging an interest of 10%, the effective rate of interest becomes :
 (a) 10% (b) 10.25%
 (c) 10.5% (d) None of these
 (e) None of these
42. A lent ₹ 5000 to B for 2 years and ₹ 3000 to C for 4 years on simple interest at the same rate of interest and received ₹ 2200 in all from both of them as interest. The rate of interest per annum is:
 (a) 5% (b) 7%
 (c) $7\frac{1}{8}$ % (d) 10%
 (e) None of these
43. A sum of ₹ 725 is lent in the beginning of a year at a certain rate of interest. After 8 months, a sum of ₹ 362.50 more is lent but at the rate twice the former. At the end of the year, ₹ 33.50 is earned as interest from both the loans. What was the original rate of interest?
 (a) 3.6% (b) 4.5%
 (c) 5% (d) 3.46%
 (e) None of these
44. The difference between the simple interest received from two different sources on ₹ 1500 for 3 years is ₹ 13.50. The difference between their rates of interest is:
 (a) 0.1% (b) 0.2%
 (c) 0.3% (d) 0.4%
 (e) None of these
45. The rates of simple interest in two banks A and B are in the ratio 5 : 4. A person wants to deposit his total savings in two banks in such a way that he received equal half-yearly interest from both. He should deposit the savings in banks A and B in the ratio.
 (a) 2 : 5 (b) 4 : 5

- (c) 5 : 2 (d) 5 : 4
(e) None of these
46. The price of a T.V. set worth ₹ 20,000 is to be paid in 20 instalments of ₹ 1000 each. If the rate of interest be 6% per annum, and the first instalment be paid at the time of purchase, then the value of the last instalment covering the interest as well will be :
(a) ₹ 1050 (b) ₹ 2050
(c) ₹ 3000 (d) None of these
(e) ₹ 2020
47. A man buys a music system valued at ₹ 8000. He pays ₹ 3500 at once and the rest 18 months later, on which he is charged simple interest at the rate of 8% per annum. Find the total amount he pays for the music system.
(a) ₹ 9260 (b) ₹ 8540
(c) ₹ 8720 (d) ₹ 9410
(e) None of these
48. An amount of ₹ 1,00,000 is invested in two types of shares. The first yields an interest of 9% p.a. and the second, 11% p.a. If the total interest at the end of one year is $9\frac{3}{4}\%$, then the amount invested in each share was:
(a) ₹ 52,500; ₹ 47,500
(b) ₹ 62,500; ₹ 37,500
(c) ₹ 72,500; ₹ 27,500
(d) ₹ 82,500; ₹ 17,500
(e) None of these
49. Find the compound interest on ₹ 12450 for 9 months at 12% per annum compounded quarterly.
(a) ₹ 1154.45 (b) ₹ 1125.18
(c) ₹ 1198.72 (d) ₹ 1164.32
(e) None of these
50. A person invested in all ₹ 2600 at 4%, 6% and 8% per annum simple interest. At the end of the year, he got the same interest in all the three cases. The money invested at 4% is:
(a) ₹ 200 (b) ₹ 600
(c) ₹ 800 (d) ₹ 1200
(e) None of these
51. Divide ₹ 2379 into 3 parts so that their amounts after 2, 3 and 4 years respectively may be equal, the rate of interest being 5% per annum at simple interest. The first part is:
(a) 759 (b) 792
(c) 818 (d) 828
(e) None of these

ANSWER KEY

1	(a)	7	(c)	13	(c)	19	(a)	25	(a)	31	(b)	37	(d)	43	(d)	49	(a)
2	(a)	8	(b)	14	(a)	20	(d)	26	(c)	32	(b)	38	(c)	44	(c)	50	(d)
3	(c)	9	(e)	15	(a)	21	(c)	27	(c)	33	(b)	39	(d)	45	(b)	51	(d)
4	(b)	10	(e)	16	(b)	22	(e)	28	(a)	34	(c)	40	(a)	46	(d)		
5	(d)	11	(c)	17	(e)	23	(b)	29	(a)	35	(b)	41	(b)	47	(b)		
6	(d)	12	(b)	18	(b)	24	(e)	30	(c)	36	(a)	42	(d)	48	(b)		

Hints & Explanations

1. (a) Let the Principal = P
 Then $\frac{P \times 8 \times 4}{100} + \frac{P \times 10 \times 6}{100} + \frac{P \times 12 \times 5}{100}$
 $= 12160$
 $\Rightarrow 152P = 12160 \times 100$
 or $\frac{12160 \times 100}{152} = ₹ 8000$
2. (a) Let the sums be ₹ P.
 Now, 45% of P = 4016.25
 or, P = ₹ 8925
3. (c) Rate of interest = $\frac{956 - 800}{3 \times 800} \times 100 = 6.50\%$
 \therefore Amount = $800 + \frac{800 \times 9.5 \times 3}{100}$
 $= 800 + 228 = ₹ 1028$
4. (b) Time = $\frac{900 \times 100}{3000 \times 6} = 5$ years
 Rate = $\frac{1600 \times 100}{5 \times 4000} = 8\%$
5. (b) Go through trial and error of the options. You will get:
 $20000 \times (1.3) = 26000$ (@ simple interest)
 $20000 \times 1.1 \times 1.1 \times 1.1 = 26620$ @ compound interest.
 Thus 20000 is the correct answer.
6. (d) Let p and r be the principal amount and rate of interest respectively.
 Then, $\frac{p \times r \times 7}{100} = 1750$
 or, pr = 25000
 Now, SI = $\frac{p \times (r + 2) \times 7}{100}$
 We have to find the value of
 $\frac{p \times (r + 2) \times 7}{100} - \frac{p \times r \times 7}{100} = M - 1750$
 M = SI when the rate of interest is 2% more. When we solve this equation, we find that we have two variables and one equation. Therefore, can't be determined the correct answer.
7. (c) **For 3 years:**
 Diff. = $\frac{\text{Sum} \times (\text{rate})^2 (300 + \text{rate})}{(100)^3}$
 $= \frac{2000 \times 10 \times 10 \times 310}{100 \times 100 \times 100} = ₹ 62$
8. (b) Ratio of Nikhilesh's investments in different schemes
 $= 100 : \frac{150 \times 100}{240} : 150 = 8 : 5 : 12$
- Now, according to the question,
 $\frac{8k \times 10}{100} + \frac{5k \times 12}{100} + \frac{12k \times 15}{100} = 3200$
 or, $80k + 60k + 180k = 3200 \times 100$
 or, $320k = 3200 \times 100$ or, $k = 1000$
 \therefore amount invested in scheme B will be
 $= 1000 \times 5 = ₹ 5000$
9. (e) Let the amount deposited at the rate of 15% per annum be ₹ x.
 $15\% \text{ of } x + 18\% \text{ of } (25000 - x) = 4050$
 or, $15\% \text{ of } x + 18\% \text{ of } 25000 - 18\% \text{ of } x = 4050$
 or, $3\% \text{ of } x = 4500 - 4050 = 450 \Rightarrow x = ₹ 15000$
 \therefore Amount deposited at 18%
 $= (25000 - 15000) = ₹ 10000$
10. (e) $\frac{30p}{100} + 450 = \left[p \left(1 + \frac{15}{100} \right)^2 - p \right]$
 $\Rightarrow p = ₹ 20,000.$
11. (c) Rate % = $\sqrt{\frac{405 \times 100 \times 100}{18000}} = 15\%$
12. (b) Let x be the other amount
 $\therefore \frac{3x}{10} + 3600 = 9000 \Rightarrow x = ₹ 18000$
 \therefore total borrowed sum = 33000
13. (c) Let the sum be ₹ x.
 $512.50 = x \left[\left(1 + \frac{5}{100} \right)^2 - 1 \right] = x \left(\frac{441 - 400}{400} \right)$
 $\therefore x = \frac{512.50 \times 400}{41} = ₹ 5000$
14. (a) Let 'x' be the amount borrowed by Mr Amin.
 $\therefore \frac{x \times 2 \times 8}{100} + \frac{x \times 3 \times 11}{100} + \frac{x \times 3 \times 14}{100} = 10920$
 or, $\frac{91}{100} x = 10920$ or $x = \frac{10920 \times 100}{91} = 12000$
15. (a) If 'x' be the interest of third year, then 108% of x = 486
 $\therefore x = 486 \times \frac{100}{108} = 450$

$$16. (b) \frac{A}{P} = \left(1 + \frac{r}{100}\right)^t \text{ or, } \frac{17640}{16000} = \left(1 + \frac{r}{100}\right)^2$$

$$\frac{21}{20} = 1 + \frac{r}{100}$$

$$\Rightarrow r = 5\%$$

$$17. (e) \text{ Amount} = 15000 \left(1 + \frac{10}{100}\right)^2$$

$$= 15000 \times \frac{11}{10} \times \frac{11}{10} = ₹ 18150$$

$$18. (b) \text{ Ratio } A : B = 3 : 2 \text{ and } A : C = 2 : 1$$

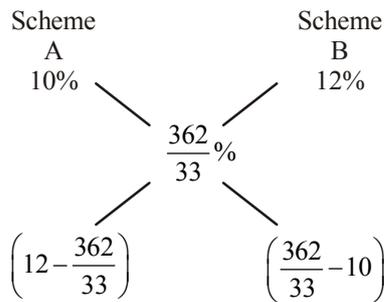
$$\therefore A : B : C = 6 : 4 : 3$$

$$\text{Profit share of } B = \frac{4 \times 157300}{13} = ₹ 48,400$$

$$19. (a) \% \text{ interest on total amount per annum}$$

$$= \frac{3620 \times 100}{16500 \times 2} = \frac{362}{33} \%$$

Now, use Alligation method.



Hence, ratio of amount invested in schemes A and B

$$= \left(12 - \frac{362}{33}\right) : \left(\frac{362}{33} - 10\right) = 17 : 16$$

$$\text{Hence, amount invested in B} = \frac{16 \times 16500}{(17+16)} = ₹ 8000$$

$$20. (d) \text{ Let the sum be } ₹ x.$$

$$\text{Then, } \left[x \left(1 + \frac{5}{100}\right)^4 - x \right] - \left[\frac{x \times 10 \times 2}{100} \right] = 124.05$$

Solving the above eqns, we get $x = ₹ 8,000$.

$$21. (c) \text{ Let the amount invested at } 20\% \text{ rate be } ₹ x. \text{ According to the question,}$$

$$12000 \times \frac{10}{100} + x \times \frac{20}{100} = (12000 + x) \times \frac{14}{100}$$

$$\text{or, } 1200 + \frac{x}{5} = 1680 + \frac{7}{50} x$$

$$\text{or, } \frac{x}{5} - \frac{7}{50} x = 480$$

$$\text{or, } \frac{3}{50} x = 480$$

$$\therefore x = ₹ 8000$$

$$\therefore \text{ Total amount invested } ₹ = (12000 + 8000) = ₹ 20000$$

$$22. (e) \text{ Amount} = 10000 \left(1 + \frac{10}{100}\right)^3$$

$$= 10000 \times \frac{11}{10} \times \frac{11}{10} \times \frac{11}{10} = ₹ 13310$$

$$23. (b) \text{ P becomes } 2P \text{ in 6 years at } r\% \text{ p.a.}$$

$$\Rightarrow 2P = P \left(1 + \frac{r}{100}\right)^6$$

$$\therefore \left(1 + \frac{r}{100}\right)^6 = 2$$

$$\Rightarrow 2^4 = \left(1 + \frac{r}{100}\right)^{6 \times 4} = \left(1 + \frac{r}{100}\right)^{24}$$

\therefore P becomes 16P in 24 years

$$24. (e) \text{ Let } x \text{ be the amount Amal borrowed.}$$

$$\therefore 18\% \text{ of } x + 40\% \text{ of } x + 48\% \text{ of } x = 5040$$

$$\text{or, } 106\% \text{ of } x = 5040$$

$$\therefore x = \frac{5040}{106} \times 100 = ₹ 4754.71$$

$$25. (a) \text{ Let the amount be } ₹ x.$$

$$\text{From the question, } \frac{x \times 14 \times 6}{1200} - \frac{x \times 8 \times 8}{1200} = 250$$

$$\therefore x = ₹ 15000$$

$$26. (c) \text{ Monthly Income}$$

$$= \frac{153000 \times 20 \times 1}{100 \times 12} = ₹ 2550$$

$$27. (c) \text{ Difference in S.I.} = \frac{P \times T}{100} (R_1 - R_2)$$

$$\Rightarrow 56 = \frac{P \times 4 \times 2}{100} \quad (\because R_1 - R_2 = 2)$$

$$\Rightarrow P = \frac{56 \times 100}{4 \times 2} = ₹ 700$$

$$28. (a) \frac{16}{25} P = \frac{P \times R \times R}{100}$$

$$\Rightarrow R^2 = \frac{1600}{25} \Rightarrow R = \frac{40}{5} = 8\%$$

Also, time = 8 years

$$29. (a) \therefore \text{ Rate} = 5 \text{ paise per rupee} = 5\%$$

$$\therefore \text{ S.I.} = \frac{200 \times 5 \times 7}{100} = ₹ 70$$

$$30. (c) \text{ Increment} = \frac{1}{8} \times 100 = 12\frac{1}{2} \%$$

$$\begin{aligned}\therefore H &= 10 \left\{ 1 + \frac{25}{100 \times 2} \right\}^{5/2} \\ &= 10 \left[1 + \frac{1}{8} \right]^{5/2} = 10 \left[1 + \frac{1}{8} \right]^2 \left[1 + \frac{1}{8} \right]^{1/2} \\ &= 10 \left(\frac{9}{8} \right)^2 \left(1 + \frac{1}{2 \times 8} \right) = \frac{10 \times 81}{64} \times \frac{17}{16} = 13.44 \text{ft}\end{aligned}$$

$$31. \quad (b) \quad P = \frac{Q \times r \times t}{100} \quad \text{and} \quad Q = \frac{R \times r \times t}{100}$$

$$\Rightarrow \frac{P}{Q} = \frac{R}{100} = \frac{r \times t}{100}$$

$$\therefore Q^2 = PR.$$

$$32. \quad (b) \quad \text{Interest for one year} = ₹ 212.50 \times \frac{3}{100} \times 1 = ₹ \frac{51}{8}$$

Thus in 8 years, the interest is ₹ 51.

$$33. \quad (b) \quad \text{Let he borrowed at } 5\% = ₹ x$$

$$\therefore \text{he borrowed at } 7\% = ₹ (2500 - x)$$

$$\text{Now } I_1 + I_2 = 275$$

$$\frac{x \times 5 \times 2}{100} + \frac{(2500 - x) \times 7 \times 2}{100} = 275$$

$$\Rightarrow 10x + 14(2500 - x) = 27500$$

$$\Rightarrow 4x = 35000 - 27500 = 7500$$

$$\Rightarrow x = ₹ 1875$$

$$\therefore \text{Sum borrowed at } 7\% \text{ rate} = 2500 - 1875 = ₹ 625$$

$$34. \quad (c) \quad \text{Shortcut method :}$$

If borrowed amount be ₹ M and it is to be paid in equal instalments, then

$$M = na + \frac{ra}{100 \times Y} \times \frac{n(n-1)}{2}$$

where Y = no. of instalments per annum

a = annual instalment

Here, M = 4200, y = 1, r = 10, n = 5, a = ?

$$4200 = 5a + \frac{10a}{100} \times \frac{5(5-1)}{2}$$

$$\Rightarrow 4200 = a[5 + 1] \Rightarrow 6a = 4200$$

$$\Rightarrow a = ₹ 700$$

$$35. \quad (b) \quad \text{Balance}$$

$$= ₹ \left[\left\{ 12500 \left(1 + \frac{20}{100} \right)^3 \right\} - \right.$$

$$\left. \left\{ 2000 \left(1 + \frac{20}{100} \right)^2 + 2000 \left(1 + \frac{20}{100} \right) + 2000 \right\} \right]$$

$$= ₹ \left[\left(12500 \times \frac{6}{5} \times \frac{6}{5} \times \frac{6}{5} \right) - \right.$$

$$\left. \left(2000 \times \frac{6}{5} \times \frac{6}{5} + 2000 \times \frac{6}{5} + 2000 \right) \right]$$

Hence, sum borrowed = ₹ 12,000.

$$36. \quad (a) \quad \text{Gain in 2 years}$$

$$= ₹ \left[\left(5000 \times \frac{25}{4} \times \frac{2}{100} \right) - \left(\frac{5000 \times 4 \times 2}{100} \right) \right]$$

$$= ₹ (625 - 400) = ₹ 225.$$

$$\therefore \text{Gain in 1 year} = ₹ \left(\frac{225}{2} \right) = ₹ 112.50$$

$$37. \quad (d) \quad \text{We need to know the S.I., principal and time to find the rate. Since the principal is not given, so data is inadequate.}$$

$$38. \quad (c) \quad \text{Let the principal be P and rate of interest be R\%.$$

$$\therefore \text{Required ratio} = \frac{\left[\frac{P \times R \times 6}{100} \right]}{\left[\frac{P \times R \times 9}{100} \right]} = \frac{6PR}{9PR} = \frac{6}{9} = 2 : 3.$$

$$39. \quad (d) \quad \text{Difference of S.I.} = ₹ 31.50$$

Let each sum be ₹ x. Then

$$\frac{x \times 4 \times \frac{1}{2} \times 7}{100} - \frac{x \times 4 \times 7}{100} = 31.50$$

$$\text{or} \quad \frac{7x}{100} \times \frac{1}{2} = \frac{63}{2}$$

$$\text{or} \quad x = ₹ 900$$

$$40. \quad (a) \quad \text{Let the rate of interest} = r \%$$

\therefore times = r years

$$\text{Now,} \quad \frac{S}{16} = \frac{S \times r \times r}{100}$$

$$\text{or,} \quad r^2 = \frac{100}{16} \quad \therefore \quad r = \frac{25}{4} = 6\frac{1}{4}\%$$

$$41. \quad (b) \quad \text{Let the sum be Rs 100. Then,}$$

$$\text{S.I. for first 6 months} = ₹ \left(\frac{100 \times 10 \times 1}{100 \times 2} \right) = ₹ 5.$$

$$\text{S.I. for last 6 months} = ₹ \left(\frac{105 \times 10 \times 1}{100 \times 2} \right) = ₹ 5.25.$$

So, amount at the end of 1 year = ₹ (100 + 5 + 5.25) = ₹ 110.25.

\therefore Effective rate = ₹ (110.25 - 100) = 10.25%.

$$42. \quad (d) \quad \text{Let the rate be R\% p.a. Then,}$$

$$\left(\frac{5000 \times R \times 2}{100} \right) + \left(\frac{3000 \times R \times 4}{100} \right) = 2200$$

$$\Rightarrow 100R + 120R = 2200 \Rightarrow R = \left(\frac{2200}{220} \right) = 10.$$

43. (d) Let the original rate be $R\%$. Then, new rate = $(2R)\%$.

$$\therefore \left(\frac{725 \times R \times 1}{100} \right) + \left(\frac{362.50 \times 2R \times 1}{100 \times 3} \right) = 33.50$$

$$\Rightarrow (2175 + 725)R = 33.50 \times 100 \times 3 = 10050$$

$$\Rightarrow R = \frac{10050}{2900} = 3.46\%$$

44. (c) $\left(\frac{1500 \times R_1 \times 3}{100} \right) - \left(\frac{1500 \times R_2 \times 3}{100} \right) = 13.50$

$$\Rightarrow 4500(R_1 - R_2) = 1350 \Rightarrow R_1 - R_2 = \frac{1350}{4500} = 0.3\%$$

45. (b) Let the savings be X and Y and the rates of simple interest be $5x$ and $4x$ respectively.

$$\text{Then, } X \times 5x \times \frac{1}{2} \times \frac{1}{100} = Y \times 4x \times \frac{1}{2} \times \frac{1}{100} \text{ or } \frac{X}{Y} = \frac{4}{5},$$

i.e., $X : Y = 4 : 5$.

46. (d) Money paid in cash = ₹ 1000.

$$\text{Balance payment} = ₹ (20000 - 1000) = ₹ 19000.$$

47. (b) Cost of the music system = ₹ 8000

$$\text{Money paid at once} = ₹ 3500$$

$$\text{Money left} = ₹ (8000 - 3500) = ₹ 4500$$

$$\text{Time} = \left(\frac{18}{12} \right) \text{yr} = 1 \frac{1}{2} \text{yr}$$

$$\text{Rate} = 8\% \text{ per annum}$$

$$\text{SI} = \left(\frac{P \times T \times R}{100} \right) = ₹ \left(4500 \times \frac{3}{2} \times 8 \times \frac{1}{100} \right) = ₹ 540$$

$$\text{Money to be paid at the end} = ₹ (4500 + 540) = ₹ 5040$$

$$\therefore \text{Cost of music system} = ₹ (3500 + 5040) = ₹ 8540$$

48. (b) Let the sum invested at 9% be ₹ x and that invested at 11% be ₹ $(100000 - x)$.

Then,

$$\left(\frac{x \times 9 \times 1}{100} \right) + \left[\frac{(100000 - x) \times 11 \times 1}{100} \right]$$

$$= \left(100000 \times \frac{39}{4} \times \frac{1}{100} \right)$$

$$\Rightarrow \frac{9x + 1100000 - 11x}{100} = \frac{39000}{4} = 9750$$

$$\Rightarrow 2x = (1100000 - 975000) = 125000 \Rightarrow x = 62500.$$

$$\therefore \text{Sum invested at } 9\% = ₹ 62500.$$

$$\text{Sum invested at } 11\% = ₹ (100000 - 62500) = ₹ 37500.$$

49. (a) $P = ₹ 12450$, $n = 9 \text{ months} = \frac{9}{12} \text{yr}$,

$$R = 12\% \text{ per annum}$$

$$A = P \left[1 + \frac{R}{100} \right]^{4n} = ₹ \left[12450 \times \left(1 + \frac{12}{100} \right)^{4 \times \frac{9}{12}} \right]$$

$$= ₹ \left[12450 \times \left(1 + \frac{3}{100} \right)^3 \right] = ₹ 12450 \times \left(\frac{103}{100} \right)^3$$

$$= ₹ 13604.45$$

$$\text{CI} = ₹ (13604.45 - 12450) = ₹ 1154.45$$

50. (d) Let the parts be x , y and $[2600 - (x + y)]$. Then,

$$\frac{x \times 4 \times 1}{100} = \frac{y \times 6 \times 1}{100} = \frac{[2600 - (x + y)] \times 8 \times 1}{100}$$

$$\therefore \frac{y}{x} = \frac{4}{6} = \frac{2}{3} \text{ or } y = \frac{2}{3}x.$$

$$\text{So, } \frac{x \times 4 \times 1}{100} = \frac{\left(2600 - \frac{5}{3}x \right) \times 8}{100}$$

$$\Rightarrow 4x = \frac{(7800 - 5x) \times 8}{3} \Rightarrow 52x = (7800 \times 8)$$

$$\Rightarrow x = \left(\frac{7800 \times 8}{52} \right) = 1200.$$

$$\therefore \text{Money invested at } 4\% = ₹ 1200.$$

51. (d) Let the parts be x , y and z

$$x + \left(x \times 2 \times \frac{5}{100} \right) = y + \left(y \times 3 \times \frac{5}{100} \right)$$

$$= z + \left(z \times 4 \times \frac{5}{100} \right)$$

$$\Rightarrow \frac{11x}{10} = \frac{23y}{20} = \frac{6z}{5} = k \Rightarrow x = \frac{10k}{11}, y = \frac{20k}{23}, z = \frac{5k}{6}$$

$$\text{But } x + y + z = 2379.$$

$$\Rightarrow \frac{10k}{11} + \frac{20k}{23} + \frac{5k}{6} = 2379$$

$$\Rightarrow 1380k + 1320k + 1256k = 2379 \times 11 \times 23 \times 6$$

$$\Rightarrow k = \frac{2379 \times 11 \times 23 \times 6}{3965} = \frac{3 \times 11 \times 23 \times 6}{5}$$

$$\therefore x = \left(\frac{10}{11} \times \frac{3 \times 11 \times 23 \times 6}{5} \right) = 828.$$

Hence, the first part is ₹ 828.



TIME AND WORK

In most of the problems on time and work, either of the following basic parameters are to be calculated :

Shortcut Approach

↪ If A can do a piece of work in X days, then A's one day's work = $\frac{1}{X}$ th part of whole work.

↪ If A's one day's work = $\frac{1}{X}$ th part of whole work, then A can finish the work in X days.

↪ If A can do a piece of work in X days and B can do it in Y days then A and B working together will do the same work in $\frac{XY}{X+Y}$ days.

↪ If A, B and C can do a work in X, Y and Z days respectively then all of them working together can finish the work in $\frac{XYZ}{XY+YZ+XZ}$ days.

↪ If (A + B) can do a piece of work in X days, (B + C) can do a piece of work in Y days and (C + A) can do a piece of work in Z days. Then,

$$(A + B + C) \text{ can do a piece of work in } \frac{2XYZ}{XY + YZ + ZX} \text{ days}$$

EXAMPLE 1. A can do a piece of work in 5 days, and B can do it in 6 days. How long will they take if both work together?

Sol. A's 1 day's work = $\frac{1}{5}$ th part of whole work and

B's 1 day's work = $\frac{1}{6}$ th part of whole work

∴ (A + B)'s one day's work = $\frac{1}{5} + \frac{1}{6} = \frac{11}{30}$ th part of whole work. So, both together will finish the work in

$$\frac{30}{11} \text{ days} = 2\frac{8}{11} \text{ days.}$$

By Direct Formula :

$$A + B \text{ can do the work in } \frac{5 \times 6}{5 + 6} \text{ days} = \frac{30}{11} = 2\frac{8}{11} \text{ days.}$$

EXAMPLE 2. Two men, Vikas and Vishal, working separately can mow a field in 8 and 12 hours respectively. If they work in stretches of one hour alternately, Vikas beginning at 8 a.m, when will the mowing be finished?

Sol. In the first hour, Vikas mows $\frac{1}{8}$ of the field.

In the second hour, Vishal mows $\frac{1}{12}$ of the field.

∴ In the first 2 hours, $\left(\frac{1}{8} + \frac{1}{12} = \frac{5}{24}\right)$ of the field is mown.

∴ In 8 hours, $\frac{5}{24} \times 4 = \frac{5}{6}$ of the field is mown.

Now, $\left(1 - \frac{5}{6}\right) = \frac{1}{6}$ of the field remains to be mown.

In the 9th hour, Vikas mows $\frac{1}{8}$ of the field.

Remaining work = $\frac{1}{6} - \frac{1}{8} = \frac{1}{24}$

∴ Vishal will finish the remaining work in $\left(\frac{1}{24} \div \frac{1}{12}\right)$

or $\frac{1}{2}$ of an hour.

∴ The total time required is $\left(8 + 1 + \frac{1}{2}\right)$ or $9\frac{1}{2}$ hours.

Thus, the work will be finished at $8 + 9\frac{1}{2} = 17\frac{1}{2}$ or 5.30 pm.

EXAMPLE 3. A can do a piece of work in 36 days, B in 54 days and C in 72 days. All the three began the work together on the Dec. 15, 2014, but A left 8 days and B 12 days before the completion of the work. If C took the rest for a week then in how many days, the work was finished from the day it started?

Sol. Let the total time taken be x days.

According to the given condition

$$\Rightarrow \frac{x-8}{36} + \frac{x-12}{54} + \frac{x}{72} = 1$$

$$\Rightarrow \frac{6(x-8) + 4(x-12) + 3x}{216} = 1$$

$$\Rightarrow \frac{6x - 48 + 4x - 48 + 3x}{216} = 1 \Rightarrow \frac{13x - 96}{216} = 1$$

$$\Rightarrow 13x - 96 = 216 \Rightarrow 13x = 216 + 96 = 312$$

$$\Rightarrow x = \frac{312}{13} = 24$$

Since, C takes the rest for a week, so the number of days in which the work was finished from one day it started = 31 i.e. on 14.01.2015.

EXAMPLE 4. A and B can do a certain piece of work in 18 days, B and C can do it in 12 days and C and A can do it in 24 days. How long would each take separately to do it?

Sol. (A + B)'s one days's work = $\frac{1}{18}$,
 (A + C)'s one days's work = $\frac{1}{24}$,
 (B + C)'s one days's work = $\frac{1}{12}$,
 Now add up all three equations :

$$2(A + B + C)'s \text{ one days's work} = \frac{1}{18} + \frac{1}{24} + \frac{1}{12} = \frac{13}{72}$$

$$(A + B + C)'s \text{ one days's work} = \frac{13}{144}$$

A's one days's work = (A + B + C)'s one days's work

$$-(B + C)'s \text{ one days's work} = \frac{13}{144} - \frac{1}{12} = \frac{1}{144}$$

Since A completes of the work in 1 day, he will complete 1

$$\text{work in } \frac{144}{1} = 144 \text{ days}$$

By similar logic we can find that B needs $\frac{144}{7}$ days and C

will require $\frac{144}{5}$ days.

Shortcut Approach

If A and B together can do a piece of work in X days and A alone can do it in Y days, then B alone can do the work in $\frac{XY}{Y-X}$ days.

If (A + B + C) can do a piece of work in X days and (B + C) can do a piece of work in Y days then

A can do a piece of work $\frac{XY}{Y-X}$ days

EXAMPLE 5. A and B together can do a piece of work in 6 days and A alone can do it in 9 days. In how many days can B alone do it?

Sol. (A + B)'s 1 day's work = $\frac{1}{6}$ th part of the whole work.

A's 1 day's work = $\frac{1}{9}$ th part of the whole work.

$$\therefore \text{B's 1 day's work} = \frac{1}{6} - \frac{1}{9} = \frac{3-2}{18} = \frac{1}{18} \text{ th}$$

part of the whole work.

\therefore B alone can do the work in 18 days.

SHORTCUT METHOD

B alone can do the whole work in

$$\frac{6 \times 9}{9 - 6} = \frac{54}{3} = 18 \text{ days}$$

Shortcut Approach

A and B can do a work in 'X' and 'Y' days respectively. They started the work together but A left 'a' days before completion of the work. Then, time taken to finish the

work is $\frac{Y(X+a)}{X+Y}$

If 'A' is 'a' times efficient than B and A can finish a work in X days, then working together, they can finish the work in

$\frac{aX}{a+1}$ days.

If A is 'a' times efficient than B and working together they finish a work in Z days then, time taken by A =

$\frac{Z(a+1)}{a}$ days. and time taken by B = Z(a + 1) days.

If A working alone takes 'x' days more than A and B together, and B working alone takes 'y' days more than A and B together then the number of days taken by A and B working together is given by $[\sqrt{xy}]$ days.

EXAMPLE 6. A and B can do alone a job in 6 days and 12 days.

They began the work together but 3 days before the completion of job, A leaves off. In how many days will the work be completed?

- (a) 6 days (b) 4 days
 (c) 5 days (d) 7 days

Sol. (a) Let work will be completed in x days. Then, work done by A in (x - 3) days + work done by B in x days = 1

$$\text{i.e. } \frac{x-3}{6} + \frac{x}{12} = 1$$

$$\Rightarrow \frac{3x-6}{12} = 1 \Rightarrow x = 6 \text{ days}$$

SHORTCUT METHOD

$$\text{Required time} = \frac{12(6+3)}{12+6} = 6 \text{ days}$$

EXAMPLE 7. A is half good a workman as B and together they finish a job in 14 days. In how many days working alone will B finish the job.

- (a) 20 days (b) 21 days
(c) 22 days (d) None of these

Sol. (b) Let B can do the work in x days
and A can do the work in $2x$ days

$$\text{Then, } \frac{1}{x} + \frac{1}{2x} = \frac{1}{14} \quad (\text{given})$$

$$\Rightarrow x = \frac{3}{2} \times 14 = 21 \text{ days}$$

SHORTCUT METHOD

$$\text{Time taken by B} = 14 \left(\frac{1}{2} + 1 \right) = 21 \text{ days}$$

Shortcut Approach

If a_1 men and b_1 boys can complete a work in x days, while a_2 men and b_2 boys can complete the same work in y days, then

$$\frac{\text{One day work of 1 man}}{\text{One day work of 1 boy}} = \frac{(yb_2 - xb_1)}{(xa_1 - ya_2)}$$

EXAMPLE 8. If 12 men and 16 boys can finish a work in 5 days, while 13 men and 24 boys can finish the same work in 4 days. Compare the one day work of 1 man and 1 boy.

Sol. Here, $a_1 = 12$, $b_1 = 16$, $x = 5$, $a_2 = 13$, $b_2 = 24$ and $y = 4$

$$\begin{aligned} \frac{\text{One day work of 1 man}}{\text{One day work of 1 boy}} &= \frac{(yb_2 - xb_1)}{(xa_1 - ya_2)} \\ &= \frac{4 \times 24 - 5 \times 16}{5 \times 12 - 4 \times 13} \\ &= \frac{96 - 80}{60 - 52} = \frac{16}{8} = \frac{12}{1} \end{aligned}$$

Shortcut Approach

If n men or m women can do a piece of work in X days, then N men and M women together can finish the work in

$$\frac{nmX}{nM + mN} \text{ days.}$$

EXAMPLE 9. 10 men can finish a piece of work in 10 days, where as it takes 12 women to finish it in 10 days. If 15 men and 6 women undertake to complete the work, how many days they will take to complete it?

- (a) 7 days (b) 5 days
(c) 4 days (d) 6 days

Sol. (b) It is clear that 10 men = 12 women or 5 men = 6 women
 \Rightarrow 15 men + 6 women = $(18 + 6)$ i.e. 24 women
Now 12 women can complete the work in 10 days
 \therefore 24 women will do it in 5 days.

SHORTCUT METHOD

$$\text{Required time} = \frac{10 \times 12 \times 10}{10 \times 6 + 12 \times 15} = 5 \text{ days}$$

EXAMPLE 10. If 3 men or 4 women can reap a field in 43 days, how long will 7 men and 5 women take to reap it?

Sol. First Method : 3 men reap $\frac{1}{43}$ of the field in 1 day.

$$\therefore 1 \text{ men reaps } \frac{1}{43 \times 3} \text{ of the field in 1 day.}$$

$$4 \text{ women reap } \frac{1}{43} \text{ of the field in 1 day.}$$

$$\therefore 1 \text{ woman reaps } \frac{1}{43 \times 4} \text{ of the field in 1 day.}$$

$$\therefore 7 \text{ men and 5 women reap } \left(\frac{7}{43 \times 3} + \frac{5}{43 \times 4} \right) = \frac{1}{12} \text{ of the}$$

field in 1 day.

$$\therefore 7 \text{ men and 5 women will reap the whole field in 12 days.}$$

Second Method : 3 men = 4 women

$$\therefore 1 \text{ man} = \frac{4}{3} \text{ women} \quad \therefore 7 \text{ men} = \frac{28}{3} \text{ women}$$

$$\therefore 7 \text{ men} + 5 \text{ women} = \frac{28}{3} + 5 = \frac{43}{3} \text{ women now, the question}$$

becomes :

$$\text{If 4 women can reap a field in 43 days, how long will } \frac{43}{3}$$

women take to reap it?

The basic-formula gives

$$4 \times 43 = \frac{43}{3} \times D_2 \quad \text{or,} \quad D_2 = \frac{4 \times 43 \times 3}{43} = 12 \text{ days.}$$

SHORTCUT METHOD

$$\text{Required number of days} = \frac{1}{\left[\frac{7}{43 \times 3} + \frac{5}{43 \times 4} \right]}$$

$$= \frac{43 \times 3 \times 4}{7 \times 4 + 5 \times 3} = 12 \text{ days.}$$

EXAMPLE 11. If 12 men and 16 boys can do a piece of work in 5 days and 13 men and 24 boys can do it in 4 days, how long will 7 men and 10 boys take to do it?

Sol. 12 men and 16 boys can do the work in 5 days (1)

13 men and 24 boys can do the work in 4 days (2)

Now it is easy to see that if the no. of workers be multiplied by any number, the time must be divided by the same number (derived from : more worker less time).

Hence multiplying the no. of workers in (1) and (2) by 5 and 4 respectively, we get 5 (12 men + 16 boys) can do the work in $5/5 = 1$ day

4 (13 men + 24 boys) can do the work in $\frac{4}{4} = 1$ day

or, $5(12m + 16b) = 4(13m + 24b)$

or, $60m + 80b = 52m + 96b$

or, $60m - 52m = 96b - 80b$

or, $8m = 16b$

$\therefore 1 \text{ men} = 2 \text{ boys}$.

Thus, 12 men + 16 boys = 24 boys + 16 boys = 40 boys

and 7 men + 10 boys = 14 boys + 10 boys = 24 boys

The question now becomes :

“If 40 boys can do a piece of work in 6 days how long will 24 boys take to do it ?”

Using basic formula, we have

$$40 \times 5 = 24 \times D_2$$

$$\text{or, } D_2 = \frac{40 \times 5}{24} = 8\frac{1}{3} \text{ days}$$

EXAMPLE 12. Two men and 7 boys can do a piece of work in 14 days. 3 men and 8 boys can do it in 11 days. In how many days can 8 men and 6 boys do a work 3 times as big as the first ?

Sol. 2 men + 7 boys in 14 days \Rightarrow 28 men + 98 boys in 1 day

3 men + 8 boys in 11 days \Rightarrow 33 men + 88 boys in 1 day

$\therefore 28 \text{ men} + 98 \text{ boys} = 33 \text{ men} + 88 \text{ boys}$

$\therefore 2 \text{ boys} \equiv 1 \text{ man}$

Now, 2 men + 7 boys = 11 boys; 8 men + 6 boys = 22 boys

More boys, fewer days; more work, more days

Boys	Days	Work
11 ↓	14 ↑	1 ↑
22	x	3

$$\therefore \frac{x}{14} = \frac{11}{22} \times \frac{3}{1} \quad \therefore \text{Number of days} = 21 \text{ days.}$$

EXAMPLE 13. Kaberi takes twice as much time as Kanti and thrice as much as Kalpana to finish a piece of work. They together finish the work in one day. Find the time taken by each of them to finish the work.

Sol. Here, the alone time of kaberi is related to the alone times of other two persons, so assume the alone time of kaberi = x,

Then, alone time of kanti = $\frac{x}{2}$ and of kalpana = $\frac{x}{3}$

Kaberi's 1 day work + kanti's 1 day work + kalpana's 1 day work = combined 1 days work

$$\Rightarrow \frac{1}{x} + \frac{1}{x/2} + \frac{1}{x/3} = \frac{1}{1} \Rightarrow x = 6$$

\therefore Alone time for kaberi = 6 days, for kanti = $6/2 = 3$ days, kalpana = $6/3 = 2$ days,

EXAMPLE 14. 1 man or 2 women or 3 boys can do a work in 44 days. Then in how many days will 1 man, 1 woman and 1 boy do the work?

Sol. Number of required days

$$= \frac{1}{\frac{1}{44 \times 1} + \frac{1}{44 \times 2} + \frac{1}{44 \times 3}} = \frac{44 \times 1 \times 2 \times 3}{6 + 3 + 2} = 24 \text{ days}$$

Shortcut Approach

A and B do a piece of work in a and b days, respectively. Both begin together but after some days, A leaves off and the remaining work is completed by B in x days. Then, the time after which A left, is given by

$$T = \frac{(b-x)a}{a+b}$$

EXAMPLE 15. A and B can do a piece of work in 40 days and 50 days, respectively. Both begin together but after a certain time, A leaves off. In this case B finishes the remaining work in 20 days. After how many days did A leave?

Sol. Here, a = 40 days, b = 50 days, x = 20 and T = ?

$$\begin{aligned} \therefore \text{Required time} &= \frac{(b-x)a}{a+b} = \frac{(50-20) \times 40}{(40+50)} \\ &= \frac{30 \times 40}{90} = \frac{40}{3} = 13\frac{1}{3} \text{ days} \end{aligned}$$

Shortcut Approach

If 'M₁' persons can do 'W₁' works in 'D₁' days and 'M₂' persons can do 'W₂' works in 'D₂' days then
M₁D₁W₂ = M₂D₂W₁
If T₁ and T₂ are the working hours for the two groups then

$$M_1 D_1 W_2 T_1 = M_2 D_2 W_1 T_2$$

Similarly,

$M_1 D_1 W_2 T_1 E_1 = M_2 D_2 W_1 T_2 E_2$, where E_1 and E_2 are the efficiencies of the two groups.

↪ If the number of men to do a job is changed in the ratio $a : b$, then the time required to do the work will be in the ratio $b : a$, assuming the amount of work done by each of them in the given time is the same, or they are identical.

↪ A is K times as good a worker as B and takes X days less than B to finish the work. Then the amount of time required

by A and B working together is $\frac{K \times X}{K^2 - 1}$ days.

↪ If A is n times as efficient as B, i.e. A has n times as much capacity to do work as B, then A will take $\frac{1}{n}$ of the time taken by B to do the same amount of work.

EXAMPLE 16. 5 men prepare 10 toys in 6 days working 6 hrs a day. Then in how many days can 12 men prepare 16 toys working 8 hrs a day ?

Sol. $M_1 D_1 T_1 W_2 = M_2 D_2 T_2 W_1$

Here, $5 \times 6 \times 6 \times 16 = 12 \times D_2 \times 8 \times 10$

$$\therefore D_2 = \frac{5 \times 6 \times 6 \times 16}{12 \times 8 \times 10} = 3 \text{ days.}$$

EXAMPLE 17. A and B can do a work in 45 days and 40 days respectively. They began the work together, but A left after some time and B finished the remaining work in 23 days. After how many days did A leave ?

Sol. B works alone for 23 days.

$$\therefore \text{Work done by B in 23 days} = \frac{23}{40} \text{ work}$$

$$\therefore \text{Work done by A + B together} = 1 - \frac{23}{40} = \frac{17}{40} \text{ work}$$

$$\text{Now, A + B do 1 work in } \frac{40 \times 45}{40 + 45} = \frac{40 \times 45}{85} \text{ days}$$

$$\therefore \text{A + B do } \frac{17}{40} \text{ work in } \frac{40 \times 45}{85} \times \frac{17}{40} = 9 \text{ days.}$$

SHORTCUT METHOD

If we ignore the intermediate steps, we can write a direct

$$\text{formula as : } \frac{40 \times 45}{40 + 45} \left(\frac{40 - 23}{40} \right) = 9 \text{ days.}$$

EXAMPLE 18. Two friends take a piece of work for ₹ 960. One alone could do it in 12 days, the other in 16 days with the assistance of an expert they finish it in 4 days. How much remuneration the expert should get ?

Sol. First friend's 4 day's work = $\frac{4}{12} = \frac{1}{3}$ (Since, the work is finished in 4 days, when expert assists)

$$\text{Second friend's 4 day's work} = \frac{4}{16} = \frac{1}{4}$$

$$\text{The expert's 4 day's work} = 1 - \left(\frac{1}{3} + \frac{1}{4} \right) = \frac{5}{12}$$

Now, total wages of ₹ 960 is to be distributed among two friends and the expert in proportion to the amount of work done by each of them.

So, 960 is to be divided in the proportion of

$$\frac{1}{3} : \frac{1}{4} : \frac{5}{12} \text{ or } 4 : 3 : 5$$

$$\therefore \text{Share of expert} = \frac{5}{12} \times 960 = ₹ 400$$

Hence, the expert should get ₹ 400.

EXAMPLE 19. A certain number of men can do a work in 60 days. If there were 8 men more it could be finished in 10 days less. How many men are there ?

Sol. Let there be x men originally.

$(x + 8)$ men can finish the work in $(60 - 10) = 50$ days.

Now, 8 men can do in 50 days what x men do in 10 days, then by basic formula we have

$$\therefore x = \frac{8 \times 50}{10} = 40 \text{ men.}$$

SHORTCUT METHOD (1) :

We have :

x men to the work in 60 days and $(x + 8)$ men do th work in $(60 - 10) = 50$ days.

Then by "basic formula", $60x = 50(x + 8)$

$$\therefore x = \frac{50 \times 8}{10} = 40 \text{ men.}$$

SHORTCUT METHOD (2) :

There exists a relationship :

Original number of workers

$$= \frac{\text{No. of more worker} \times \text{Number of days taken by the second group}}{\text{No. of less days}}$$

$$= \frac{8 \times (60 - 10)}{10} = \frac{8 \times 50}{10} = 40 \text{ man}$$

EXAMPLE 20. Two coal loading machines each working 12 hours per day for 8 days handles 9,000 tonnes of coal with an efficiency of 90%. While 3 other coal loading machines at an efficiency of 80% set to handle 12,000 tonnes of coal in 6 days. Find how many hours per day each should work.

$$\text{Sol. Here } \frac{N_1 \times D_1 \times R_1 \times E_1}{W_1} = \frac{N_2 \times D_2 \times R_2 \times E_2}{W_2}$$

$$N_1 = R_1 = 12 \text{ h/day} : N_2 = 3R_2 = ?$$

$$E_1 = \frac{90}{100} W_1 = 9,000 ;$$

$$E_2 = \frac{80}{100} W_2 = 12,000$$

$$\Rightarrow \frac{2 \times 8 \times 12 \times 90}{9,000 \times 100} = \frac{3 \times 6 \times R_2 \times 80}{12,000 \times 100}$$

$$\Rightarrow R_2 = 16 \text{ h/day.}$$

\therefore Each machine should work 16 h/day.

WORK AND WAGES

Wages are distributed in proportion to the work done and in indirect proportion to the time taken by the individual.

EXAMPLE 21. A, B and C can do a work in 6, 8 and 12 days respectively. Doing that work together they get an amount of ₹ 1350. What is the share of B in that amount?

$$\text{Sol. A's one day's work} = \frac{1}{6}$$

$$\text{B's one day's work} = \frac{1}{8}$$

$$\text{C's one day's work} = \frac{1}{12}$$

A's share : B's share : C's share

$$= \frac{1}{6} : \frac{1}{8} : \frac{1}{12}$$

Multiplying each ratio by the L.C.M. of their denominators, the ratios become 4 : 3 : 2

$$\therefore \text{B's share} = \frac{1350 \times 3}{9} = ₹ 450$$

EXAMPLE 22. If 6 men working 8 hours a day earn ₹ 1680 per week, then how much will 9 men working 6 hours a day earn per week?

Sol. 6m	8 hours	₹ 1680
9m	6 hours	?

$$1680 \times \frac{6}{8} \times \frac{9}{6} = ₹ 1890$$

SHORTCUT METHOD

As earnings are proportional to the work done, we have

$$\frac{M_1 D_1}{W_1} = \frac{M_2 D_2}{W_2} \Rightarrow \frac{6 \times 8}{1680} = \frac{9 \times 6}{W_2} \Rightarrow W_2 = ₹ 1890$$

EXAMPLE 23. A can do a piece of work in 15 days and B in 20 days. They finished the work with the assistance of C in 5 days and got ₹ 45 as their wages, find the share for each in the wages.

Sol. A did in 5 days $1/3$ of the work,

B did in 5 days $1/4$ of the work.

C did in 5 days $1 - \frac{1}{3} + \frac{1}{4} = \frac{5}{12}$ of the work

Since A, B, C did in 5 days $1/3, 1/4, 5/12$ of the work respectively.

$$\text{A's share} = ₹ 45 \times \frac{1}{3} = ₹ 15$$

$$\text{B's share} = ₹ 45 \times \frac{1}{4} = ₹ 11.25$$

$$\text{C's share} = ₹ 45 \times \frac{5}{12} = ₹ 18.75$$

EXAMPLE 24. If 8 men, working 9 hours per day can build a wall 18 meter long, 2 meters wide and 12 meters high in 10 days, how many men will be required to build a wall 32 meters long, 3 meters wide and 9 meters high by working 6 hours a day in 8 days?

Sol. This method is a substitute for the conventional method and can be safely employed for most of the problems.

Step 1 : Assume the thing to be found as 'X'

Step 2 : In the first place look for X's counterpart.

e.g. in the above example, X = no. of men

So X's counterpart = No. of men, given = 8.

So write $X = 8x$

Now see the direct and indirect variation or simply see by which operation more men will be required & by which fewer:

$$\text{We have } X = 8 \times \frac{32}{18} \times \frac{3}{2} \times \frac{9}{12} \times \frac{10}{8} \times \frac{9}{6} = 30 \text{ men}$$

SHORTCUT METHOD

Given that

$$M_1 = 8 \text{ men}$$

$$M_2 = x \text{ (Let)}$$

$$t_1 = 9 \text{ hour}$$

$$t_2 = 6 \text{ hour}$$

$$D_1 = 10 \text{ days}$$

$$D_2 = 8 \text{ days}$$

$$W_1 = 18 \times 2 \times 12 \text{ m}^3$$

$$W_2 = 32 \times 3 \times 9 \text{ m}^3$$

$$\text{Now, } \frac{M_1 t_1 d_1}{w} = \frac{M_2 t_2 d_2}{w^2}$$

$$= \frac{8 \times 9 \times 10}{18 \times 2 \times 12} = \frac{x \times 6 \times 8}{32 \times 3 \times 9} = \boxed{x = 30 \text{ men}}$$

EXAMPLE 25. If 5 engines consume 6 tonnes of coal when each runs 9 hours per day, how much coal will be needed for 8 engines, each running 10 hours per day, it being given that 3 engines of the former type consume as much as 4 engines of latter type?

$$\text{Sol. We have } X = 6 \times \frac{8}{5} \times \frac{10}{9} \times \frac{3}{4} = 8 \text{ tons}$$

Explanation : (1) More engines more coal (> 1)

(2) More time, more coal (> 1)

(3) Latter consumes less coal than former (< 1).

In case of men working we have more time, less men (< 1) but here we have more time, more coal (> 1).

Here let $W = 6$ tonnes $\equiv 5 \times 9 \times 4/3$ engine hours

and let $X \equiv 8 \times 10 \times 1$ engine hours.

$$\text{or } X = 6 \text{ tons} \times \frac{8 \times 10 \times 1}{5 \times 9 \times (4/3)} = 8 \text{ tons}$$

SHORTCUT METHOD**Given that**

$$\begin{array}{ll} M_1 = 5 \text{ engines} & M_2 = 8 \text{ engines} \\ t_1 = 9 \text{ hour} & t_2 = 10 \text{ hour} \\ w_1 = 6 \text{ tones} & n_2 = (\text{efficiency}) \\ n_1 (\text{efficiency}) = 4 & w_2 = x (\text{let}) \end{array}$$

$$\text{Now, } \frac{m_1 t_1 n_1}{w_1} = \frac{m_2 t_2 n_2}{w_2}$$

$$\therefore \frac{5 \times 9 \times 4}{6} = \frac{8 \times 10 \times 3}{x}$$

$$x = 8 \text{ tonnes}$$

EXAMPLE 26. A garrison of 1500 men is provisioned for 60 days. After 25 days the garrison is reinforced by 500 men, how long will the remaining provisions last ?

Sol. Since the garrison is reinforced by 500 men therefore then are (1500 + 500) or 2000 men now, since $60 - 25 = 35$ days.
 \Rightarrow The provisions left would last 1500 men 35 days
 \Rightarrow Provisions left would last 1 man 35×1500 days
 \Rightarrow Provisions left would last 2000 men

$$35 \times \frac{1500}{2000} = 26.25 \text{ days}$$

By work equivalence method

$$1500 \times 60 = (1500 \times 25) + (2000 \times X)$$

Solve to get $X = 26.25$ days.

EXAMPLE 27. 40 men can cut 60 trees in 8 hours. If 8 men leaves the job how many trees will be cut in 12 hours ?

Sol. 40 men – working 8 hours – cut 60 trees

$$\text{or, 1 man – working 1 hour – cuts } \frac{60}{40 \times 8} \text{ trees}$$

$$\text{Thus, 32 men – working 12 hours – cuts } \frac{60 \times 32 \times 12}{40 \times 8} = 72 \text{ trees.}$$

Using basic concepts :

$$M_1 = 40, D_1 = 8 \text{ (As days and hrs both denote time)}$$

$$W_1 = 60 \text{ (cutting of trees is taken as work)}$$

$$M_2 = 40 - 8 = 32, D_2 = 12, W_2 = ?$$

Putting the values in the formula

$$M_1 D_1 W_2 = M_2 D_2 W_1$$

$$\text{We have, } 40 \times 8 \times W_2 = 32 \times 12 \times 60$$

$$\text{or, } W_2 = \frac{32 \times 12 \times 60}{40 \times 8} = 72 \text{ trees.}$$

EXAMPLE 28. I can finish a work in 15 days at 8 hours a day.

You can finish it in $6\frac{2}{3}$ days at 9 hrs a day. Find in how many days we can finish it working together 10 hrs a day.

Sol. First suppose each of us works for only one hr a day.

Then I can finish the work in $15 \times 8 = 120$ days and you can

$$\text{finish the work in } \frac{20}{3} \times 9 = 60 \text{ days.}$$

But here we are given that we do the work 10 hrs a day. Then clearly we can finish the work in 4 days.

EXAMPLE 29. A can do a work in 6 days. B takes 8 days to complete it. C takes as long as A and B would take working together. How long will it take B and C to complete the work together ?

$$\text{Sol. (A + B) can do the work in } \frac{6 \times 8}{6+8} = \frac{24}{7} \text{ days.}$$

$$\therefore \text{C takes } \frac{24}{7} \text{ days to complete the work.}$$

$$\therefore \text{(B + C) takes } \frac{\frac{24}{7} \times 8}{\frac{24}{7} + 8} = \frac{24 \times 8}{24 + 56} = 2\frac{2}{5} \text{ days.}$$

EXAMPLE 30. A group of 20 cows can graze a field 3 acres in size in 10 days. How many cows can graze a field twice as large in 8 days ?

Sol. Here, first of all, let us see how work can be defined. It is obvious that work can be measured as “acres grazed”.

In the first case, there were 20 cows in the group.

They had to work for 10 days to do the work which we call W (which = 3)

$$\Rightarrow 20 \times 10 = 3 \text{ (1)}$$

Do not be worried about the numerical values on either side.

The point is that logically this equation is consistent as the LHS indicates “Cowdays” and the RHS indicates “Acres”, both of which are correct ways of measuring work done.

Now the field is twice as large. Hence the new equation is

$$\Rightarrow C \times 8 = 6 \text{ (2)}$$

Just divide (2) by (1) to get the answer.

$$\frac{8C}{200} = \frac{6}{3}$$

$$\Rightarrow 8C = 2 \times 200 \Rightarrow C = \frac{400}{8} = 50 \text{ cows.}$$

Hence, there were 50 cows in the second group.

SHORTCUT METHOD

$$\text{No. of cows (M}_1\text{)} = 20$$

$$\text{No. of cows (m}_2\text{)} = 2$$

$$\text{No. of dogs (D}_1\text{)} = 10$$

$$\text{No. of dogs (d}_2\text{)} = 8$$

$$\text{Field graze (w}_1\text{)} = 3$$

$$\text{Field graze} = 3 \times 2 = 6$$

Now, By formula

$$\frac{M_1 d_1}{W_1} = \frac{M_2 d_2}{W_2}$$

$$\Rightarrow \frac{20 \times 10}{3} = \frac{n_2 \times 8}{6}$$

$$n_2 = 50 \text{ cows}$$

EXAMPLE 31. In how many days can the work be completed by A and B together ?

I. A alone can complete the work in 8 days.

II. If A alone works for 5 days and B alone works for 6 days, the work gets completed.

III. B alone can complete the work in 16 days.

(a) I and II only

(b) II and III only

(c) Any two of the three (d) II and either I or III

Sol. (c) I. A can complete the job in 8 days. So, A's 1 days' work

$$= \frac{1}{8}$$

II. A works for 5 days, B works for 6 days and the work is completed.

III. B can complete the job in 16 days. So B's 1 days's work

$$= \frac{1}{16}$$

$$\text{I and III : (A + B)'s 1 days' work} = \left(\frac{1}{8} + \frac{1}{16} \right) = \frac{3}{16}$$

\therefore Both can finish the work in $\frac{16}{3}$ days.

II and III : Suppose A takes x days to finish the work

$$\text{Then, } \frac{5}{x} + \frac{6}{16} = 1 \Rightarrow \frac{5}{x} = \left(1 - \frac{3}{8} \right) = \frac{5}{8} \Rightarrow x = 8$$

$$\therefore \text{ (A + B)'s 1 days' work} = \left(\frac{1}{8} + \frac{1}{16} \right) = \frac{3}{16}$$

\therefore Both can finish it in $\frac{16}{3}$ days.

$$\text{I and II : A' 1 day's work} = \frac{1}{8}.$$

Suppose B takes x days to finish the work

$$\text{Then from II, } \left(5 \times \frac{1}{8} + 6 \times \frac{1}{x} = 1 \right)$$

$$\Rightarrow \frac{6}{x} = \left(1 - \frac{5}{8} \right) = \frac{3}{8} \Rightarrow x = \left(\frac{8 \times 6}{3} \right) = 16$$

$$\therefore \text{ (A + B)'s 1 days' work} = \left(\frac{1}{8} + \frac{1}{16} \right) = \frac{3}{16}$$

\therefore Both can finish it in $\frac{16}{3}$ days.

EXAMPLE 32. In how many days can the work be done by 9 men and 15 women ?

I. 6 men and 5 women can complete the work in 6 days

II. 3 men and 4 women can complete the work in 10 days

III. 18 men and 15 women can complete the work in 2 days.

(a) III only (b) All I, II and III

(c) Any two of the three (d) Any of the three

Sol. (c) Clearly, any two of the three will give two equations in x and y, which can be solved simultaneously.

For example I and II together give

$$\left(6x + 5y = \frac{1}{6}, 3x + 4y = \frac{1}{10} \right)$$

EXAMPLE 33. 8 men and 14 women are working together in a field. After working for 3 days, 5 men and 8 women leave the work. How many more days will be required to complete the work ?

I. 19 men and 12 women together can complete the work in 18 days.

II. 16 men complete two-third of the work in 16 days

III. In a day, the work done by three men is equal to the work done by four women.

(a) I only (b) II only

(c) III only (d) I or II or III

Sol. (d) Clearly, I only gives the answer

Similarly, II only gives the answer

And, III only gives the answer

PIPES AND CISTERNS

The same principle of Time and Work is employed to solve the problems on Pipes and Cisterns. The only difference is that in this case, the work done is in terms of filling or emptying a cistern (tank) and the time taken is the time taken by a pipe or a leak (crack) to fill or empty a cistern respectively.

Inlet : A pipe connected with a tank (or a cistern or a reservoir) is called an inlet, if it fills it.

Outlet : A pipe connected with a tank is called an outlet, if it empties it.

Shortcut Approach

↪ If a pipe can fill a tank in x hours, then the part filled in 1 hour = $\frac{1}{x}$

↪ If a pipe can empty a tank in y hours, then the part of the full tank emptied in 1 hour = $\frac{1}{y}$.

↪ If a pipe can fill a tank in x hours and another pipe can empty the full tank in y hours, then the net part filled in 1 hour, when both the pipes are opened = $\left(\frac{1}{x} - \frac{1}{y} \right)$.

\therefore Time taken to fill the tank, when both the pipes are opened = $\frac{xy}{y-x}$.

↪ If a pipe can fill or empties tank in x hours and another can fill or empties the same tank in y hours, then time taken to fill or empty the tank = $\frac{xy}{y+x}$, when both the pipes are opened

↪ If a pipe fills a tank in x hours and another fills the same tank in y hours, but a third one empties the full tank in z hours, and all of them are opened together, then net part filled in 1 hr = $\left[\frac{1}{x} + \frac{1}{y} - \frac{1}{z} \right]$

\therefore Time taken to fill the tank = $\frac{xyz}{yz + xz - xy}$ hours.

↪ A pipe can fill a tank in x hrs. Due to a leak in the bottom it is filled in y hrs. If the tank is full, the time taken by the leak to empty the tank = $\frac{xy}{y-x}$ hrs.

↪ A cistern has a leak which can empty it in X hours. A pipe which admits Y litres of water per hour into the cistern is turned on and now the cistern is emptied in Z hours. Then the capacity of the cistern is $\frac{X+Y+Z}{Z-X}$ litres.

↪ A cistern is filled by three pipes whose diameters are X cm., Y cm. and Z cm. respectively (where $X < Y < Z$). Three pipes are running together. If the largest pipe alone will fill it in P minutes and the amount of water flowing in by each pipe is proportional to the square of its diameter, then the time in which the cistern will be filled by the three pipes is

$$\left[\frac{PZ^2}{X^2 + Y^2 + Z^2} \right] \text{ minutes.}$$

↪ If one filling pipe A is n times faster and takes X minutes less time than the other filling pipe B, then the time they will take to fill a cistern, if both the pipes are opened together, is

$$\left[\frac{nX}{n^2 - 1} \right] \text{ minutes. A will fill the cistern in } \left(\frac{X}{n-1} \right) \text{ minutes}$$

and B will take to fill the cistern $\left(\frac{nX}{n-1} \right)$ minutes.

Here, A is the faster filling pipe and B is the slower one.

↪ Two filling pipes A and B opened together can fill a cistern in t minutes. If the first filling pipe A alone takes X minutes more or less than t and the second fill pipe B along takes Y minutes more or less than t minutes, then t is given by $[t = \sqrt{xy}]$ minutes.

EXAMPLE 34. A pipe can fill a cistern in 6 hours. Due to a leak in its bottom, it is filled in 7 hours. When the cistern is full, in how much time will it be emptied by the leak?

- (a) 42 hours (b) 40 hours
(c) 43 hours (d) 45 hours

Sol. (a) Part of the capacity of the cistern emptied by the leak

$$\text{in one hour} = \left(\frac{1}{6} - \frac{1}{7} \right) = \frac{1}{42} \text{ of the cistern.}$$

The whole cistern will be emptied in 42 hours.

EXAMPLE 35. Three pipes A, B and C can fill a cistern in 6 hrs. After working together for 2 hrs, C is closed and A and B fill the cistern in 8 hrs. Then find the time in which the cistern can be filled by pipe C.

Sol. $A + B + C$ can fill in 1 hr = $\frac{1}{6}$ of cistern.

$$A + B + C \text{ can fill in 2 hrs} = \frac{2}{6} = \frac{1}{3} \text{ of cistern.}$$

$$\text{Remaining part} = \left(1 - \frac{1}{3} \right) = \frac{2}{3} \text{ is filled by A + B in 8 hrs.}$$

$$\therefore (A + B) \text{ can fill the cistern in } \frac{8 \times 3}{2} = 12 \text{ hrs.}$$

Since $(A + B + C)$ can fill the cistern in 6 hrs.

$\therefore C = (A + B + C) - (A + B)$ can fill the cistern in

$$\frac{12 \times 6}{12 - 6} \text{ hours} = 12 \text{ hours.}$$

EXAMPLE 36. Pipe A can fill a tank in 20 hours while pipe B alone can fill it in 30 hours and pipe C can empty the full tank in 40 hours. If all the pipes are opened together, how much time will be needed to make the tank full?

Sol. By direct formula,

$$\begin{aligned} \text{The tank will be fill in} &= \frac{20 \times 30 \times 40}{30 \times 40 + 20 \times 40 - 20 \times 30} \\ &= \frac{120}{7} = 17\frac{1}{7} \text{ hrs.} \end{aligned}$$

EXAMPLE 37. Three pipes A, B and C can fill a tank in 6 minutes, 8 minutes and 12 minutes, respectively. The pipe C is closed 6 minutes before the tank is filled. In what time will the tank be full?

- (a) 4 min (b) 6 min
(c) 5 min (d) Data inadequate

Sol. (a) Let it takes t minutes to completely fill the tank.

$$\text{Now, } \frac{t}{6} + \frac{t}{8} + \frac{t-6}{12} = 1$$

$$\text{or } \frac{4t + 3t + 2t - 12}{24} = 1$$

$$\text{or } 9t - 12 = 24$$

$$\text{or } 9t = 36 \Rightarrow t = 4 \text{ min.}$$

EXAMPLE 38. If three taps are opened together, a tank is filled in 12 hrs. One of the taps can fill it in 10 hrs and another in 15 hrs. How does the third tap work?

Sol. We have to find the nature of the third tap, whether it is a filler or a waste pipe.

Let it be a filler pipe which fills in x hrs.

$$\text{Then, } \frac{10 \times 15 \times x}{10 \times 15 + 10x + 15x} = 12$$

$$\text{or, } 150x = 150 \times 12 + 25x \times 12$$

$$\text{or } -150x = 1800 \quad \therefore x = -12$$

-ve sign shows that the third pipe is a waste pipe which vacates the tank in 12 hrs.

EXAMPLE 39. 4 pipes can fill a reservoir in 15, 20, 30 and 60 hours respectively. The first was opened at 6 am, second at 7 am third at 8 am and fourth at 9 am. When will the reservoir be full?

Sol. (1) Let the time be t hours after 6 am.

$$\therefore \frac{1}{15} \times t + \frac{(t-1)}{20} + \frac{(t-2)}{30} + \frac{(t-3)}{60} = 1$$

$$\therefore 4t + 3(t-1) + 2(t-2) + (t-3) = 60$$

$$\therefore t = 7 \text{ hours} \quad \therefore \text{It is filled at 1 pm}$$

EXAMPLE 40. A and B can fill a cistern in 7.5 minutes and 5 minutes respectively and C can carry off 14 litres per minute. If the cistern is already full and all the three pipes are opened, then it is emptied in 1 hour. How many litres can it hold?

Sol. If the capacity is L litres, water filled in 1 hour = Water removed in 1 hour.

$$L + \frac{L}{7\frac{1}{2}} \times 60 + \frac{L}{5} \times 60 = 14 \times 60$$

$$\therefore L + \frac{2L}{15} \times 60 + 12L = 14 \times 60 \Rightarrow L + 8L + 12L = 14 \times 60$$

$$\Rightarrow 21L = 14 \times 60 \text{ or } L = 40 \text{ litres.}$$

So the capacity of the cistern is 40 litres.

EXAMPLE 41. A cistern can be filled by two taps A and B in 25 minutes and 30 minutes respectively can be emptied by a third in 15 minutes. If all the taps are turned on at the same moment, what part of the cistern will remain unfilled at the end of 100 minutes?

Sol. We have $\frac{1}{25} + \frac{1}{30} - \frac{1}{15} = \frac{1}{150}$ part filled in 1 minute

Hence, $1 - 100 \left(\frac{1}{150} \right) = 1/3$ rd of the tank is unfilled after 100 minutes.

EXAMPLE 42. A barrel full of beer has 2 taps one midway, which draw a litre in 6 minutes and the other at the bottom, which draws a litre in 4 minutes. The lower tap is lower normally used after the level of beer in the barrel is lower than midway. The capacity of the barrel is 36 litres. A new assistant opens the lower tap when the barrel is full and draws out some beer. As a result the lower tap has been used 24 minutes before the usual time. For how long was the beer drawn out by the new assistant?

Sol. The top tap is operational till 18 litres is drawn out.

\therefore Time after which the lower tap is usually open

$$= 18 \times 6 = 108 \text{ minutes}$$

\therefore Time after which it is open now = $108 - 24 = 84$ minutes

\therefore Litres drawn = $84/6 = 14$ litres

$\therefore 18 - 14 = 4$ litres were drawn by the new assistant.

\therefore Time = $4 \times 4 = 16$ minutes

EXAMPLE 43. A cistern can be filled by two pipes filling separately in 12 and 16 min. respectively. Both pipes are opened together for a certain time but being clogged, only $7/8$ of the full quantity of water flows through the former and only $5/6$ through the latter pipe. The obstructions, however, being suddenly removed, the cistern is filled in 3 min. from that moment. How long was it before the full flow began?

(a) 2.5 min

(b) 4.5 min

(c) 3.5 min

(d) 5.5 min

Sol. (b) Both the pipes A and B can fill $\frac{1}{12} + \frac{1}{16} = \frac{7}{48}$ of the

cistern in one minute, when there is no obstruction.

With obstruction, both the pipes can fill

$\frac{1}{12} \times \frac{7}{8} + \frac{1}{16} \times \frac{5}{6} = \frac{7}{96} + \frac{5}{96} = \frac{1}{8}$ of the cistern in one

minute.

Let the obstructions were suddenly removed after x minutes.

\therefore With obstruction, $\frac{x}{8}$ of the cistern could be filled

in x minutes and so the remaining $1 - \frac{x}{8} = \frac{8-x}{8}$ of the

cistern was filled without obstruction in 3 minutes, i.e.

In one minute, $\frac{8-x}{24}$ of the cistern was filled.

$$\Rightarrow \frac{8-x}{24} = \frac{7}{48} \Rightarrow 16 - 2x = 7 \Rightarrow x = 4.5$$

EXERCISE

1. 12 men take 18 days to complete a job whereas 12 women in 18 days can complete $\frac{3}{4}$ of the same job. How many days will 10 men and 8 women together take to complete the same job?
 - (a) 6
 - (b) $13\frac{1}{2}$
 - (c) 12
 - (d) Data inadequate
 - (e) None of these
2. Seven men and four boys can complete a work in 6 days. A man completes double the work than a boy. In how many days will 5 men and 4 boys complete the work?
 - (a) 5
 - (b) 4
 - (c) 6
 - (d) Cannot be determined
 - (e) None of these
3. The work done by a woman in 8 hours is equal to the work done by a man in 6 hours and by a boy in 12 hours. If working 6 hours per day, 9 men can complete a work in 6 days then in how many days can 12 men, 12 women and 12 boys together finish the same work by working 8 hours per day?
 - (a) $1\frac{1}{3}$ days
 - (b) $3\frac{2}{3}$ days
 - (c) 3 days
 - (d) $1\frac{1}{2}$ days
 - (e) None of these
4. Tap 'A' can fill a water tank in 25 minutes, tap 'B' can fill the same tank in 40 minutes and tap 'C' can empty that tank in 30 minutes. If all the three taps are opened together, in how many minutes will the tank be completely filled up or emptied?
 - (a) $3\frac{2}{13}$
 - (b) $15\frac{5}{13}$
 - (c) $8\frac{2}{13}$
 - (d) $31\frac{11}{19}$
 - (e) None of these
5. Machine A can print one lakh books in 8 hours. Machine B can do the same job in 10 hours. Machine C can do the same job in 12 hours. All the three machines start job at 9.00 am. A breaks down at 11.00 am and the other two machines finish the job. **Approximately** at what time will the job be finished?
 - (a) 12.00 noon
 - (b) 1.30 pm
 - (c) 1.00 pm
 - (d) 11.30 am
 - (e) None of these
6. Suresh can complete a job in 15 hours. Ashutosh alone can complete the same job in 10 hours. Suresh works for 9 hours and then the remaining job is completed by Ashutosh. How many hours will it take Ashutosh to complete the remaining job alone?
 - (a) 4
 - (b) 5
 - (c) 6
 - (d) 12
 - (e) None of these
7. 10 men and 15 women finish a work in 6 days. One man alone finishes that work in 100 days. In how many days will a woman finish the work?
 - (a) 125 days
 - (b) 150 days
 - (c) 90 days
 - (d) 225 days
 - (e) None of these
8. A tank is filled in 5 hours by three pipes A, B and C. The pipe C is twice as fast as B and B is twice as fast as A. How much time will pipe A alone take to fill the tank?
 - (a) 35 hours
 - (b) 25 hours
 - (c) 20 hours
 - (d) Cannot be determined
 - (e) None of these
9. 24 men working 8 hours a day can finish a work in 10 days. Working at the rate of 10 hours a day, the number of men required to finish the same work in 6 days is :
 - (a) 30
 - (b) 32
 - (c) 34
 - (d) 36
 - (e) None of these
10. A water tank is $\frac{2}{5}$ th full. Pipe A can fill the tank in 10 minutes and the pipe B can empty it in 6 minutes. If both the pipes are open, how long will it take to empty or fill the tank completely?
 - (a) 6 minutes to empty
 - (b) 6 minutes to fill
 - (c) 9 minutes to empty
 - (d) 9 minutes to fill
 - (e) None of these
11. A water tank has three taps A, B and C. Tap A, when opened, can fill the water tank alone in 4 hours. Tap B, when opened, can fill the water tank alone in 6 hours and tap C, when opened, can empty the water tank alone in 3 hours. If taps A, B and C are opened simultaneously, how long will it take to fill the tank completely?
 - (a) 10 hours
 - (b) 8 hours
 - (c) 18 hours
 - (d) 12 hours
 - (e) None of these
12. Twenty-four men can complete a work in sixteen days. Thirty-two women can complete the same work in twenty-four days. Sixteen men and sixteen women started working and worked for twelve days. How many more men are to be added to complete the remaining work in 2 days?
 - (a) 48
 - (b) 24
 - (c) 36
 - (d) 16
 - (e) None of the above
13. The total monthly income of four men and two women is ₹ 46,000. If every woman earns ₹ 500 more than a man then what is the monthly income of a woman?
 - (a) ₹ 7,500
 - (b) ₹ 8,000
 - (c) ₹ 9,000
 - (d) ₹ 6,500
 - (e) None of these

14. 10 men can complete a piece of work in 15 days and 15 women can complete the same work in 12 days. If all the 10 men and 15 women work together, in how many days will the work get completed?
- (a) 6 (b) $7\frac{2}{3}$
(c) $6\frac{2}{3}$ (d) $6\frac{1}{3}$
(e) None of these
15. 'A' completes a work in 12 days. 'B' completes the same work in 15 days. 'A' started working alone and after 3 days B joined him. How many days will they now take together to complete the remaining work?
- (a) 5 (b) 8
(c) 6 (d) 4
(e) None of these
16. Rajani has to read a book of 445 pages. She has already read the first 157 pages of the book and if she reads 24 pages of the book everyday then how long will she take now to complete the book?
- (a) 25 days (b) 20 days
(c) 46 days (d) 21 days
(e) None of these
17. 10 horses and 15 cows eat grass of 5 acres in a certain time. How many acres will feed 15 horses and 10 cows for the same time, supposing a horse eats as much as 2 cows?
- (a) $40/7$ acres (b) $39/8$ acres
(c) $40/11$ acres (d) $25/9$ acres
(e) None of these
18. X and Y can do job in 25 days and 30 days respectively. They work together for 5 days and then X leaves. Y will finish the rest of the work in how many days?
- (a) 18 days (b) 19 days
(c) 20 days (d) 21 days
(e) None of these
19. A and B can do a job in 16 days and 12 days respectively. 4 days before finishing the job, A joins B. B has started the work alone. Find how many days B has worked alone?
- (a) 6 days (b) 4 days
(c) 5 days (d) 7 days
(e) None of these
20. A contractor undertakes to build a wall in 50 days. He employs 50 people for the same. However after 25 days he finds that only 40% of the work is complete. How many more men need to be employed to complete the work in time?
- (a) 25 (b) 30
(c) 35 (d) 20
(e) None of these
21. A is 30% more efficient than B. How much time will they, working together, take to complete a job which A alone could have done in 23 days?
- (a) 11 days (b) 13 days
(c) $20\frac{3}{17}$ days (d) 12 days
(e) None of these
22. A and B can finish a work in 10 days while B and C can do it in 18 days. A started the work, worked for 5 days, then B worked for 10 days and the remaining work was finished by C in 15 days. In how many days could C alone have finished the whole work?
- (a) 30 days (b) 15 days
(c) 45 days (d) 24 days
(e) None of these
23. 12 men complete a work in 18 days. Six days after they had started working, 4 men joined them. How many days will all of them take to complete the remaining work?
- (a) 10 days (b) 12 days
(c) 15 days (d) 9 days
(e) None of these
24. A tyre has two punctures. The first puncture alone would have made the tyre flat in 9 minutes and the second alone would have done it in 6 minutes. If air leaks out at a constant rate, how long does it take both the punctures together to make it flat?
- (a) $1\frac{1}{2}$ minutes (b) $3\frac{1}{2}$ minutes
(c) $3\frac{3}{5}$ minutes (d) $4\frac{1}{4}$ minutes
(e) None of these
25. A man, a woman or a boy can do a job in 20 days, 30 days or 60 days respectively. How many boys must assist 2 men and 8 women to do the work in 2 days?
- (a) 15 boys (b) 8 boys
(c) 10 boys (d) 11 boys
(e) None of these
26. A can do 50% more work as B can do in the same time. B alone can do a piece of work in 20 hours. A, with help of B, can finish the same work in how many hours?
- (a) 12 (b) 8
(c) $13\frac{1}{3}$ (d) $5\frac{1}{2}$
(e) None of these
27. If 15 women or 10 men can complete a project in 55 days, in how many days will 5 women and 4 men working together complete the same project?
- (a) 75 (b) 8
(c) 9 (d) 85
(e) None of these
28. 12 buckets of water fill a tank when the capacity of each tank is 13.5 litres. How many buckets will be needed to fill the same tank, if the capacity of each bucket is 9 litres?
- (a) 8 (b) 15
(c) 16 (d) 18
(e) None of these

29. Water flows at 3 metres per sec through a pipe of radius 4 cm. How many hours will it take to fill a tank 40 metres long, 30 metres broad and 8 metres deep, if the pipe remains full?
 (a) 176.6 hours (b) 120 hour
 (c) 135.5 hours (d) None of these
 (e) None of these
30. A can do a piece of work in 10 days, while B alone can do it in 15 days. They work together for 5 days and the rest of the work is done by C in 2 days. If they get ₹ 450 for the whole work, how should they divide the money?
 (a) ₹ 225, ₹ 150, ₹ 75 (b) ₹ 250, ₹ 100, ₹ 100
 (c) ₹ 200, ₹ 150, ₹ 100 (d) ₹ 175, ₹ 175, ₹ 100
 (e) None of these
31. A alone would take 8 days more to complete the job than if both A and B would together. If B worked alone, he took $4\frac{1}{2}$ days more to complete the job than A and B worked together. What time would they take if both A and B worked together?
 (a) 7 days (b) 5 days
 (c) 4 days (d) 6 days
 (e) None of these
32. A alone can complete work in 15 days and B alone in 20 days. Starting with A, the work on alternate days. The total work will be completed in
 (a) 17 days (b) 16 days
 (c) 14 days (d) 13 days
 (e) None of these
33. A contractor undertook to do a piece of work in 9 days. He employed certain number of labourers but 6 of them were absent from the very first day and the rest could finish the work in only 15 days. Find the number of men originally employed.
 (a) 15 (b) 6
 (c) 13 (d) 9
 (e) None of these
34. After working for 8 days, Anil finds that only $\frac{1}{3}$ of the work has been done. He employs Rakesh who is 60% efficient as Anil. How many more days will Anil take to complete the job?
 (a) 15 days (b) 12 days
 (c) 10 days (d) 8 days
 (e) None of these
35. A sum of ₹ 25 was paid for a work which A can do in 32 days, B in 20 days, B and C in 12 days and D in 24 days. How much did C receive if all the four work together?
 (a) ₹ $\frac{14}{3}$ (b) ₹ $\frac{16}{3}$
 (c) ₹ $\frac{15}{3}$ (d) ₹ $\frac{17}{3}$
 (e) None of these
36. A and B can do a job in 15 days and 10 days, respectively. They began the work together but A leaves after some days and B finished the remaining job in 5 days. After how many days did A leave?
 (a) 2 days (b) 3 days
 (c) 1 day (d) 4 days
 (e) None of these
37. Mr. Suresh is on tour and he has ₹ 360 for his expenses. If he exceeds his tour by 4 days he must cut down daily expenses by ₹ 3. The number of days of Mr. Suresh's tour programme is :
 (a) 20 days (b) 24 days
 (c) 40 days (d) 42 days
 (e) None of these
38. A can knit a pair of socks in 3 days. B can knit the same thing in 6 days. If they are knitting together, in how many days will they knit two pairs of socks?
 (a) 4 days (b) 2 days
 (c) $4\frac{1}{2}$ days (d) 3 days
 (e) None of these
39. A can do a job in 3 days less time than B. A works at it alone for 4 days and then B takes over and completes it. If altogether 14 days were required to finish the job, how many days would each of them take alone to finish it?
 (a) 17 days, 20 days (b) 12 days, 15 days
 (c) 13 days, 16 days (d) 14 days, 11 days
 (e) None of these
40. Two workers A and B working together completed a job in 5 days. If A worked twice as efficiently as he actually did and B worked $\frac{1}{3}$ as efficiently as he actually did, the work would have completed in 3 days. Find the time for A to complete the job alone.
 (a) $6\frac{1}{4}$ days (b) $5\frac{3}{4}$ days
 (c) 5 days (d) 3 days
 (e) None of these
41. X can do a piece of work in 15 days. If he is joined by Y who is 50% more efficient, in what time will X and Y together finish the work?
 (a) 10 days (b) 6 days
 (c) 18 days (d) Data insufficient
 (e) None of these
42. A can build up a wall in 8 days while B can break it in 3 days. A has worked for 4 days and then B joined to work with A for another 2 days only. In how many days will A alone build up the remaining part of wall?
 (a) $13\frac{1}{3}$ days (b) $7\frac{1}{3}$ days
 (c) $6\frac{1}{3}$ days (d) 7 days
 (e) None of these
43. Sakshi can do a piece of work in 20 days. Tanya is 25% more efficient than Sakshi. The number of days taken by Tanya to do the same piece of work is:
 (a) 15 (b) 16
 (c) 18 (d) 25
 (e) None of these

44. Two taps can fill a tank in 12 and 18 minutes respectively. Both are kept open for 2 minutes and the first is turned off. In how many minutes more will the tank be filled ?
 (a) 15 min. (b) 20 min.
 (c) 11 min. (d) 13 min.
 (e) None of these
45. A cistern normally takes 6 hours to be filled by a tap but because of a leak, 2 hours more. In how many hours will the leak empty a full cistern ?
 (a) 20 hours (b) 24 hours
 (c) 26 hours (d) 18 hours
 (e) None of these
46. One fill pipe A is 3 times faster than second fill pipe B and takes 10 minutes less time to fill a cistern than B takes. Find when the cistern will be full if fill pipe B is only opened.
 (a) 20 min (b) 18 min
 (c) 15 min (d) 10 min
 (e) None of these
47. Two pipes can fill a cistern in 14 and 16 hours respectively. The pipes are opened simultaneously and it is found that due to leakage in the bottom, 32 minutes extra are taken for the cistern to be filled up. If the cistern is full, in what time would the leak empty it ?
 (a) 110 hours (b) 112 hours
 (c) 115 hours (d) 100 hours
 (e) None of these
48. Two pipes A and B can fill a cistern in 10 and 15 minutes respectively. Both fill pipes are opened together, but at the end of 3 minutes, 'B' is turned off. How much time will the cistern take to fill ?
 (a) 6 min (b) 8 min
 (c) 10 min (d) 12 min
 (e) None of these
49. A cistern has two taps which fill it in 12 minutes and 15 minutes respectively. There is also a waste pipe in the cistern. When all the three are opened, the empty cistern is full in 20 minutes. How long will the waste pipe take to empty the full cistern ?
 (a) 10 min (b) 12 min
 (c) 15 min (d) 9 min
 (e) None of these
50. Two taps A and B can fill a cistern in 12 minutes and 18 minutes respectively. They are turned on at the same time. If the tap A is turned off after 4 minutes, how long will tap B take to fill the rest of the cistern ?
 (a) 8 min. (b) 9 min.
 (c) 10 min. (d) 7 min.
 (e) None of these
51. A pipe can fill a tank in 15 minutes and another one in 10 minutes. A third pipe can empty the tank in 5 minutes. The first two pipes are kept open for 4 minutes in the beginning and then the third pipe is also opened. In what time will the tank be emptied ?
 (a) 35 min (b) 15 min
 (c) 20 min (d) Cannot be emptied
 (e) None of these
52. Two fill pipes A and B can fill a cistern in 12 and 16 minutes respectively. Both fill pipes are opened together, but 4 minutes before the cistern is full, one pipe A is closed. How much time will the cistern take to fill ?
 (a) $9\frac{1}{7}$ min. (b) $3\frac{1}{3}$ min.
 (c) 5 min. (d) 3 min.
 (e) None of these
53. Two fill taps A and B can separately fill a cistern in 45 and 40 minutes respectively. They started to fill a cistern together but tap A is turned off after few minutes and tap B fills the rest part of cistern in 23 minutes. After how many minutes, was tap A turned-off ?
 (a) 9 min (b) 10 min
 (c) 12 min (d) 7 min
 (e) None of these
54. Three fill pipes A, B and C can fill separately a cistern in 3, 4 and 6 minutes respectively. A was opened first. After 1 minute, B was opened and after 2 minutes from the start of A, C was also opened. Find the time when the cistern will be full ?
 (a) $2\frac{1}{9}$ min (b) $4\frac{1}{2}$ min
 (c) $3\frac{3}{4}$ min (d) 3 min
 (e) None of these
55. A tap can fill a tank in 16 minutes and another can empty it in 8 minutes. If the tank is already $\frac{1}{2}$ full and both the taps are opened together, will the tank be filled or emptied? How long will it take before the tank is either filled or emptied completely as the case may be ?
 (a) Emptied; 16 min (b) Filled; 8 min
 (c) Emptied; 8 min (d) Filled; 12 min
 (e) None of these

ANSWER KEY

1	(b)	7	(d)	13	(b)	19	(c)	25	(b)	31	(d)	37	(a)	43	(b)	49	(a)	55	(c)
2	(e)	8	(a)	14	(c)	20	(a)	26	(b)	32	(a)	38	(a)	44	(d)	50	(a)		
3	(d)	9	(b)	15	(a)	21	(b)	27	(a)	33	(a)	39	(b)	45	(b)	51	(c)		
4	(d)	10	(a)	16	(e)	22	(c)	28	(d)	34	(c)	40	(a)	46	(c)	52	(a)		
5	(c)	11	(d)	17	(a)	23	(d)	29	(a)	35	(b)	41	(b)	47	(b)	53	(a)		
6	(a)	12	(b)	18	(b)	24	(c)	30	(a)	36	(b)	42	(b)	48	(b)	54	(a)		

Hints & Explanations

$$1. \quad (b) \quad 12M \times 18 = 12W \times 18 \times \frac{4}{3}$$

$$\therefore 1W = \frac{3}{4}M$$

$$10M + 8W = 10M + 8 \times \frac{3}{4}M = 16M$$

\therefore 16 men can complete the same work

$$\text{in } \frac{12 \times 18}{16} = \frac{27}{2} = 13\frac{1}{2} \text{ days}$$

$$2. \quad (e) \quad M = 2B$$

$$\therefore 7M + 4B = 14B + 4B = 18B$$

$$5M + 4B = 10B + 4B = 14B$$

\therefore 18 boys complete the work in 6 days.

\therefore 14 boys complete the work in

$$\frac{6 \times 18}{14} = 7\frac{5}{7} \text{ days.}$$

Note: 7 men and 4 boys complete the work in 6 days. We have to find out the no. of days in which 5 men and 4 boys complete the work. Here, we see that 4 boys are common in both the cases, therefore, 5 men will take more time to complete the work, i.e., more than 6 days, which is not given in any options. Therefore, without calculating we can say that our answer is (e).

$$3. \quad (d) \quad 8W = 6M = 12B$$

$$12M + 12W + 12B \Rightarrow 12M + 9M + 6M = 27M$$

\therefore 9 men can complete the work by working 1 hour per day in 6×6 days

$$\therefore 27 \text{ men working 8 hours per day} = \frac{6 \times 6 \times 9}{27 \times 8} = 1\frac{1}{2} \text{ days.}$$

$$4. \quad (d) \quad \text{Tank filled in 1 minute} = \frac{1}{25} + \frac{1}{40} - \frac{1}{30} \text{ part}$$

$$= \frac{24 + 15 - 20}{600} = \frac{19}{600} \text{ part}$$

\therefore tank will be filled complete in minutes

$$= \frac{600}{19} = 31\frac{11}{19}$$

$$5. \quad (c) \quad \text{Part of print done by A, B and C in 2}$$

$$\text{hours} = 2 \left(\frac{1}{8} + \frac{1}{10} + \frac{1}{12} \right) = \frac{37}{60}$$

$$\text{Remaining} = 1 - \frac{37}{60} = \frac{23}{60}$$

If B and C print together, then they can print

$$\text{in } \frac{10 \times 12}{10 + 12} \text{ hrs.}$$

Therefore, remaining part can be printed by

$$\text{B and C in } \frac{10 \times 12}{22} \times \frac{23}{60} \approx 2 \text{ hrs}$$

Hence, the job will be finished at
9 am + 2 + 2 = 1.00 p.m.

$$6. \quad (a) \quad \text{The part of job that Suresh completes in 9 hours}$$

$$= \frac{9}{15} = \frac{3}{5}$$

$$\text{Remaining job} = 1 - \frac{3}{5} = \frac{2}{5}$$

Remaining job can be done by Ashutosh in

$$\frac{2}{5} \times 10 = 4 \text{ hours}$$

$$7. \quad (d) \quad 15 \text{ women's work of a day} = \frac{1}{6} - \frac{1}{10} \Rightarrow \frac{1}{15} \text{ part}$$

\therefore for 1 whole part a woman will take
 $= 15 \times 15 = 225$ days.

$$8. \quad (a) \quad \text{Here ratio of efficiencies of pipes A, B and C are as follows:}$$

C	B	A
2	1	
	2	1
4	2	1

Suppose the efficiencies of pipes C, B and A are 4K, 2K and K.

Since, the tank is filled in 5 hours by the three pipes having combined efficiency equal to 7K, the time

$$\text{required to fill the tank by A alone} = \frac{7K \times 5}{K} = 35 \text{ hours}$$

$$9. \quad (b) \quad m_1 \times d_1 \times t_1 \times w_2 = m_2 \times d_2 \times t_2 \times w_1$$

$$24 \times 10 \times 8 \times 1 = m_2 \times 6 \times 10 \times 1$$

$$\Rightarrow m_2 = \frac{24 \times 10 \times 8}{6 \times 10} = 32 \text{ men}$$

$$10. \quad (a)$$

\therefore Pipe A in 1 minute fills $1/10$ part and Pipe B in 1 min.

empties $\frac{1}{6}$ part

$$\therefore \text{Pipe A + B in 1 min} = \frac{1}{10} - \frac{1}{6} = \frac{-1}{15}$$

\therefore $\frac{1}{15}$ part gets emptied in 1 min

$$\therefore \frac{2}{5} \text{ part is emptied in } 15 \times \frac{2}{5} \text{ min} = 6 \text{ min}$$

11. (d) Required time to fill the tank

$$= \frac{1}{\left(\frac{1}{4} + \frac{1}{6}\right) - \frac{1}{3}} = \frac{1}{\frac{5}{12} - \frac{1}{3}} = \frac{1}{\frac{1}{12}} = 12 \text{ h}$$
12. (b) 24 men complete the work in 16 days
 \therefore 16 men complete $\left(\frac{16}{24} \times \frac{12}{16}\right) = \frac{1}{2}$ part of work in 12 days
 32 women complete the work in 24 days
 \therefore 16 women complete $\frac{16}{32} \times \frac{14}{24} = \frac{7}{24}$ part of work in $(12 + 2) = 14$ days
 So, the remaining part of the work which is done by sixteen men + sixteen women and the reqd additional no. of men in 2 days

$$= 1 - \left(\frac{1}{2} + \frac{7}{24}\right) = \frac{1}{2} - \frac{7}{24} = \frac{5}{24} \text{ (part)}$$

 Now, in 2 days $\frac{5}{24}$ part of the work is done by

$$24 \times \frac{16}{2} \times \frac{5}{24} = 40 \text{ men}$$

 Hence, the reqd. additional no. of men
 $= 40 - 16 = 24 \text{ men.}$
13. (b) $4M + 2W = 46000$;
 Again, $W = M + 500$
 or, $M = W - 500$
 $\therefore 4(W - 500) + 2W = 46000$
 or, $6W = 46000 + 2000 = 48000$
 $\therefore W = ₹ 8000$
14. (c) 10 men + 15 women in 1 day do $\frac{1}{15} + \frac{1}{12} = \frac{9}{60}$ work
 \therefore Time taken $= \frac{60}{9} \text{ days} = 6\frac{2}{3} \text{ days}$
15. (a) Work done by 'A' in 3 days

$$= \frac{1}{12} \times 3 = \frac{1}{4}$$

 \therefore Remaining work $= 1 - \frac{1}{4} = \frac{3}{4}$
 Work done by A and B together $= \frac{12 \times 15}{27} = \frac{20}{3}$
 \therefore Remaining work done by A and B together in

$$= \frac{3}{4} \times \frac{20}{3} = 5 \text{ days}$$
16. (e) Remaining pages to read $= 445 - 157 = 288$
 \therefore Reqd. number of days $= \frac{288}{24} = 12$
17. (a) 1 horse = 2 cows, 10 horses = 20 cows.
 \Rightarrow 10 horses + 15 cows = 20 + 15 = 35 cows.
 15 horses + 10 cows = 40 cows. Now 35 cows eat 5 acres.

$$\Rightarrow 40 \text{ cows eat } 5 \times \frac{40}{35} = 5\frac{5}{7} \text{ acres.}$$

Here we have converted everything in terms of cows, you can work in terms of horses also.

18. (b) X's one day's work $= \frac{1}{25}$ th part of whole work.
 Y's one day's work $= \frac{1}{30}$ th part of whole work.
 Their one day's work $= \frac{1}{25} + \frac{1}{30} = \frac{1}{150}$ th part of whole work.
 Now, work is done in 5 days $= \frac{11}{150} \times 5 = \frac{11}{30}$ th of whole work
 \therefore Remaining work $= 1 - \frac{11}{30} = \frac{19}{30}$ th of whole work
 Now, $\frac{1}{30}$ th work is done by Y in one day.
 $\therefore \frac{19}{30}$ th work is done by Y in $\frac{1}{1/30} \times \frac{19}{30} = 19$ days
19. (c) A's one day's work $= \frac{1}{16}$ th work
 B's one day's work $= \frac{1}{12}$ th work
 Let B has worked alone = x days. Then,
 A's amount of work + B's amount of work = 1

$$\Rightarrow 4\left(\frac{1}{16}\right) + (x + 4)\left(\frac{1}{12}\right) = 1$$

$$\Rightarrow \frac{1}{4} + \frac{x + 4}{12} = 1 \Rightarrow x = \frac{3}{4} \times 12 - 4$$

$$\Rightarrow x = 5 \text{ days}$$
20. (a) 50 men complete 0.4 work in 25 days.
 Applying the work rule, $m_1 \times d_1 \times w_2 = m_2 \times d_2 \times w_1$
 we have,

$$50 \times 25 \times 0.6 = m_2 \times 25 \times 0.4$$

 or $m_2 = \frac{50 \times 25 \times 0.6}{25 \times 0.4} = 75 \text{ men}$
 Number of additional men required $= (75 - 50) = 25$
21. (b) Ratio of times taken by A and B = 100 : 130 = 10 : 13.
 Suppose B takes x days to do the work.
 Then, $10 : 13 :: 23 : x \Rightarrow x = \left(\frac{23 \times 13}{10}\right) \Rightarrow x = \frac{299}{10}$
 A's 1 day's work $= \frac{1}{23}$; B's 1 days work $= \frac{10}{299}$.

- (A + B)'s 1 day's work = $\left(\frac{1}{23} + \frac{10}{299}\right) = \frac{23}{299} = \frac{1}{13}$.
- ∴ A and B together can complete the job in 13 days.
22. (c) Let C completes the work in x days.
- Work done by (A + B) in 1 day = $\frac{1}{10}$
- Work done by (B + C) in 1 day = $\frac{1}{18}$
- A's 5 days' work + B's 10 days' work + C's 15 days' work = 1
- or (A + B)'s 5 days' work + (B + C)'s 5 days' work + C's 10 days' work = 1
- or $\frac{5}{10} + \frac{5}{18} + \frac{10}{x} = 1$ or $x = 45$ days
23. (d) In 1 day, work done by 12 men = $\frac{1}{18}$
- In 6 days, work done by 12 men = $\frac{6}{18} = \frac{1}{3}$
- Remaining work = $\frac{2}{3}$
- Now, $m_1 \times d_1 \times w_2 = m_2 \times d_2 \times w_1$
- or $12 \times 18 \times \frac{2}{3} = 16 \times d_2 \times 1$
- or $d_2 = \frac{4 \times 18 \times 2}{16} = 9$ days
24. (c) 1 minute's work of both the punctures = $\left(\frac{1}{9} + \frac{1}{6}\right) = \frac{5}{18}$.
- So, both the punctures will make the tyre flat in $\frac{18}{5} = 3\frac{3}{5}$ min.
25. (b) Man's two day's work = $2 \times \frac{1}{20}$ th work = $\frac{1}{10}$ th work
- Woman's two days's work = $2 \times \frac{1}{30}$ th work = $\frac{1}{15}$ th work
- Boy's two day's work = $2 \times \frac{1}{60}$ th work = $\frac{1}{30}$ th work
- Now, let 2 men, 8 women and x boys can complete work in 2 days. Then,
- 2 men's work + 8 women's work + x boy's work = 1
- $2\left(\frac{1}{10}\right) + 8\left(\frac{1}{15}\right) + x\left(\frac{1}{30}\right) = 1$
- $\Rightarrow x = \left(1 - \frac{1}{5} - \frac{8}{15}\right) \times 30 \Rightarrow x = 8$ boys
26. (b) B alone can do a work in 20 hours.
- ∴ A alone can do $\frac{3}{2}$ of the work in 20 hours.
- i.e., A alone can do the same work in $\frac{40}{3}$ hours
- ∴ (A + B)'s one hour's work = $\frac{3}{40} + \frac{1}{20} = \frac{5}{40} = \frac{1}{8}$
- ⇒ A and B together can finish the whole work in 8 hours.
27. (a) $15W = 10M$
- Now, $5W + 4M = 5W + \frac{4 \times 15}{10}W = 5W + 6W = 11W$
- If 15 women can complete the project in 55 days, 11 women can complete the same project in $\frac{55 \times 15}{11} = 75$ days
28. (d) Capacity of the tank = (12×13.5) litres = 162 litres.
- Capacity of each bucket = 9 litres.
- Number of buckets needed = $\left(\frac{162}{9}\right) = 18$.
29. (a) Radius of the pipe (r) = 4 cm. = 0.04 meter
- Volume of water flowing out per sec = $\pi r^2 \times \text{rate of flow}$
- = $\frac{22}{7} \times 0.04^2 \times 3$ cu meters = 0.0151 cubic m
- Time taken to fill the tank = $40 \times 30 \times \frac{8}{0.0151}$ sec
- = $\frac{40 \times 30 \times 8}{0.01} \times \frac{1}{3600}$ hours = 176.6 hours
30. (a) Work done by A and B in 5 days = $\left(\frac{1}{10} + \frac{1}{15}\right) \times 5 = \frac{5}{6}$
- Work remaining = $1 - \frac{5}{6} = \frac{1}{6}$
- ∴ C alone can do the work in $6 \times 2 = 12$ days
- Ratio of their share work = $\frac{5}{10} : \frac{5}{15} : \frac{2}{12} = 3 : 2 : 1$
- Share of wages = ₹ 225, ₹ 150, ₹ 75.
31. (d) Let if both A and B work together, they take x days.
- ∴ (A + B)'s 1 days's work = $\frac{1}{x}$ th work.
- A's 1 day's work = $\frac{1}{x+8}$ th work.
- B's 1 day's work = $\frac{1}{x+9/2}$ th work.
- Now, $\frac{1}{x+8} + \frac{2}{2x+9} = \frac{1}{x}$

$$\begin{aligned} \Rightarrow x(2x+9+2x+16) &= (x+8)(2x+9) \\ \Rightarrow 4x^2+25x &= 2x^2+25x+72 \\ \Rightarrow x^2 &= 36 \Rightarrow x = 6 \text{ days} \end{aligned}$$

$$32. \quad (a) \quad (A+B)\text{'s } 2 \text{ day's work} = \frac{1}{15} + \frac{1}{20} = \frac{7}{60}$$

$$\text{Work done in 8 pairs of days} = \left(\frac{7}{60} \times 8\right) = \frac{14}{15}$$

$$\text{Remaining work} = \left(1 - \frac{14}{15}\right) = \frac{1}{15}$$

$$\therefore \text{Work done by A on 17th day} = \frac{1}{15}$$

$$\therefore \text{Total time taken} = 17 \text{ days}$$

$$33. \quad (a) \quad \text{Let the number of men originally employed be } x. \\ 9x = 15(x-6) \\ \text{or } x = 15$$

$$34. \quad (c) \quad \text{In 8 days, Anil does} = \frac{1}{3} \text{rd work.}$$

$$\therefore \text{in 1 day, he does} = \frac{1}{24} \text{th work.}$$

$$\therefore \text{Rakesh's one day's work}$$

$$= 60\% \text{ of } \frac{1}{24} = \frac{1}{40} \text{th work.}$$

$$\text{Remaining work} = 1 - \frac{1}{3} = \frac{2}{3}$$

$$\text{(Anil and Rakesh)'s one day's work}$$

$$= \frac{1}{24} + \frac{1}{40} = \frac{1}{15} \text{th work}$$

$$\text{Now, } \frac{1}{15} \text{th work is done by them in one day.}$$

$$\therefore \frac{2}{3} \text{rd work is done by them in } 15 \times \frac{2}{3} = 10 \text{ days}$$

$$35. \quad (b) \quad \text{A's one day's work} = \frac{1}{32}$$

$$\text{B's one day's work} = \frac{1}{20}$$

$$\text{(B+C)'s one day's work} = \frac{1}{12}$$

$$\therefore \text{C's one day's work} = \frac{1}{12} - \frac{1}{20} = \frac{1}{30}$$

$$\text{D's one day's work} = \frac{1}{24}$$

$$\therefore \text{(A+B+C+D)'s one day's work}$$

$$= \frac{1}{32} + \frac{1}{20} + \frac{1}{30} + \frac{1}{24} = \frac{75+120+80+100}{2400}$$

$$= \frac{375}{2400} = \frac{15}{96} = \frac{5}{32}$$

$$\therefore \text{Out of } \frac{5}{32} \text{ of work done,}$$

$$\frac{1}{30} \text{ of the work is done by C.}$$

$$\Rightarrow \text{Out of ₹ 25 paid for the work, C will receive}$$

$$\text{₹ } \frac{1/30}{5/32} \times 25, \text{ i.e. } \frac{1}{30} \times \frac{32}{5} \times 25, \text{ i.e. ₹ } \frac{16}{3}$$

$$36. \quad (b) \quad \text{A's one day's work} = \frac{1}{15} \text{th work.}$$

$$\text{B's one day's work} = \frac{1}{10} \text{th work.}$$

$$\text{(A+B)'s one day's work} = \frac{1}{15} + \frac{1}{10} = \frac{1}{6} \text{th work.}$$

$$\text{Let A left after } x \text{ days.}$$

$$\therefore \text{(A+B)'s } x \text{ days' work} = \frac{x}{6} \text{th work.}$$

$$\text{Remaining work} = 1 - \frac{x}{6} = \frac{6-x}{6} \text{th work.}$$

$$\text{Now, in 5 days, work done by B} = \frac{6-x}{6} \text{th work.}$$

$$\therefore \text{in 1 day work done by B} = \frac{6-x}{30} \text{th work}$$

$$\text{and } \frac{6-x}{30} = \frac{1}{10}$$

$$\therefore x = 3 \text{ days}$$

$$37. \quad (a) \quad \text{Let Suresh undertakes a tour of } x \text{ days.}$$

$$\text{Then, expenses for each day} = \frac{360}{x}$$

$$\text{Now, } \frac{360}{x+4} = \frac{360}{x} - 3$$

$$\text{or } 360 \left(\frac{1}{x} - \frac{1}{x+4} \right) = 3$$

$$\text{or } x^2 + 4x - 480 = 0 \text{ or } x = -24 \text{ or } x = 20$$

$$\text{Since, } x \neq -24 \text{ we have } x = 20$$

$$38. \quad (a) \quad \text{A's one day's work} = \frac{1}{3} \text{rd work.}$$

$$\text{B's one day's work} = \frac{1}{6} \text{th work.}$$

$$\text{(A+B)'s one day's work} = \frac{1}{3} + \frac{1}{6} = \frac{1}{2} \text{nd work}$$

$$\therefore \text{A and B together can complete the work (knit a pair of socks) in 2 days.}$$

$$\therefore \text{They together knit two pair of socks in 4 days.}$$

39. (b) Let B can finish the work in x days.
Then A can finish the work in $(x-3)$ days.
- B's one day's work = $\frac{1}{x}$ th work
- A's one day's work = $\frac{1}{x-3}$ th work
- A's 4 days' work = $\frac{4}{x-3}$ th work
- Remaining work = $1 - \frac{4}{x-3} = \frac{x-7}{x-3}$ th work
- The remaining work done by B in $14-4=10$ days.
- Now, in 10 days, work done by B = $\frac{x-7}{x-3}$ th work
- \therefore in 1 day, work done by B = $\frac{1}{10} \left(\frac{x-7}{x-3} \right)$ th work
- and $\frac{1}{10} \left(\frac{x-7}{x-3} \right) = \frac{1}{x}$
- $\Rightarrow x = 15$ days
- \therefore B \rightarrow 15 days and A \rightarrow 12 days
40. (a) (A+B)'s one day's work = $\frac{1}{5}$ th work
- Let A can do job in x days. Then,
- A's one day's work = $\frac{1}{x}$ th work
- and B's one day's work = $\frac{1}{5} - \frac{1}{x} = \frac{x-5}{5x}$ th work
- Now, (2A)'s work + $\left(\frac{1}{3}\right)$ B's work = $\frac{1}{3}$ rd work
- $\Rightarrow \frac{2}{x} + \frac{1}{3} \left(\frac{x-5}{5x} \right) = \frac{1}{3} \Rightarrow x = \frac{25}{4} = 6\frac{1}{4}$ days
41. (b) X's one day's work = $\frac{1}{15}$ th work.
- Y's one day's work = $\frac{1}{15} + 50\%$ of $\frac{1}{15} = \frac{1}{10}$ th work
- \therefore (X+Y)'s one day's work = $\frac{1}{15} + \frac{1}{10} = \frac{1}{6}$ th work
- Hence, they together finish the work in 6 days.
42. (b) A's one day's work = $\frac{1}{8}$ th work
- B's one day's work = $\frac{1}{3}$ rd work
- \therefore A's 4 day's work = $4 \times \frac{1}{8} = \frac{1}{2}$ nd work

$$\begin{aligned} \therefore \text{In next two days, total wall} &= \frac{1}{2} + 2 \left(\frac{1}{8} \right) - 2 \left(\frac{1}{3} \right) \\ &= \frac{1}{12} \text{ th wall} \end{aligned}$$

$$\text{Remaining wall} = 1 - \frac{1}{12} = \frac{11}{12} \text{ th}$$

Now, $\frac{1}{8}$ th wall is built up by A in one day.

$$\therefore \frac{11}{12} \text{ th wall is built up by A in } 8 \times \frac{11}{12} = 7\frac{1}{3} \text{ days.}$$

43. (b) Sakshi's one day's work = $\frac{1}{20}$ th work
- Tanya's one day's work
- $$= \frac{1}{20} + 25\% \text{ of } \frac{1}{20} = \frac{1}{16} \text{ th work}$$
- Hence, Tanya takes 16 days to complete the work.
44. (d) Part filled by first tap in one min = $\frac{1}{12}$ th
- Part filled by second tap in one min = $\frac{1}{18}$ th
- Now, $2 \left[\frac{1}{12} + \frac{1}{18} \right] + \text{unfilled part} = 1$
- $$\Rightarrow \text{unfilled part} = \frac{13}{18} \text{ th}$$
- $\therefore \frac{1}{18}$ th part of tank is filled by second tap in 1 min.
- $\therefore \frac{13}{18}$ th part of tank is filled by second tap in 1 min.
- $$= 18 \times \frac{13}{18} \text{ min} = 13 \text{ min.}$$
45. (b) \therefore cistern fill in 6 hours.
- \therefore in 1 hour, filled part = $\frac{1}{6}$ th
- Now, due to leakage, filled part in 1 hour = $\frac{1}{8}$ th
- Part of the cistern emptied, due to leakage in 1 hour
- $$= \frac{1}{6} - \frac{1}{8} = \frac{1}{24} \text{ th}$$
- \therefore The leakage will empty the full cistern in 24 hrs.
46. (c) Let B can fill the cistern in x min. Then,
- then A can fill the cistern in $\frac{x}{3}$ min
- Given $x - \frac{x}{3} = 10 \Rightarrow x = 15$ min

47. (b) Cistern filled by both pipes in one hour

$$= \frac{1}{14} + \frac{1}{16} = \frac{15}{112} \text{ th}$$

$$\therefore \text{Both pipes filled the cistern in } \frac{112}{15} \text{ hrs.}$$
Now, due to leakage both pipes filled the cistern in

$$\frac{112}{15} + \frac{32}{60} = 8 \text{ hrs.}$$

$$\therefore \text{due to leakage, filled part in one hour} = \frac{1}{8}$$

$$\therefore \text{part of cistern emptied, due to leakage in one hour}$$

$$= \frac{15}{112} - \frac{1}{8} = \frac{1}{112} \text{ th}$$

$$\therefore \text{in 112hr, the leakage would empty the cistern.}$$
48. (b) In one min, (A + B) fill the cistern $= \frac{1}{10} + \frac{1}{15} = \frac{1}{6}$ th
In 3 min, (A + B) fill the cistern $= \frac{3}{6} = \frac{1}{2}$ th
Remaining part $= 1 - \frac{1}{2} = \frac{1}{2}$

$$\therefore \frac{1}{10} \text{ th part filled by A in one min.}$$

$$\therefore \frac{1}{2} \text{ nd part filled by A in } 10 \times \frac{1}{2} = 5 \text{ min.}$$

$$\therefore \text{Total time} = 3 + 5 = 8 \text{ min.}$$
49. (a) Work done by the waste pipe in 1 minutes

$$= \frac{1}{20} - \left(\frac{1}{12} + \frac{1}{15} \right) = -\frac{1}{10} \text{ [-ve sign means emptying]}$$

$$\therefore \text{Waste pipe will empty the full cistern in 10 minutes.}$$
50. (a) In one min, (A + B) fill the cistern $= \frac{1}{12} + \frac{1}{18} = \frac{5}{36}$ th
In 4 min, (A + B) fill the cistern $= \frac{5}{36} \times 4 = \frac{5}{9}$ th
Rest part $= 1 - \frac{5}{9} = \frac{4}{9}$ th

$$\therefore \frac{1}{18} \text{ th part is filled by B in one min.}$$

$$\therefore \frac{4}{9} \text{ th part is filled by B in } 18 \times \frac{4}{9} = 8 \text{ min.}$$
51. (c) Proportion of the volume of the tank filled by both the pipes in 4 min $= 4 \left(\frac{1}{15} + \frac{1}{10} \right) = \frac{2}{3}$ rd of the tank.
Volume of the tank filled by all the pipes working together $= \frac{1}{15} + \frac{1}{10} - \frac{1}{5} = \frac{-1}{30}$
i.e. $\frac{1}{30}$ tank is emptied in 1 min.

$$\therefore \frac{2}{3} \text{ rd of the tank can be emptied in } \frac{2 \times 30}{3} = 20 \text{ min}$$
52. (a) Let cistern will be full in x min. Then,
part filled by B in x min + part filled by A in (x - 4) min = 1

$$\Rightarrow \frac{x}{16} + \frac{x-4}{12} = 1$$

$$\Rightarrow x = \frac{64}{7} = 9\frac{1}{7} \text{ hours.}$$
53. (a) Let A was turned off after x min. Then,
cistern filled by A in x min + cistern filled by B in (x + 23) min = 1

$$\Rightarrow \frac{x}{45} + \frac{x+23}{40} = 1$$

$$\Rightarrow 17x + 207 = 360 \Rightarrow x = 9 \text{ min.}$$
54. (a) Let cistern will be full in x min. Then,
part filled by A in x min + part filled by B in (x - 1) min + part filled by C in (x - 2) min = 1

$$\Rightarrow \frac{x}{3} + \frac{x-1}{4} + \frac{x-2}{6} = 1$$

$$\Rightarrow 9x = 19 \Rightarrow x = \frac{19}{9} = 2\frac{1}{9} \text{ min}$$
55. (c) If both the pumps are opened together, then the tank will be emptied because the working efficiency of pump emptying is more than that of the pump filling it. Thus in 1 min net proportion of the volume of tank filled

$$= \left(\frac{1}{8} - \frac{1}{16} \right) = \frac{1}{16}$$
or the tank will be emptied in 16 min

$$\Rightarrow \frac{1}{2} \text{ tank will be emptied in 8 min.}$$



Time, Speed and Distance

TIME, SPEED AND DISTANCE

Speed

The rate at which any moving body covers a particular distance is called its speed.

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}; \text{Time} = \frac{\text{Distance}}{\text{Speed}};$$

$$\text{Distance} = \text{Speed} \times \text{time}$$

Unit :

SI unit of speed is metre per second (mps). It is also measured in kilometers per hour (kph) or miles per hour (mph).

Basic Conversions :

- (i) • 1 hour = 60 minutes = 60 × 60 seconds.
 • 1 km = 1000 m
 • 1 km = 0.6214 mile
 • 1 mile = 1.609 km i.e. 8 km = 5 miles
 • 1 yard = 3 feet
 • 1 foot = 12 inches
 • $1 \text{ km/h} = \frac{5}{18} \text{ m/sec}$,
 • $1 \text{ m/sec} = \frac{18}{5} \text{ km/h}$
 • $1 \text{ miles/hr} = \frac{22}{15} \text{ ft/sec}$

Shortcut Approach

$$\Rightarrow \text{Average speed} = \frac{\text{Total Distance}}{\text{Total time}}$$

While travelling a certain distance (d), if a man changes his speed in the ratio m : n, then the ratio of time taken becomes n : m.

⇒ If a certain distance (d), say from A to B, is covered at 'a' km/hr and the same distance is covered again say from B to A in 'b' km/hr, then the average speed during the whole journey is given by :

$$\text{Average speed} = \left(\frac{2ab}{a+b} \right) \text{ km/hr}$$

Also, if t_1 and t_2 is time taken to travel from A to B and B to A respectively, the distance 'd' from A to B is given by :

$$d = (t_1 + t_2) \left(\frac{ab}{a+b} \right)$$

$$d = (t_1 - t_2) \left(\frac{ab}{b-a} \right)$$

$$d = (b - a) \left(\frac{t_1 t_2}{t_1 - t_2} \right)$$

⇒ If first part of the distance is covered at the rate of v_1 in time t_1 and the second part of the distance is covered at the rate of v_2 in time t_2 , then the average speed is

$$\left(\frac{v_1 t_1 + v_2 t_2}{t_1 + t_2} \right)$$

Relative Speed

When two bodies are moving in same direction with speeds S_1 and S_2 respectively, their relative speed is the difference of their speeds.

$$\text{i.e., Relative Speed} = S_1 - S_2, \text{ If } S_1 > S_2 \\ = S_2 - S_1, \text{ if } S_2 > S_1$$

When two bodies are moving in opposite direction with speeds S_1 and S_2 respectively, then their relative speed is the sum of their speeds.

$$\text{i.e., Relative Speed} = S_1 + S_2$$

EXAMPLE 1. The driver of a maruti car driving at the speed of 68 km/h locates a bus 40 metres ahead of him travelling in the same direction. After 10 seconds, the bus is 60 metres behind. The speed of the bus is.

Sol. Let speed of Bus = S_B km/h.

Now, in 10 sec., car covers the relative distance
 $= (60 + 40) \text{ m} = 100 \text{ m}$

$$\therefore \text{Relative speed of car} = \frac{100}{10} = 10 \text{ m/s}$$

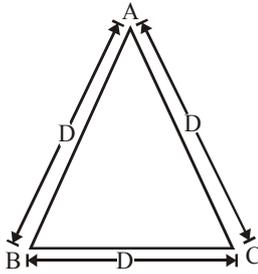
$$= 10 \times \frac{18}{5} = 36 \text{ km/h}$$

$$\therefore 68 - S_B = 36$$

$$\Rightarrow S_B = 32 \text{ km/h}$$

EXAMPLE 2. If a person goes around an equilateral triangle shaped field at speed of 10, 20 and 40 kmph on the first, second and third side respectively and reaches back to the starting point, then find his average speed during the journey.

Sol. Let the measure of each side of triangle is D km. The person travelled the distance from A to B with 10 kmph, B to C with 20 kmph and C to A with 40 kmph.



If T_{AB} = Time taken by the person to travel from A to B,
 T_{BC} = Time taken by the person to travel from B to C and
 T_{CA} = Time taken by the person to travel from C to A.
 Then total time = $T_{AB} + T_{BC} + T_{CA}$

$$= \frac{D}{10} + \frac{D}{20} + \frac{D}{40} = D \left(\frac{8+4+2}{80} \right) = \frac{7D}{40}$$

Total distance travelled = $D + D + D = 3D$
 Hence, average speed

$$= \frac{3D}{\frac{7D}{40}} = \frac{120}{7} = 17\frac{1}{7} \text{ kmph.}$$

EXAMPLE 3. Two guns were fired from the same place at an interval of 15 min, but a person in a bus approaching the place hears the second report 14 min 30 sec after the first. Find the speed of the bus, supposing that sound travels 330 m per sec.

Sol. Distance travelled by the bus in 14 min 30 sec could be travelled by sound in $(15 \text{ min} - 14 \text{ min } 30 \text{ sec}) = 30$ second.

\therefore Bus travels 330×30 m in $14\frac{1}{2}$ min.

\therefore Speed of the bus per hour

$$= \frac{330 \times 30 \times 2 \times 60}{29 \times 1000} = \frac{99 \times 12}{29} = \frac{1188}{29} = 40\frac{28}{29} \text{ km/hr}$$

EXAMPLE 4. A hare sees a dog 100 m away from her and scuds off in the opposite direction at a speed of 12 km/h. A minute later the dog perceives her and gives chase at a speed of 16 km/h. How soon will the dog overtake the hare and at what distance from the spot where the hare took flight?

Sol. Suppose the hare at H sees the dog at D.



$\therefore DH = 100$ m

Let K be the position of the hare where the dog sees her.

$\therefore HK$ = the distance gone by the hare in 1 min

$$= \frac{12 \times 1000}{60} \times 1 \text{ m} = 200 \text{ m}$$

$\therefore DK = 100 + 200 = 300$ m

The hare thus has a start of 300 m.

Now the dog gains $(16 - 12)$ or 4 km/h.

\therefore The dog will gain 300 m in $\frac{60 \times 300}{4 \times 1000}$ min or $4\frac{1}{2}$ min.

Again, the distance gone by the hare in $4\frac{1}{2}$ min

$$= \frac{12 \times 1000}{60} \times 4\frac{1}{2} = 900 \text{ m}$$

\therefore Distance of the place where the hare is caught from the spot H where the hare took flight = $200 + 900 = 1100$ m

Shortcut Approach

If two persons (or vehicles or trains) start at the same time in opposite directions from two points A and B, and after crossing each other they take x and y hours respectively to complete the journey, then

$$\frac{\text{Speed of first}}{\text{Speed of second}} = \sqrt{\frac{y}{x}}$$

EXAMPLE 5. A train starts from A to B and another from B to A at the same time. After crossing each other they complete their journey in $3\frac{1}{2}$ and $2\frac{4}{7}$ hours respectively. If the speed of the first is 60 km/h, then find the speed of the second train.
Sol.

$$\frac{\text{1st train's speed}}{\text{2nd train's speed}} = \sqrt{\frac{y}{x}} = \sqrt{\frac{2\frac{4}{7}}{3\frac{1}{2}}} = \sqrt{\frac{18 \times 2}{7 \times 7}} = \frac{6}{7}$$

$$\therefore \frac{60}{\text{2nd train's speed}} = \frac{6}{7}$$

\Rightarrow 2nd train's speed = 70 km/h.

Shortcut Approach

Usual speed : If a man changes his speed to $\frac{a}{b}$ of his usual speed, reaches his destination late/earlier by t minutes then,

$$\text{Usual time} = \frac{\text{Change in time}}{\left(\frac{b}{a} - 1\right)}$$

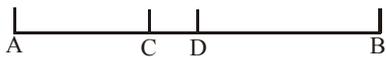
EXAMPLE 6. A boy walking at $\frac{3}{5}$ of his usual speed, reaches his school 14 min late. Find his usual time to reach the school.

$$\text{Sol. Usual time} = \frac{14}{\frac{5}{3} - 1} = \frac{14 \times 3}{2} = 21 \text{ min}$$

EXAMPLE 7. A train after travelling 50 km, meets with an accident and then proceeds at $\frac{4}{5}$ of its former rate and arrives at the terminal 45 minutes late. Had the accident happened 20 km

further on, it would have arrived 12 minutes sooner. Find the speed of the train and the distance.

Sol. Let A be the starting place, B the terminal, C and D the places where the accidents to be placed.



By travelling at $\frac{4}{5}$ of its original rate the train would take $\frac{5}{4}$

of its usual time, i.e., $\frac{1}{4}$ of its original time more.

$\therefore \frac{1}{4}$ of the usual time taken to travel the distance

$$CB = 45 \text{ min.} \quad \dots(i)$$

and $\frac{1}{4}$ of the usual time taken to travel the distance

$$DB = (45 - 12) \text{ min} \quad \dots(ii)$$

Subtracting (ii) from (i),

$\frac{1}{4}$ of the usual time taken to travel the distance

$$CD = 12 \text{ min.}$$

\therefore Usual time taken on travel 20 km = 48 min.

\therefore Speed of the train per hour = $\frac{20}{48} \times 60$ or 25 km/h.

From (i), we have

$$\text{Time taken to travel } CB = 45 \times 4 \text{ min} = 3 \text{ hrs.}$$

\therefore The distance $CB = 25 \times 3$ or 75 km.

$$\begin{aligned} \text{Hence the distance } AB &= \text{the distance } (AC + CB) \\ &= 50 + 75 \text{ or } 125 \text{ km.} \end{aligned}$$

Shortcut Approach

A man covers a certain distance D. If he moves S_1 speed faster, he would have taken t time less and if he moves S_2 speed slower, he would have taken t time more. The original speed is given by

$$\frac{2 \times (S_1 \times S_2)}{S_2 - S_1}$$

EXAMPLE 8. A man covers a certain distance on scooter. Had he moved 3 km/h faster, he would have taken 20 min less. If he had moved 2 km/h slower, he would have taken 20 min more. Find the original speed.

Sol. Speed = $\frac{2 \times (3 \times 2)}{3 - 2} = 12 \text{ km/hr.}$

Shortcut Approach

If a person with two different speeds U & V cover the same distance, then required distance

$$= \frac{U \times V}{U - V} \times \text{Difference between arrival time}$$

$$\text{Also, required distance} = \text{Total time taken} \times \frac{U \times V}{U + V}$$

EXAMPLE 9. A boy walking at a speed of 10 km/h reaches his school 12 min late. Next time at a speed of 15 km/h reaches his school 7 min late. Find the distance of his school from his house?

Sol. Difference between the time = $12 - 7 = 5 \text{ min} = \frac{5}{60} = \frac{1}{12} \text{ hr}$

$$\text{Required distance} = \frac{15 \times 10}{15 - 10} \times \frac{1}{12} = \frac{150}{5} \times \frac{1}{12} = 2.5 \text{ km}$$

Shortcut Approach

A policeman sees a thief at a distance of d. He starts chasing the thief who is running at a speed of 'a' and policeman is chasing with a speed of 'b' ($b > a$). In this case, the distance covered by the thief when he is caught by the

policeman, is given by $d \left(\frac{a}{b-a} \right)$.

Shortcut Approach

A man leaves a point A at t_1 and reaches the point B at t_2 . Another man leaves the point B at t_3 and reaches the point A at t_4 , then they will meet at

$$t_1 + \frac{(t_2 - t_1)(t_4 - t_1)}{(t_2 - t_1) + (t_4 - t_3)}$$

EXAMPLE 10. A bus leaves Ludhiana at 5 am and reaches Delhi at 12 noon. Another bus leaves Delhi at 8 am and reaches Ludhiana at 3 pm. At what time do the buses meet?

Sol. Converting all the times into 24 hour clock time, we get 5 am = 500, 12 noon = 1200, 8 am = 800 and 3 pm = 1500

$$\text{Required time} = 500 + \frac{(1200 - 500)(1500 - 500)}{(1200 - 500) + (1500 - 800)}$$

$$= 500 + \frac{700 \times 1000}{700 + 700} = 1000 = 10 \text{ am.}$$

Shortcut Approach

Relation between time taken with two different modes of transport : $t_{2x} + t_{2y} = 2(t_x + t_y)$

where,

t_x = time when mode of transport x is used single way.

t_y = time when mode of transport y is used single way.

t_{2x} = time when mode of transport x is used both ways.

t_{2y} = time when mode of transport y is used both ways.

EXAMPLE 11. A man takes 6 hours 30 min. in going by a cycle and coming back by scooter. He would have lost 2 hours 10

min by going on cycle both ways. How long would it take him to go by scooter both ways?

Sol. Clearly, time taken by him to go by scooter both way

$$= 6\text{h.}30\text{m} - 2\text{h.}10\text{m} = 4\text{h.}20\text{m} = 4\frac{1}{3}\text{h}$$

EXAMPLE 12. A man travels 120 km by ship, 450 km by rail and 60 km by horse taking altogether 13 hrs 30 min. The speed of the train is 3 times that of the horse and $1\frac{1}{2}$ times that of the ship. Find the speed of the train.

Sol. If the speed of the horse is x km/hr; that of the train is $3x$ and

that of the ship is $\frac{3x}{1\frac{1}{2}} = 2x$ km/hr

$$\therefore \frac{120}{2x} + \frac{450}{3x} + \frac{60}{x} = \frac{27}{2}$$

$$\therefore \frac{60}{x} + \frac{150}{x} + \frac{60}{x} = \frac{27}{2} \quad \therefore \frac{270}{x} = \frac{27}{2}$$

$$\therefore x = 20 \quad \therefore \text{Speed of the train} = 60 \text{ km/hr.}$$

EXAMPLE 13. Rajesh travelled from the city A to city B covering as much distance in the second part as he did in the first part of his journey. His speed during the second part was twice his speed during the first part of the journey. What is his average speed of journey during the entire travel?

(1) His average speed is the harmonic mean of the individual speed for the two parts.

(2) His average speed is the arithmetic mean of the individual speed for the two parts.

(3) His average speed is the geometric mean of the individual speeds for the two parts.

(4) Cannot be determined.

Sol. (1) The first part is $\frac{1}{2}$ of the total distance & the second part is $\frac{1}{2}$ of the total distance. Suppose, he travels at a km/hr speed during the first half & b km/hr speed during the second half. When distance travelled is the same in both parts of

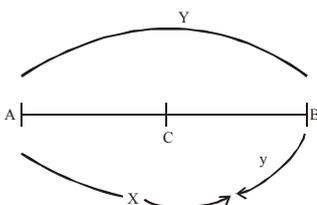
the journey, the average speed is given by the formula $\frac{2ab}{a+b}$

i.e. the harmonic mean of the two speeds.

EXAMPLE 14. Two friends X and Y walk from A to B at a

distance of 39 km, at 3 km an hour and $3\frac{1}{2}$ km an hour respectively. Y reaches B, returns immediately and meet X at C. Find the distance from A to C.

Sol. When Y meets X at C, Y has walked the distance AB + BC and X has walked the distance AC.



So, both X and Y have walked together a distance

$$= 2 \times AB = 2 \times 39 = 78 \text{ km.}$$

The ratio of the speeds of X and Y is $3 : 3\frac{1}{2}$ i.e. $\frac{6}{7}$

Hence, the distance travelled by X = AC

$$= \frac{6}{6+7} \times 78 = 36 \text{ km}$$

EXAMPLE 15. A man rides one-third of the distance from A to B at the rate of 'a' kmph and the remaining at the rate of '2b' kmph. If he had travelled at the uniform rate of $3c$ kmph, he could have rode from A to B and back again in the same time. Find a relationship between a, b and c.

Sol. Let the distance between A and B is X km and T_1 and T_2 be the time taken, then

$$T_1 = \frac{X}{3a}, \quad T_2 = \frac{2X}{6b} = \frac{X}{3b}, \quad T_1 + T_2 = \frac{X}{3} \left[\frac{a+b}{ab} \right]$$

Let T_3 be the time taken in third case, then $T_3 = \frac{2X}{3c}$

$$\Rightarrow \frac{2X}{3c} = \frac{X}{3ab} (a+b) \Rightarrow \frac{2}{c} = \frac{a+b}{ab} \Rightarrow c = \frac{2ab}{a+b}$$

EXAMPLE 16. Two cyclists start from the same place to ride in the same direction. A starts at noon at 8 kmph and B at 1.30 pm at 10 kmph. How far will A have ridden before he is overtaken by B? Find also at what times A and B will be 5 km apart.

Sol. If A rides for X hours before he is overtaken, then B rides for $(X - 1.5)$ hrs.

$$\Rightarrow 8X = 10(X - 1.5) \Rightarrow X = 7.5$$

$$\Rightarrow \text{A will have ridden } 8 \times 7.5 \text{ km or } 60 \text{ km.}$$

For the second part, if Y = the required number of hours after noon, then

$$8X = 10(X - 1.5) \pm 5$$

$$\Rightarrow X = 10 \text{ or } 5 \text{ according as B is ahead or behind A.}$$

$$\Rightarrow \text{The required times are } 5 \text{ p.m. and } 10 \text{ p.m.}$$

EXAMPLE 17. Two men A and B start from a place P walking at 3 kmph and $3\frac{1}{2}$ kmph respectively. How many km apart will they be at the end of $2\frac{1}{2}$ hours?

(i) If they walk in opposite directions?

(ii) If they walk in the same direction?

(iii) What time will they take to be 16 km apart if.

(a) they walk in opposite directions?

(b) in the same direction?

Sol. (i) When they walk in opposite directions, they will be

$$\left(3 + 3\frac{1}{2} \right) = 6\frac{1}{2} \text{ km apart in 1 hour.}$$

$$\therefore \text{In } 2\frac{1}{2} \text{ hours they will be } 6\frac{1}{2} \times \frac{5}{2} = 16\frac{1}{4} \text{ km apart.}$$

(ii) If they walk in the same direction, they will be

$$3\frac{1}{2} - 3 = \frac{1}{2} \text{ km apart in 1 hour.}$$

$$\Rightarrow \text{In } 2\frac{1}{2} \text{ hours they will be } \frac{1}{2} \times \frac{5}{2} = 1\frac{1}{4} \text{ km apart.}$$

(iii) Time to be 16 km apart while walking in opposite

$$\text{directions} = \frac{16}{3 + 3\frac{1}{2}} = 2\frac{6}{13} \text{ hours.}$$

But if they walk in the same direction,

$$\text{time} = \frac{16}{3\frac{1}{2} - 3} = 32 \text{ hours}$$

TRAINS

A train is said to have crossed an object (stationary or moving) only when the last coach of the train crosses the object completely. It implies that the total length of the train has crossed the total length of the object.

Shortcut Approach

Time taken by a train to cross a pole/a standing man

$$= \frac{\text{Length of train}}{\text{Speed of train}}$$

Time taken by a train to cross platform/bridge etc. (i.e. a stationary object with some length)

$$= \frac{\text{length of train} + \text{length of platform/bridge etc.}}{\text{speed of train}}$$

When two trains with lengths L_1 and L_2 and with speeds S_1 and S_2 respectively, then

(a) When they are moving in the same direction, time taken by the faster train to cross the slower train

$$= \frac{L_1 + L_2}{\text{difference of their speeds}}$$

(b) When they are moving in the opposite direction, time taken by the trains to cross each other

$$= \frac{L_1 + L_2}{\text{sum of their speeds}}$$

Suppose two trains or two bodies are moving in the same direction at u km/hr and v km/hr respectively such that $u > v$, then

their relative speed = $(u - v)$ km/hr.

If their lengths be x km and y km respectively, then time taken by the faster train to cross the slower train (moving

$$\text{in the same direction}) = \left(\frac{x + y}{u - v} \right) \text{ hrs.}$$

Suppose two trains or two bodies are moving in opposite directions at u km/hr and v km/hr, then their relative speed = $(u + v)$ km/hr.

If their lengths be x km & y km, then :

$$\text{time taken to cross each other} = \left(\frac{x + y}{u + v} \right) \text{ hrs.}$$

If a man is running at a speed of u m/sec in the same direction in which a train of length L meters is running at a speed v m/sec, then $(v - u)$ m/sec is called the speed of the train relative to man. Then the time taken by the train to

$$\text{cross the man} = \frac{1}{v - u} \text{ seconds}$$

If a man is running at a speed of u m/sec in a direction opposite to that in which a train of length L meters is running with a speed v m/sec, then $(u + v)$ is called the speed of the train relative to man.

Then the time taken by the train to cross the man

$$= \frac{1}{v + u} \text{ seconds.}$$

If two trains start at the same time from two points A and B towards each other and after crossing, they take (a) and (b) hours in reaching B and A respectively. Then,

$$A's \text{ speed} : B's \text{ speed} = (\sqrt{b} : \sqrt{a}).$$

EXAMPLE 18. How long does a train 90 m long running at the rate of 54 km/h take to cross –

- a Mahatma Gandhi's statue?
- a platform 120 m long?
- another train 150 m long, standing on another parallel track?
- another train 160 m long running at 36 km/h in same direction?
- another train 160 m long running at 36 km/h in opposite direction?
- a man running at 6 km/h in same direction?
- a man running at 6 km/h in opposite direction?

Sol. (a) The statue is a stationary object, so time taken by train is same as time taken by train to cover a distance equal to its own length.

$$\text{Now, } 54 \text{ km/h} = 54 \times \frac{5}{18} = 15 \text{ m/s}$$

$$\therefore \text{ Required time} = \frac{90}{15} = 6 \text{ sec.}$$

(b) The platform is stationary of length = 120 m.

Length to be covered

$$= \text{Length of the train} + \text{Length of the platform} \\ = 90 + 120 = 210 \text{ m}$$

$$\therefore \text{ Required time} = \frac{210}{15} = 14 \text{ sec.}$$

(c) Length to be covered

$$= \text{Length of the train} + \text{length of the other train} \\ = 90 + 150 = 240 \text{ m.}$$

$$\therefore \text{Required time} = \frac{240}{15} = 16 \text{ sec.}$$

- (d) Another train is moving in same direction.

Length to be covered
 = Length of the train + length of the other train
 = $90 + 160 = 250 \text{ m}$
 Relative speed = $54 - 36 = 18 \text{ kmph.}$

$$\therefore \text{Required time} = \frac{250}{18 \times \frac{5}{18}} = 50 \text{ sec.}$$

- (e) Another train is moving in opposite direction.

Length to be covered
 = Length of the train + length of the other train
 = $90 + 160 = 250 \text{ m}$
 Relative speed = $54 + 36 = 90 \text{ kmph}$

$$\therefore \text{Required speed} = \frac{250}{\frac{5}{18} \times 90} = 10 \text{ sec.}$$

- (f) The man is moving in same direction,
 so Length to be covered = Length of the train,
 and relative speed = speed of train – speed of man

$$\therefore \text{Required time} = \frac{90}{(54 - 6) \times \frac{5}{18}} \\ = \frac{90}{40} \times 3 = \frac{27}{4} = 6 \frac{3}{4} \text{ sec.}$$

- (g) The man is moving in opposite direction, so
 Length to be covered = Length of the train, and
 relative speed = speed of train + speed of man

$$\therefore \text{Required time} = \frac{90}{(54 + 6) \times \frac{5}{18}} = \frac{27}{5} = 5 \frac{2}{5} \text{ sec.}$$

EXAMPLE 19. Two trains of equal lengths are running on parallel tracks in the same direction at 46 km/h and 36 km/h, respectively. The faster train passes the slower train in 36 sec. The length of each train is :

- (a) 50 m (b) 80 m
 (c) 72 m (d) 82 m
 (e) None of these

Sol. (a) Let the length of each train be x metres.

Then, the total distance covered = $(x + x) = 2x \text{ m}$

$$\text{Relative speed} = (46 - 36) = 10 \text{ km/h} = \frac{10 \times 5}{18} \text{ m/s}$$

$$\text{Now, } 36 = \frac{2x \times 18}{50} \text{ or } x = 50 \text{ m}$$

EXAMPLE 20. A train 110 m in length travels at 60 km/h. How much time does the train take in passing a man walking at 6 km/h against the train ?

- (a) 6 s (b) 12 s
 (c) 10 s (d) 18 s
 (e) None of these

Sol. (a) Relative speeds of the train and the man

$$= (60 + 6) = 66 \text{ km/h} = \frac{66 \times 5}{18} \text{ m/s}$$

Distance = 110 m

Therefore, time taken in passing the man

$$= \frac{110 \times 18}{66 \times 5} = 6 \text{ s}$$

EXAMPLE 21. Two trains 137 metres and 163 metres in length are running towards each other on parallel lines, one at the rate of 42 kmph and another at 48 kmph. In what time will they be clear of each other from the moment they meet?

- (a) 10 sec (b) 12 sec
 (c) 14 sec (d) cannot be determined
 (e) None of these

Sol. (b) Relative speed of the trains

$$= (42 + 48) \text{ kmph} = 90 \text{ kmph}$$

$$= \left(90 \times \frac{5}{18} \right) \text{ m/sec} = 25 \text{ m/sec.}$$

Time taken by the trains to pass each other

$$= \text{Time taken to cover } (137 + 163) \text{ m at } 25 \text{ m/sec}$$

$$= \left(\frac{300}{25} \right) \text{ sec} = 12 \text{ seconds.}$$

Shortcut Approach

If a train of length L m passes a platform of x m in t_1 s, then time taken t_2 by the same train to pass a platform of length y m is given as

$$t_2 = \left(\frac{L + y}{L + x} \right) t_1$$

EXAMPLE 22. A train of length 250m, passes a platform of 350 m length in 50s. What time will this train take to pass the platform of 230m length.

Sol. Here, $L = 250 \text{ m}$, $x = 350 \text{ m}$, $t_1 = 50 \text{ s}$,
 $y = 230 \text{ m}$ and $t_2 = ?$

$$\therefore t_2 = \left(\frac{L + y}{L + x} \right) t_1 = \left(\frac{250 + 230}{250 + 350} \right) \times 50$$

$$= \frac{480}{600} \times 50 = 40 \text{ s}$$

Shortcut Approach

From stations P and Q, two trains start moving towards each other with the speeds a and b , respectively. When they meet each other, it is found that one train covers distance d more than that of another train. In such cases, distance between

stations P and Q is given as $\left(\frac{a+b}{a-b}\right) \times d$.

EXAMPLE 23. From stations A and B, two trains start moving towards each other with the speeds of 150 km/h and 130 km/h, respectively. When the two trains meet each other, it is found that one train covers 20 km more than that of another train. Find the distance between stations A and B.

Sol. Here, $a = 150$ km/h, $b = 130$ km/h and $d = 20$ km

According to the formula,

$$\begin{aligned} \text{Distance between stations A and B} &= \left(\frac{a+b}{a-b}\right) \times d \\ &= \left(\frac{150+130}{150-130}\right) \times 20 = \frac{280}{20} \times 20 = 280 \text{ km} \end{aligned}$$

Shortcut Approach

The distance between P and Q is (d) km. A train with (a) km/h starts from station P towards Q and after a difference of (t) hr another train with (b) km/h starts from Q towards station P, then both the trains will meet at a certain point after time T . Then,

$$T = \left(\frac{d \pm tb}{a+b}\right)$$

If second train starts after the first train, then t is taken as positive.

If second train starts before the first train, then t is taken as negative.

EXAMPLE 24. The distance between two stations P and Q is 110 km. A train with speed of 20 km/h leaves station P at 7:00 am towards station Q. Another train with speed of 25 km/h leaves station Q at 8:00 am towards station P. Then, at what time both trains meet?

Sol. Here, $d = 110$ km, $t = 8:00 - 7:00 = 1$ h

$a = 20$ km/h and $b = 25$ km/h

Time taken by trains to meet, $T = \left(\frac{d+tb}{a+b}\right)$

$$\Rightarrow T = \frac{110 + (1)(25)}{20 + 25} = \frac{135}{45}$$

$$\Rightarrow t = 3 \text{ h}$$

\therefore They will meet at $= 7:00 \text{ am} + 3 \text{ h} = 10:00 \text{ am}$.

Shortcut Approach

The distance between two stations P and Q is d km. A train starts from P towards Q and another train starts from Q towards P at the same time and they meet at a certain point after t h. If train starting from P travels with a speed of x km/h slower or faster than another train, then

$$(i) \text{ Speed of faster train} = \left(\frac{d+tx}{2t}\right) \text{ km/h}$$

$$(ii) \text{ Speed of slower train} = \left(\frac{d-tx}{2t}\right) \text{ km/h}$$

EXAMPLE 25. The distance between two stations A and B is 138 km. A train starts from A towards B and another from B to A at the same time and they meet after 6 h. The train travelling from A to B is slower by 7 km/h compared to other train from B to A, then find the speed of the slower train?

Sol. Here, $d = 138$ km, $t = 6$ h and $x = 7$ km/h

$$\begin{aligned} \therefore \text{Speed of slower train} &= \frac{d-tx}{2t} = \frac{138-(6)(7)}{2(6)} \\ &= \frac{138-42}{12} = \frac{96}{12} = 8 \text{ km/h} \end{aligned}$$

Shortcut Approach

A train covers distance d between two stations P and Q in t_1 h. If the speed of train is reduced by (a) km/h, then the same distance will be covered in t_2 h.

(i) Distance between P and Q is

$$d = a \left(\frac{t_1 t_2}{t_2 - t_1}\right) \text{ km}$$

(ii) Speed of the train = $\left(\frac{at_2}{t_2 - t_1}\right)$ km/h

EXAMPLE 26. A train covers distance between two stations A and B in 2h. If the speed of train is reduced by 6 km/h, then it travels the same distance in 3 h. Calculate the distance between two stations and speed of the train.

Sol. Here, $t_1 = 2$ h, $t_2 = 3$ h, $a = 6$ km/h and $d = ?$

(i) Distance between A and B is

$$d = a \left(\frac{t_1 t_2}{t_2 - t_1}\right) \text{ km}$$

$$\Rightarrow d = 6 \left(\frac{2 \times 3}{3-2}\right) \Rightarrow d = 36 \text{ km}$$

(ii) Speed of the train = $\frac{at_2}{t_2 - t_1} = \frac{6 \times 3}{3-2} = 18 \text{ km/h}$

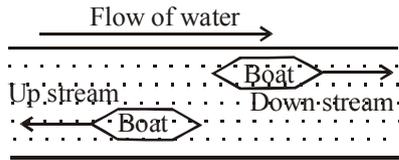
BOATS AND STREAMS

Stream : It implies that the water in the river is moving or flowing.

Upstream : Going against the flow of the river.

Downstream : Going with the flow of the river.

Still water : It implies that the speed of water is zero (generally, in a lake).



Let the speed of a boat (or man) in still water be X m/sec and the speed of the stream (or current) be Y m/sec. Then,

Shortcut Approach

Speed of boat with the stream (or downstream or D/S) = $(X + Y)$ m/sec.

Speed of boat against the stream (or upstream or U/S) = $(X - Y)$ m/sec.

Speed of boat in still water is

$$X = \frac{(X + Y) + (X - Y)}{2} = \frac{\text{Upstream} + \text{Downstream}}{2}$$

Speed of the stream or current is $Y = \frac{(X + Y) - (X - Y)}{2} = \frac{\text{Downstream} - \text{Upstream}}{2}$

EXAMPLE 27. A boat is rowed down a river 28 km in 4 hours and up a river 12 km in 6 hours. Find the speed of the boat and the river.

Sol. Downstream speed is $\frac{28}{4} = 7$ kmph

Upstream speed is $\frac{12}{6} = 2$ kmph

$$\begin{aligned} \text{Speed of Boat} &= \frac{1}{2} (\text{Downstream} + \text{Upstream Speed}) \\ &= \frac{1}{2} [7 + 2] = 4.5 \text{ kmph} \end{aligned}$$

$$\begin{aligned} \text{Speed of current} &= \frac{1}{2} (\text{Downstream} - \text{Upstream speed}) \\ &= \frac{1}{2} (7 - 2) = 2.5 \text{ kmph} \end{aligned}$$

EXAMPLE 28. P, Q, and R are the three towns on a river which flows uniformly. Q is equidistant from P and R. I row from P to Q and back in 10 hours and I can row from P to R in 4 hours. Compare the speed of my boat in still water with that of the river.

- (a) 4 : 3 (b) 5 : 3
(c) 6 : 5 (d) 7 : 3
(e) None of these

Sol. (c) Let the speed of the boat be v_1 and the speed of the current be v_2 and d be the distance between the cities.

$$\text{Now, } \frac{d}{v_1 + v_2} = 4 \text{ and } \frac{d}{v_1 - v_2} = 6$$

$$\Rightarrow \frac{v_1 + v_2}{v_1 - v_2} = \frac{6}{4}$$

$$\text{or } \frac{2v_1}{2v_2} = \frac{10}{2} \text{ or } \frac{v_1}{v_2} = 5 : 1$$

$$\text{Required ratio} = (5 + 1) : 5 = 6 : 5$$

Shortcut Approach

A man can row X km/h in still water. If in a stream which is flowing of Y km/h, it takes him Z hours to row to a place and back, the distance between the two places is

$$\frac{Z(X^2 - Y^2)}{2X}$$

EXAMPLE 29. A man can row 6 km/h in still water. When the river is running at 1.2 km/h, it takes him 1 hour to row to a place and back. How far is the place?

Sol. Man's rate downstream = $(6 + 1.2) = 7.2$ km/h.

Man's rate upstream = $(6 - 1.2)$ km/h = 4.8 km/h.

Let the required distance be x km.

$$\text{Then } \frac{x}{7.2} + \frac{x}{4.8} = 1 \text{ or } 4.8x + 7.2x = 7.2 \times 4.8$$

$$\Rightarrow x = \frac{7.2 \times 4.8}{12} = 2.88 \text{ km}$$

SHORTCUT METHOD

$$\begin{aligned} \text{Required distance} &= \frac{1 \times (6^2 - (1.2)^2)}{2 \times 6} \\ &= \frac{36 - 1.44}{12} = \frac{34.56}{12} = 2.88 \text{ km} \end{aligned}$$

Shortcut Approach

A man rows a certain distance downstream in X hours and returns the same distance in Y hours. If the stream flows at the rate of Z km/h, then the speed of the man in still water is given by

$$\frac{Z(X + Y)}{Y - X} \text{ km/hr}$$

And if speed of man in still water is Z km/h then the speed of stream is given by

$$\frac{Z(Y - X)}{X + Y} \text{ km/hr}$$

Shortcut Approach

If speed of stream is a and a boat (swimmer) takes n times as long to row up as to row down the river, then

$$\text{Speed of boat (swimmer) in still water} = \frac{a(n + 1)}{(n - 1)}$$

Note: This formula is applicable for equal distances.

EXAMPLE 30. Rajnish can row 12 km/h in still water. It takes him twice as long to row up as to row down the river. Find the rate of stream.

Sol. Here, speed of Rajnish in still water = 12 km/h
 $n = 2$; Speed of stream (a) = ?
 According to the formula,

$$\text{Speed in still water} = \frac{a(n+1)}{(n-1)}$$

$$\Rightarrow 12 = \frac{a(2+1)}{(2-1)}$$

$$\Rightarrow 3a = 12$$

$$\therefore a = \frac{12}{3} = 4 \text{ km/h}$$

EXAMPLE 31. Vikas can row a certain distance downstream in 6 hours and return the same distance in 9 hours. If the stream flows at the rate of 3 km/h, find the speed of Vikas in still water.

Sol. By the formula,

$$\text{Vikas's speed in still water} = \frac{3(9+6)}{9-6} = 15 \text{ km/h}$$

Shortcut Approach

If a man capable of rowing at the speed (u) m/sec in still water, rows the same distance up and down a stream flowing at a rate of (v) m/sec, then his average speed through the journey is

$$= \frac{\text{Upstream} \times \text{Downstream}}{\text{Man's rate in still water}} = \frac{(u-v)(u+v)}{u}$$

EXAMPLE 32. Two ferries start at the same time from opposite sides of a river, travelling across the water on routes at right angles to the shores. Each boat travels at a constant speed though their speeds are different. They pass each other at a point 720m from the nearer shore. Both boats remain at their sides for 10 minutes before starting back. On the return trip they meet at 400m from the other shore. Find the width of the river.

- (a) 1760m
- (b) 1840m
- (c) 2000m
- (d) Cannot be found
- (e) None of these

Sol. (a)

Let the width of the river be x.
 Let a, b be the speeds of the ferries.

$$\frac{720}{a} = \frac{(x-720)}{b} \dots\dots\dots (i)$$

$$\frac{(x-720)}{a} + 10 + \frac{400}{a} = \frac{720}{b} + 10 + \frac{(x-400)}{b} \dots\dots\dots (ii)$$

(Time for ferry 1 to reach other shore + 10 minute wait + time to cover 400m)
 = Time for ferry 2 to cover 720m to other shore + 10 minute wait + Time to cover (x - 400m))

Using (i), we get $\frac{a}{b} = \frac{720}{(x-720)}$

$$\text{Using (ii), } \frac{(x-320)}{a} = \frac{(x+320)}{b} \Rightarrow \frac{a}{b} = \frac{(x-320)}{(x+320)}$$

On, solving we get, $x = 1760\text{m}$

EXAMPLE 33. A man rows 27km with the stream and 15km against the stream taking 4 hours each time. Find this rate per hour in still water and the rate at which the stream flows.

Sol. Speed with the stream = $\frac{27}{4} = 6\frac{3}{4}$ kmph

\therefore Speed against the stream = $\frac{15}{4} = 3\frac{3}{4}$ kmph.

\therefore Speed of the man in still water

$$= \frac{1}{2} \left(6\frac{3}{4} + 3\frac{3}{4} \right) = 5\frac{1}{4} \text{ kmph}$$

\therefore Speed of the stream = $\frac{1}{2} \left(6\frac{3}{4} - 3\frac{3}{4} \right) = 1.5 \text{ kmph}$

EXAMPLE 34. On a river, B is between A and C and is also equidistant from A and C. A boat goes from A to B and back in 5 hours 15 minutes and from A to C and back in 7 hours. How long will it take to go from C to A if the river flows from A to C?

Sol. If the speed in still water is x kmph and speed of the river is y kmph, speed down the river = $x + y$ and speed up the river = $x - y$.

$$\therefore \frac{d}{x+y} + \frac{d}{x-y} = 5\frac{1}{4} \dots\dots\dots (1)$$

$$\frac{2d}{x+y} = 7 \dots\dots\dots (2)$$

Multiplying (1) by 2, we get $\frac{2d}{x+y} + \frac{2d}{x-y} = 10\frac{1}{2}$

$$\Rightarrow 7 + \frac{2d}{x-y} = \frac{21}{2} \left[\because \frac{2d}{x-y} = 7 \right]$$

$$\Rightarrow \frac{2d}{x-y} = 3\frac{1}{2} \text{ hours} = \text{Time taken to travel from C to A.}$$

Shortcut Approach

If boat's (swimmer's) speed in still water is a km/h and river is flowing with a speed of b km/h, then average speed in going to a certain place and coming back to starting point

is given by $\frac{(a+b)(a-b)}{a}$ km/h.

EXAMPLE 35. Ramesh rows in still water with speed of 4.5 km/h to go to a certain place and to come back. Find his average speed for the whole journey, if the river is flowing with a speed of 1.5 km/h.

Sol. Here, a = 4.5 km/h, b = 1.5 km/h

$$\text{Average speed} = \frac{(a+b)(a-b)}{a}$$

$$= \frac{(4.5+1.5)(4.5-1.5)}{4.5} = \frac{6 \times 3}{4.5} = \frac{18}{4.5} = 4 \text{ km/h}$$

EXERCISE

- A car finishes a journey in ten hours at the speed of 80 km/hr. If the same distance is to be covered in eight hours how much more speed does the car have to gain?
 - 8 km/hr
 - 10 km/hr
 - 12 km/hr
 - 16 km/hr
 - None of these
- Two cars *A* and *B* are running towards each other from different places 88 km apart. If the ratio of the speeds of the cars *A* and *B* is 5 : 6 and the speed of the car *B* is 90 km per hour then after how long will the two meet each other?
 - $26\frac{2}{3}$ minutes
 - 24 minutes
 - 32 minutes
 - 36 minutes
 - None of these
- Train '*A*' leaves Mumbai Central for Lucknow at 11 am, running at the speed of 60 kmph. Train '*B*' leaves Mumbai Central for Lucknow by the same route at 2 pm on the same day, running at the speed of 72 kmph. At what time will the two trains meet each other?
 - 2 am on the next day
 - 5 am on the next day
 - 5 pm on the next day
 - 2 pm on the next day
 - None of these
- A motor starts with the speed of 70 kmph with its speed increasing every two hours by 10 kmph. In how many hours will it cover 345 kms?
 - $2\frac{1}{4}$ hours
 - $4\frac{1}{2}$ hours
 - 4 hours 5 minutes
 - Cannot be determined
 - None of these
- A boat takes 3 hours to travel from place *M* to *N* downstream and back from *N* to *M* upstream. If the speed of the boat in still water is 4 km/hr, what is the distance between the two places?
 - 8 km
 - 12 km
 - 6 km
 - Data inadequate
 - None of these
- A boat has to travel upstream 20 km distance from point *X* of a river to point *Y*. The total time taken by boat in travelling from point *X* to *Y* and *Y* to *X* is 41 minutes 40 seconds. What is the speed of the boat?
 - 66 km/hr
 - 72 km/hr
 - 48 km/hr
 - Data inadequate
 - None of these
- The speed of a car increases by 2 km after every hour. If the distance travelled in the first hour was 35 km, what was the total distance travelled in 12 hours?
 - 522 km
 - 456 km
 - 556 km
 - 482 km
 - None of these
- A boat covers a distance of 30 km downstream in 2 hours while it take 6 hours to cover the same distance upstream. If the speed of the current is half of the speed of the boat then what is the speed of the boat in km per hour?
 - 15 kmph
 - 5 kmph
 - 10 kmph
 - Data inadequate
 - None of these
- A man starts walking. He walked 2 km in the first hour. Then he walked two-thirds of the distance of the previous hour in each next hour. If he walked continuously then how long could he walk maximum?
 - 60 km
 - 6 km
 - 12 km
 - 8 km
 - None of these
- Starting with the initial speed of 30 km/hr, the speed is increased by 4 km/hour every two hours. How many hours will it take to cover a distance of 288 km?
 - 4
 - 6
 - 12
 - 8
 - None of these
- With a uniform speed a car covers a distance in 8 hours. Were the speed increased by 4 km/hr the same distance could be covered in $7\frac{1}{2}$ hours. What is the distance covered?
 - 640 km
 - 480 km
 - 420 km
 - Cannot be determined
 - None of these
- A 300-metre-long train crosses a platform in 39 seconds while it crosses a signal pole in 18 seconds. What is the length of the platform?
 - 320 metres
 - 650 metres
 - 350 metres
 - Data inadequate
 - None of these
- A 260-metre-long train crosses a 120-metre-long wall in 19 seconds. What is the speed of the train?
 - 27 km/hr
 - 49 km/hr
 - 72 km/hr
 - 70 km/hr
 - None of these
- A 270-metre-long train running at the speed of 120 kmph crosses another train running in opposite direction at the speed of 80 kmph in 9 secs. What is the length of the other train?
 - 240 metres
 - 320 metres
 - 260 metres
 - 230 metres
 - None of these
- A monkey ascends a greased pole 12 metres high. He ascends 2 metres in first minute and slips down 1 metre in the alternate minute. In which minute, he reaches the top?
 - 21st
 - 22nd
 - 23rd
 - 24th
 - None of these

16. A man walks a certain distance and rides back in $6\frac{1}{4}$ h. He can walk both ways in $7\frac{3}{4}$ h. How long it would take to ride both ways ?
- (a) 5 hours (b) $4\frac{1}{2}$ hours
(c) $4\frac{3}{4}$ hours (d) 6 hours
(e) None of these
17. There are 20 poles with a constant distance between each pole. A car takes 24 seconds to reach the 12th pole. How much time will it take to reach the last pole?
- (a) 25.25 s (b) 17.45 s
(c) 35.75 s (d) 41.45 s
(e) None of these
18. A man is walking at a speed of 10 km per hour. After every kilometre, he takes rest for 5 minutes. How much time will be take to cover a distance of 5 kilometres?
- (a) 48 min. (b) 50 min.
(c) 45 min. (d) 55 min.
(e) None of these
19. On a journey across Bombay, a tourist bus averages 10 km/h for 20% of the distance, 30 km/h for 60% of it and 20 km/h for the remainder. The average speed for the whole journey was
- (a) 10 km/h (b) 30 km/h
(c) 5 km/h (d) 20 km/h
(e) None of these
20. In a 800 m race around a stadium having the circumference of 200 m, the top runner meets the last runner on the 5th minute of the race. If the top runner runs at twice the speed of the last runner, what is the time taken by the top runner to finish the race ?
- (a) 20 min (b) 15 min
(c) 10 min (d) 5 min
(e) None of these
21. A man walks half of the journey at 4 km/h by cycle does one third of journey at 12 km/h and rides the remainder journey in a horse cart at 9 km/h, thus completing the whole journey in 6 hours and 12 minutes. The length of the journey is
- (a) 36 km (b) $\frac{1332}{67}$ km
(c) 40 km (d) 28 km
(e) None of these
22. R and S start walking each other at 10 AM at the speeds of 3 km/h and 4 km/h respectively. They were initially 17.5 km apart. At what time do they meet?
- (a) 2 : 30 PM (b) 11 : 30 AM
(c) 1 : 30 PM (d) 12 : 30 PM
(e) None of these
23. A train does a journey without stoppage in 8 hours, if it had travelled 5 km/h faster, it would have done the journey in 6 hours 40 minutes. Find its original speed.
- (a) 25 km/h (b) 40 km/h
(c) 45 km/h (d) 36.5 km/h
(e) None of these
24. A train leaves station X at 5 a.m. and reaches station Y at 9 a.m. Another train leaves station Y at 7 a.m. and reaches station X at 10:30 a.m. At what time do the two trains cross each other ?
- (a) 7 : 36 am (b) 7 : 56 am
(c) 8 : 36 am (d) 8 : 56 am
(e) None of these
25. Cars C_1 and C_2 travel to a place at a speed of 30 and 45 km/h respectively. If car C_2 takes $2\frac{1}{2}$ hours less time than C_1 for the journey, the distance of the place is
- (a) 300 km (b) 400 km
(c) 350 km (d) 225 km
(e) None of these
26. If I walk at 4 km/h, I miss the bus by 10 minutes. If I walk at 5 km/h, I reach 5 minutes before the arrival of the bus. How far I walk to reach the bus stand ?
- (a) 5 km (b) 4.5 km
(c) $5\frac{1}{4}$ km/h (d) Cannot be determined
(e) None of these
27. A goods train leaves a station at a certain time and at a fixed speed. After 6 hours, an express train leaves the same station and moves in the same direction at a uniform speed of 90 kmph. This train catches up the goods train in 4 hours. Find the speed of the goods train.
- (a) 36 kmph (b) 40 kmph
(c) 30 kmph (d) 42 kmph
(e) None of these
28. Without stoppages, a train travels certain distance with an average speed of 80 km/h, and with stoppages, it covers the same distance with an average speed of 60 km/h. How many minutes per hour the train stops ?
- (a) 15 (b) 18
(c) 10 (d) 16
(e) None of these
29. If a man walks to his office at $\frac{3}{4}$ of his usual rate, he reaches office $\frac{1}{3}$ of an hour later than usual. What is his usual time to reach office.
- (a) $\frac{1}{2}$ hr (b) 1 hr
(c) $\frac{3}{4}$ hr (d) 2 hrs
(e) None of these
30. If a man walks to his office at $\frac{5}{4}$ of his usual rate, he reaches office 30 minutes early than usual. What is his usual time to reach office.
- (a) 2 hrs (b) $2\frac{1}{2}$ hr s
(c) 1 hr 50 min (d) 2 hrs 15 min
(e) None of these

31. A train running between two stations A and B arrives at its destination 10 minutes late when its speed is 50 km/h and 50 minutes late when its speed is 30 km/h. What is the distance between the stations A and B ?
- (a) 40 km (b) 50 km
(c) 60 km (d) 70 km
(e) None of these
32. A car travels 25 km an hour faster than a bus for a journey of 500 km. If the bus takes 10 hours more than the car, then the speeds of the bus and the car are
- (a) 25 km/h and 40 km/h respectively
(b) 25 km/h and 60 km/h respectively
(c) 25 km/h and 50 km/h respectively
(d) 25 km/h and 70 km/h respectively
(e) None of these
33. A train consists of 12 boggies, each boggy 15 metres long. The train crosses a telegraph post in 18 seconds. Due to some problem, two boggies were detached. The train now crosses a telegraph post in
- (a) 18 sec (b) 12 sec
(c) 15 sec (d) 20 sec
(e) None of these
34. A man started running at a distance of 225 metre from the train. If the speed of the man is 6 km/h, then how much time should the train wait so that the man will be just able to catch it ?
- (a) $2\frac{1}{4}$ min (b) 3 min
(c) $4\frac{1}{4}$ min (d) $4\frac{1}{2}$ min
(e) None of these
35. A man sitting in a train which is travelling at 50 kmph observes that a goods train, travelling in opposite direction, takes 9 seconds to pass him. If the goods train is 280 m long, find its speed.
- (a) 62 kmph (b) 58 kmph
(c) 52 kmph (d) 50 kmph
(e) None of these
36. Two trains, one from Howrah to Patna and the other from Patna to Howrah, start simultaneously. After they meet, the trains reach their destinations after 9 hours and 16 hours respectively. The ratio of their speeds is:
- (a) 2 : 3 (b) 4 : 3
(c) 6 : 7 (d) 9 : 16
(e) None of these
37. A train 75 metres long overtook a man who was walking at the rate of 6 km/h and passed him in 18 seconds. Again, the train overtook a second person in 15 seconds. At what rate was the second person travelling ?
- (a) 3 km/h (b) 2.5 km/h
(c) 4 km/h (d) 1.5 km/h
(e) None of these
38. A jogger running at 9 kmph alongside a railway track is 240 metres ahead of the engine of a 120 metre long train running at 45 kmph in the same direction. In how much time will the train pass the jogger?
- (a) 3.6 sec (b) 18 sec
(c) 36 sec (d) 72 sec
(e) None of these
39. Two trains are running at 40 km/h and 20 km/h respectively in the same direction. Fast train completely passes a man sitting in the slower train in 5 seconds. What is the length of the fast train?
- (a) 23 m (b) $23\frac{2}{9}$ m
(c) 27 m (d) $27\frac{7}{9}$ m
(e) None of these
40. Two trains, 130 and 110 metres long, while going in the same direction, the faster train takes one minute to pass the other completely. If they are moving in opposite direction, they pass each other completely in 3 seconds. Find the speed of trains.
- (a) 30 m/s, 40 m/s (b) 32 m/s, 48 m/s
(c) 40 m/s, 44 m/s (d) 38 m/s, 42 m/s
(e) None of these
41. A train overtakes two person who are walking in the same direction in which the train is going, at the rate of 2 kmph and 4 kmph and passes them completely in 9 and 10 seconds respectively. The length of the train is:
- (a) 45 m (b) 50 m
(c) 54 m (d) 72 m
(e) None of these
42. Local trains leave from a station at an interval of 15 minutes at a speed of 16 km/h. A man moving from opposite side meets the trains at an interval of 12 minutes. Find the speed of the man.
- (a) 4 km/h (b) 3.5 km/h
(c) 4.5 km/h (d) 3 km/h
(e) None of these
43. Local trains leave from a station at an interval of 14 minutes at a speed of 36 km/h. A man moving in the same direction along the road meets the trains at an interval of 18 minutes. Find the speed of the man.
- (a) 8 km/h (b) 7 km/h
(c) 6 km/h (d) 5.8 km/h
(e) None of these
44. A train overtakes two persons walking along a railway track. The first one walks at 4.5 km/h. The other one walks at 5.4 km/h. The train needs 8.4 and 8.5 seconds respectively to overtake them. What is the speed of the train if both the persons are walking in the same direction as the train?
- (a) 66 km/h (b) 72 km/h
(c) 78 km/h (d) 81 km/h
(e) None of these
45. Two trains running in opposite directions cross a man standing on the platform in 27 seconds and 17 seconds respectively and they cross each other in 23 seconds. The ratio of their speeds is:
- (a) 1 : 3 (b) 3 : 2
(c) 3 : 4 (d) 2 : 1
(e) None of these

46. Two trains each of 120 m in length, run in opposite directions with a velocity of 40 m/s and 20 m/s respectively. How long will it take for the tail ends of the two trains to meet each other during the course of their journey :
- (a) 20 s (b) 3 s
(c) 4 s (d) 5 s
(e) None of these

Directions (Qs. 47-48): Answer the following questions on the basis of the information given below:

- (i) Trains A and B are travelling on the same route heading towards the same destination. Train B has already covered a distance of 220 km before train A started.

- (ii) The two trains meet each other 11 hours after the start of train A.
(iii) Had the trains been travelling towards each other (from a distance of 220 km), they would have met after one hour.
47. What is the speed of train B in kmph?
(a) 100 (b) 180
(c) 116 (d) Data inadequate
(e) None of these
48. What is the speed of train A in kmph?
(a) 102 (b) 80.5
(c) 118 (d) Data inadequate
(e) None of these

ANSWER KEY

1	(e)	6	(d)	11	(b)	16	(c)	21	(a)	26	(a)	31	(b)	36	(b)	41	(b)	46	(c)
2	(c)	7	(e)	12	(c)	17	(d)	22	(d)	27	(a)	32	(c)	37	(a)	42	(a)	47	(a)
3	(b)	8	(c)	13	(c)	18	(b)	23	(a)	28	(a)	33	(c)	38	(c)	43	(a)	48	(e)
4	(b)	9	(b)	14	(d)	19	(d)	24	(b)	29	(b)	34	(a)	39	(d)	44	(d)		
5	(d)	10	(d)	15	(b)	20	(c)	25	(d)	30	(b)	35	(a)	40	(d)	45	(b)		

Hints & Explanations

1. (e) Distance covered by the car = $80 \times 10 = 800$ km

$$\therefore \text{Speed} = \frac{800}{8} = 100 \text{ km/hr}$$

$$\therefore \text{Speed gain} = 100 - 80 = 20 \text{ km/hr}$$

2. (c) Speed of the car $A = \frac{5}{6} \times 90 = 75 \text{ km/hr}$

$$\therefore \text{Reqd time} = \frac{88}{90 + 75} \times 60 = 32 \text{ minutes}$$

3. (b) Distance covered by train A before the train B leaves Mumbai Central = $60 \times 3 = 180$ km

$$\therefore \text{Time taken to cross each other} = \frac{180}{12} = 15 \text{ hours}$$

$$\therefore \text{Reqd time} = 2 \text{ pm} + 15 = 5 \text{ am on the next day}$$

4. (b) Distance covered in first two hours = $70 \times 2 = 140$ km
Distance covered in next two hours = $80 \times 2 = 160$ km
Distance covered in first four hours
 $140 + 160 = 300$ km

Remaining distance = $345 - 300 = 45$ km. Now, this distance will be covered at the speed of 90 km/hr.

$$\therefore \text{Time taken} = \frac{45}{90} = \frac{1}{2} \text{ hour}$$

$$\text{Total time} = 4 + \frac{1}{2} = 4 \frac{1}{2} \text{ hours.}$$

5. (d) Let the distance between M and N and the speed of current in still water be d km and x km/hr respectively.

$$\text{According to the question, } \frac{d}{4+x} + \frac{d}{4-x} = 3$$

In the above equation we have only one equation but two variables, hence, can't be determined.

6. (d) Let x be the speed of the boat and y the speed of the current.

$$\therefore \frac{20}{x-y} + \frac{20}{x+y} = \frac{25}{36}$$

In this equation there are two variables, but only one equation, so, the value of 'x' cannot be determined.

7. (e) This is the problem of arithmetic progression (AP) with the first term (a) = 35, common difference (d) = 2 and total no. of terms (n) = 12. The sum of this series will be total distance travelled.

$$\text{Sum } (S_n) = \frac{n}{2} \{2a + (n-1)d\}$$

$$= \frac{12}{2} \{70 + 11 \times 2\}$$

$$= \frac{12 \times 92}{2} = 552 \text{ km}$$

8. (c) Here downstream speed = 15 km/hr and upstream speed = 5 km/hr

$$\therefore \text{Speed of the boat} = \frac{15 + 5}{2} = 10 \text{ km/h}$$

9. (b) Required distance

$$= 2 \left[1 + \frac{2}{3} + \left(\frac{2}{3}\right)^2 + \left(\frac{2}{3}\right)^3 + \dots \right]$$

$$= 2 \times \frac{1}{1 - \frac{2}{3}} = 2 \times 3 = 6 \text{ km.}$$

10. (d) Hour Speed (km/h) Distance travelled (in km)

2	30	60
2	34	68
2	38	76
2	42	84
8		288

Hence, the required time = 8 hours

11. (b) Here $\frac{D}{7.5} - \frac{D}{8} = 4$

(where D is the distance in km)

$$\Rightarrow 0.5D = 4 \times 8 \times 7.5$$

$$\Rightarrow D = 2 \times 4 \times 8 \times 7.5 = 480 \text{ km}$$

12. (c) When a train crosses a platform, it crosses a distance equal to the sum of the length of the platform and that of the train. But when a train crosses a signal pole, it crosses the distance equal to its length only. Here, time taken by the train to cross a signal pole = 18 seconds

$$\text{Hence, speed of the train} = \frac{300}{18} \text{ m/sec}$$

The train takes 21 (= 39 - 18) seconds extra in order to cross the platform.

$$\text{Hence, length of platform} = \frac{21 \times 300}{18} = 350 \text{ m}$$

13. (c) Speed of train = $\frac{260 + 120}{19} \times \frac{18}{5} = 72 \text{ km/hr.}$

14. (d) Relative speed = $120 + 80 \text{ kmph} = 200 \times \frac{5}{18} \text{ m/sec}$

$$t = \frac{\text{Distance}}{\text{Speed}} = \frac{(270 + x) \times 9}{500}$$

$$\text{or } 270 + x = \frac{9 \times 500}{9} \quad x = 500 - 270 = 230 \text{ m}$$

15. (a) In 2 minutes, he ascends = 1 metre
 \therefore 10 metres, he ascends in 20 minutes.
 \therefore He reaches the top in 21st minute.

16. (c) We know that, the relation in time taken with two different modes of transport is

$$t_{\text{walk both}} + t_{\text{ride both}} = 2(t_{\text{walk}} + t_{\text{ride}})$$

$$\frac{31}{4} + t_{\text{ride both}} = 2 \times \frac{25}{4}$$

$$\Rightarrow t_{\text{ride both}} = \frac{25}{2} - \frac{31}{4} = \frac{19}{4} = 4 \frac{3}{4} \text{ hrs}$$

17. (d) Let the distance between each pole be x m.
 Then, the distance up to 12th pole = $11x$ m

$$\text{Speed} = \frac{11x}{24} \text{ m/s}$$

Time taken to covers the total distance of $19x$

$$= \frac{19x \times 24}{11x} = 41.45 \text{ s}$$

18. (b) Rest time = Number of rest \times Time for each rest
 $= 4 \times 5 = 20$ minutes

Total time to cover 5 km

$$= \left(\frac{5}{10} \times 60 \right) \text{ minutes} + 20 \text{ minutes} = 50 \text{ minutes.}$$

19. (d) Let the average speed be x km/h.
 and Total distance = y km. Then,

$$\frac{0.2}{10}y + \frac{0.6}{30}y + \frac{0.2}{20}y = \frac{y}{x}$$

$$\Rightarrow x = \frac{1}{0.05} = 20 \text{ km/h}$$

20. (c) After 5 minutes (before meeting), the top runner covers 2 rounds i.e., 400 m and the last runner covers 1 round i.e., 200 m.

\therefore Top runner covers 800 m race in 10 minutes.

21. (a) Let the length of the journey = x km.

$$\therefore \text{Journey rides by horse cart} = x \left(1 - \frac{1}{2} - \frac{1}{3} \right)$$

$$= \frac{1}{6}x \text{ km.}$$

Then, total time taken to complete journey = $\frac{31}{5}$ hr

$$\Rightarrow t_1 + t_2 + t_3 = \frac{31}{5}$$

$$\Rightarrow \frac{x}{2} \times \frac{1}{4} + \frac{x}{3} \times \frac{1}{12} + \frac{x}{6 \times 9} = \frac{31}{5}$$

$$\Rightarrow x = \frac{31}{5} \times \frac{216}{37} = 36.2 \text{ km} \approx 36 \text{ km}$$

22. (d) Let after t hours they meet then,
 $3t + 4t = 17.5 \Rightarrow t = 2.5$

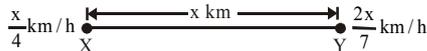
$$\therefore \text{Time} = 10 \text{ am} + 2.5 \text{ h} = 12 : 30 \text{ pm}$$

23. (a) Let original speed = S km/h
 Here, distance to be covered is constant

$$\therefore S \times 8 = (S + 5) \left(\frac{20}{3} \right)$$

$$\Rightarrow 8S - \frac{20}{3}S = \frac{100}{3} \Rightarrow S = \frac{100}{4} = 25 \text{ km/h}$$

24. (b) Let the distance between X and Y be x km. Then, the speed of A is $\frac{x}{4}$ km/h and that of B is $\frac{2x}{7}$ km/h.



Relative speeds of the trains

$$= \left(\frac{x}{4} + \frac{2x}{7} \right) = \frac{15x}{28} \text{ km/h}$$

Therefore the distance between the trains at 7 a.m.

$$= x - \frac{x}{2} = \frac{x}{2} \text{ km}$$

Hence, time taken to cross each other

$$= \frac{\frac{x}{2}}{\frac{15x}{28}} = \frac{x}{2} \times \frac{28}{15x} = \frac{14}{15} \times 60 = 56 \text{ min}$$

Thus, both of them meet at 7 : 56 a.m.

25. (d) Let C_1 takes t hrs. Then,
 \therefore Distance is same.

$$\therefore 30t = 45 \left(t - \frac{5}{2} \right)$$

$$\Rightarrow t = \frac{15}{2} \text{ hrs}$$

$$\therefore \text{Distance} = 30 \times \frac{15}{2} = 225 \text{ km}$$

26. (a) $d = \text{product of speed} \left[\frac{\text{difference of time}}{\text{difference of speed}} \right]$

$$d = \frac{4 \times 5}{60} \left[\frac{10 - (-5)}{5 - 4} \right] \quad [\text{Here, -ve sign indicates before the schedule time}]$$

$$\Rightarrow d = 5 \text{ km}$$

27. (a) Let the speed of the goods train be x kmph.
 Distance covered by goods train in 10 hours
 = Distance covered by express train in 4 hours.

$$\therefore 10x = 4 \times 90 \text{ or } x = 36.$$

So, speed of goods train = 36 kmph.

28. (a) Due to stoppages, it covers 20 km less .

$$\text{Time taken to cover } 20 \text{ km} = \frac{20}{80} \text{ h} = \frac{1}{4} \text{ h}$$

$$= \frac{1}{4} \times 60 \text{ min} = 15 \text{ min}$$

29. (b) If new speed is $\frac{a}{b}$ of original speed, then

$$\text{usual time} \times \left(\frac{b}{a} - 1 \right) = \text{change in time}$$

$$\therefore \text{usual time} \times \left(\frac{4}{3} - 1 \right) = \frac{1}{3}$$

$$\Rightarrow \text{usual time} = \frac{1}{3} \times 3 = 1 \text{ hr}$$

30. (b) $\text{usual time} \times \left(\frac{4}{5} - 1 \right) = \frac{-30}{60}$

$$\Rightarrow \text{usual time} = \frac{1}{2} \times 5 = 2 \frac{1}{2} \text{ hrs}$$

31. (b) Let the distance between the two stations be x km.

$$\text{Then, } \frac{x}{50} - \frac{10}{60} = \frac{x}{30} - \frac{50}{60}$$

$$\Rightarrow \frac{x}{50} - \frac{1}{6} = \frac{x}{30} - \frac{5}{6}$$

$$\text{or } \frac{x}{30} - \frac{x}{50} = \frac{2}{3} \quad \text{or } x = 50 \text{ km}$$

Thus distance between the station A and B = 50 km

32. (c) Let the speed of the bus be x km/h.
 then speed of the car = $(x + 25)$ km/h

$$\therefore \frac{500}{x} = \frac{500}{x + 25} + 10$$

$$\Rightarrow x^2 + 25x - 1250 = 0 \Rightarrow x = 25$$

Thus speed of the bus = 25 km/h

Speed of the car = 50 km/h

Alternative:

Difference in speeds 25 km/hr is in only option (c).

33. (c) Length of train = $12 \times 15 = 180$ m.

$$\text{Then, speed of train} = \frac{180}{18} = 10 \text{ m/s}$$

Now, length of train = $10 \times 15 = 150$ m

$$\therefore \text{Required time} = \frac{150}{10} = 15 \text{ sec.}$$

34. (a) $\text{Time} = \frac{225}{6 \times \frac{5}{18}} = 135 \text{ sec} = 2 \frac{1}{4} \text{ min.}$

35. (a) Relative speed = $\left(\frac{280}{9}\right)$ m/sec = $\left(\frac{280}{9} \times \frac{18}{5}\right)$ kmph
= 112 kmph.

\therefore Speed of goods train = $(112 - 50)$ kmph = 62 kmph.

36. (b) Let us name the trains as A and B. Then,

(A's speed) : (B's speed) = $\sqrt{b} : \sqrt{a} = \sqrt{16} : \sqrt{9} = 4 : 3$.

37. (a) Let actual speed of train = S_T km/h.

Then, $S_T - 6 = \frac{75}{18} \times \frac{18}{5} = 15$

$\Rightarrow S_T = 21$ km/h

Now, let speed of second man = S_m

$21 - S_m = \frac{75}{15} \times \frac{18}{5} = 18$

$\Rightarrow S_m = 3$ km/h

38. (c) Speed of train relative to jogger

= $(45 - 9)$ km/h = 36 km/h

= $\left(36 \times \frac{5}{18}\right)$ m/sec = 10 m/sec.

Distance to be covered = $(240 + 120)$ m = 360 m.

\therefore Time taken = $\left(\frac{360}{10}\right)$ sec = 36 sec.

39. (d) Relative speed = $(40 - 20)$ km/h

= $\left(20 \times \frac{5}{18}\right)$ m/sec = $\left(\frac{50}{9}\right)$ m/sec.

Length of faster train

= $\left(\frac{50}{9} \times 5\right)$ m = $\frac{250}{9}$ m = $27\frac{7}{9}$ m.

40. (d) Let speed of trains are S_1 m/s and S_2 m/s.

Then, $S_1 - S_2 = \frac{130 + 110}{60} = 4$... (i)

and $S_1 + S_2 = \frac{130 + 110}{3} = 80$... (ii)

on solving (i) and (ii), we get

$S_1 = 42$ m/s, $S_2 = 38$ m/s

41. (b) Let actual speed of train = S m/sec
and length of train = L m.

Then, $S - \frac{2 \times 5}{18} = \frac{L}{9}$

$\Rightarrow 9S = L + 5$... (i)

and $S - 4 \times \frac{5}{18} = \frac{L}{10}$

$\Rightarrow 90S = 9L + 100$... (ii)

By (i) & (ii), we get $L = 50$ m.

42. (a) Let speed of man = S km/h. Then,
Distance covered in 15 min = Distance covered in 12 min

$16 \times \frac{15}{60} = \frac{12}{60} [16 + S]$

$\Rightarrow 16 + S = 20 \Rightarrow S = 4$ km/h

43. (a) Let speed of man = S km/h. Then,

$36 \times \frac{14}{60} = \frac{18}{60} [36 - S] \Rightarrow 36 - S = 28 \Rightarrow S = 8$ km/h.

44. (d) 4.5 km/h = $\left(4.5 \times \frac{5}{18}\right)$ m/sec = 1.25 m/sec,

& 5.4 km/h = $\left(5.4 \times \frac{5}{18}\right)$ m/sec = 1.5 m/sec.

Let the speed of the train be S m/sec.

Then, $(S - 1.25) \times 8.4 = (S - 1.5) \times 8.5$

$\Rightarrow 8.4S - 10.5 = 8.5S - 12.75 \Rightarrow 0.1S = 2.25 \Rightarrow S = 22.5$.

\therefore Speed of the train = $\left(22.5 \times \frac{18}{5}\right)$ km/h = 81 km/h.

45. (b) Let the speeds of the two trains be S_1 m/sec and S_2 m/sec respectively. Then, length of the first train = $27S_1$ metres, and length of the second train = $17S_2$ metres.

$\therefore \frac{27S_1 + 17S_2}{S_1 + S_2} = 23 \Rightarrow 27S_1 + 17S_2 = 23S_1 + 23S_2$

$\Rightarrow 4S_1 = 6S_2 \Rightarrow \frac{S_1}{S_2} = \frac{3}{2}$.

46. (c) Relative speed of the trains = $(40 + 20) = 60$ m/s

Distance = $(120 + 120) = 240$ m

Time taken by trains to cross each other completely

= $\frac{240}{60} = 4$ s

(47-48)

Let the speeds of train A and B be V_A and V_B respectively.

$V_A - V_B = \frac{220}{11} \Rightarrow \frac{220}{11} \Rightarrow V_A - V_B = 20$... (i)

$V_A + V_B = \frac{220}{1} \Rightarrow V_A + V_B = 220$... (ii)

Solving the equations (i) and (ii), we get $V_A = 120$ km/hr
and $V_B = 100$ km/hr

47. (a)

48. (e)

Mensuration

MENSURATION

Mensuration is the science of measurement of the lengths of lines, areas of surfaces and volumes of solids.

Perimeter

Perimeter is sum of all the sides. It is measured in cm, m, etc.

Area

The area of any figure is the amount of surface enclosed within its boundary lines. This is measured in square unit like cm^2 , m^2 , etc.

Volume

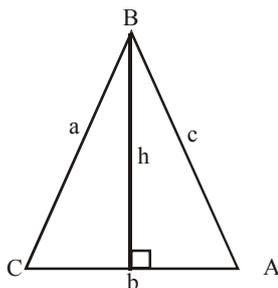
If an object is solid, then the space occupied by such an object is called its volume. This is measured in cubic unit like cm^3 , m^3 , etc.

Basic Conversions :

- I. 1 m = 10 dm
1 dm = 10 cm
1 cm = 10 mm
1 m = 100 cm = 1000 mm
1 km = 1000 m
- II. 1 km = $\frac{5}{8}$ miles
1 mile = 1.6 km
1 inch = 2.54 cm
- III. 100 kg = 1 quintal
10 quintal = 1 tonne
1 kg = 2.2 pounds (approx.)
- IV. 1 litre = 1000 cc
1 acre = 100 m^2
1 hectare = 10000 m^2 (100 acre)

PART I : PLANE FIGURES

TRIANGLE



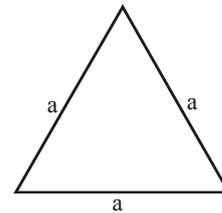
$$\text{Perimeter (P)} = a + b + c$$

$$\text{Area (A)} = \sqrt{s(s-a)(s-b)(s-c)}$$

where $s = \frac{a+b+c}{2}$ and a, b and c are three sides of the triangle.

$$\text{Also, } A = \frac{1}{2} \times bh; \text{ where } b \rightarrow \text{base} \\ h \rightarrow \text{altitude}$$

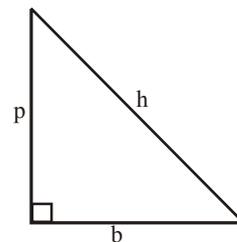
Equilateral triangle



$$\text{Perimeter} = 3a$$

$$A = \frac{\sqrt{3}}{4} a^2; \text{ where } a \rightarrow \text{side}$$

Right triangle



$$A = \frac{1}{2} pb \text{ and } h^2 = p^2 + b^2 \text{ (Pythagoras triplet)}$$

where p \rightarrow perpendicular
b \rightarrow base
h \rightarrow hypotenuse

EXAMPLE 1. Find the area of a triangle whose sides are 50 m, 78m, 112m respectively and also find the perpendicular from the opposite angle on the side 112 m.

Sol. Here a = 50 m, b = 78 m, c = 112m

$$s = \frac{1}{2}(50 + 78 + 112) = 120\text{m}$$

$$s - a = 120 - 50 = 70 \text{ m}$$

$$s - b = 120 - 78 = 42 \text{ m}$$

$$s - c = 120 - 112 = 8 \text{ m}$$

$$\therefore \text{Area} = \sqrt{120 \times 70 \times 42 \times 8} = 1680 \text{ sq.m.}$$

$$\therefore \text{Area} = \frac{1}{2} \text{base} \times \text{perpendicular}$$

$$\therefore \text{Perpendicular} = \frac{2\text{Area}}{\text{Base}} = \frac{1680 \times 2}{112} = 30\text{m.}$$

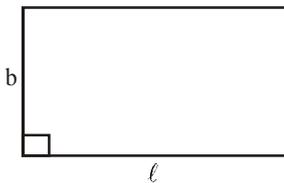
EXAMPLE 2. The base of a triangular field is 880 m and its height 550 m. Find the area of the field. Also calculate the charges for supplying water to the field at the rate of ₹24.25 per sq. hectometre.

Sol. Area of the field = $\frac{\text{Base} \times \text{Height}}{2}$

$$= \frac{880 \times 550}{2} = 242000 \text{ sq.m.} = 24.20 \text{ sq.hm}$$

Cost of supplying water to 1 sq. hm = ₹ 24.25
 \therefore Cost of supplying water to the whole field
 $= 24.20 \times 24.25 = ₹ 586.85$

RECTANGLE



$$\text{Perimeter} = 2(\ell + b)$$

$$\text{Area} = \ell \times b; \quad \text{where } \ell \rightarrow \text{length} \\ b \rightarrow \text{breadth}$$

Shortcut Approach

If the length and breadth of a rectangle are increased by a% and b%, respectively, then are will be increased by

$$\left(a + b + \frac{ab}{100} \right) \%$$

EXAMPLE 3. If the length and breadth of a rectangle are increased by 10% and 8%, respectively, then by what per cent will the area of that rectangle be increased?

Sol. Given that, $a = 10, b = 8$

According to the formula,

$$\text{Percentage increase in area} = \left(10 + 8 + \frac{10 \times 8}{100} \right) \%$$

$$= \left(18 + \frac{80}{100} \right) \% = \left(18 + \frac{4}{5} \right) \% = 18\frac{4}{5} \%$$

EXAMPLE 4. If the length of a rectangle is increased by 5% and the breadth of the rectangle is decreased by 6%, then find the percentage change in area.

Sol. Given that $a = 5, b = -6$

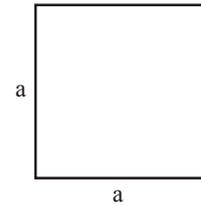
According to the formula,

$$\text{Percentage change in area} = \left(5 - 6 - \frac{5 \times 6}{100} \right) \%$$

$$= -1 - \frac{30}{100} = -1 - 0.30 = -1.3\% (\text{decrease})$$

Negative value shown that there is a decrease in area.

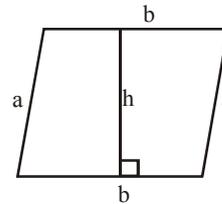
SQUARE



$$\text{Perimeter} = 4 \times \text{side} = 4a$$

$$\text{Area} = (\text{side})^2 = a^2; \quad \text{where } a \rightarrow \text{side}$$

PARALLELOGRAM

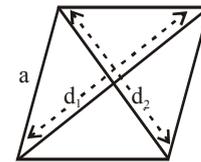


$$\text{Perimeter} = 2(a + b)$$

$$\text{Area} = b \times h;$$

where $a \rightarrow$ breadth
 $b \rightarrow$ base (or length)
 $h \rightarrow$ altitude

RHOMBUS



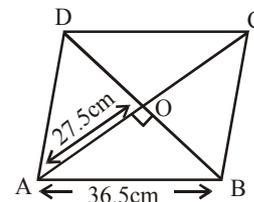
$$\text{Perimeter} = 4a$$

$$\text{Area} = \frac{1}{2} d_1 \times d_2$$

where $a \rightarrow$ side and
 d_1 and d_2 are diagonals.

EXAMPLE 5. The perimeter of a rhombus is 146 cm and one of its diagonals is 55 cm. Find the other diagonal and the area of the rhombus.

Sol. Let ABCD be the rhombus in which $AC = 55$ cm.



$$\text{and } AB = \frac{146}{4} = 36.5 \text{ cm}$$

$$\text{Also, } AO = \frac{55}{2} = 27.5 \text{ cm}$$

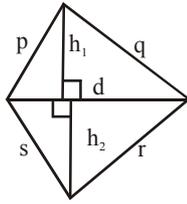
$$\therefore BO = \sqrt{(36.5)^2 - (27.5)^2} = 24 \text{ cm}$$

Hence, the other diagonal $BD = 48$ cm

$$\text{Now, Area of the rhombus} = \frac{1}{2} AC \times BD$$

$$= \frac{1}{2} \times 55 \times 48 = 1320 \text{ sq.cm.}$$

IRREGULAR QUADRILATERAL



Perimeter = $p + q + r + s$

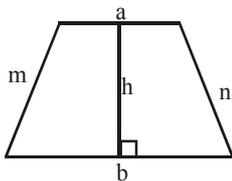
Area = $\frac{1}{2} \times d \times (h_1 + h_2)$

EXAMPLE 6. Find the area of a quadrilateral piece of ground, one of whose diagonals is 60 m long and the perpendicular from the other two vertices are 38 and 22m respectively.

Sol. Area = $\frac{1}{2} \times d \times (h_1 + h_2)$

= $\frac{1}{2} \times 60(38 + 22) = 1800 \text{ sq.m.}$

TRAPEZIUM



Perimeter = $a + b + m + n$

Area = $\frac{1}{2}(a + b)h$; where (a) and (b) are two parallel sides;
(m) and (n) are two non-parallel sides;
h → perpendicular distance between two parallel sides.

EXAMPLE 7. A 5100 sq.cm trapezium has the perpendicular distance between the two parallel sides 60 m. If one of the parallel sides be 40m then find the length of the other parallel side.

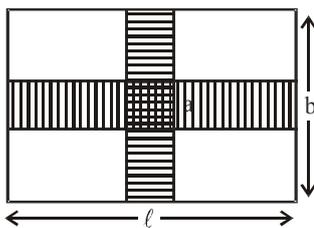
Sol. Since, $A = \frac{1}{2}(a + b)h$

⇒ $5100 = \frac{1}{2}(40 + x) \times 60$

⇒ $170 = 40 + x$

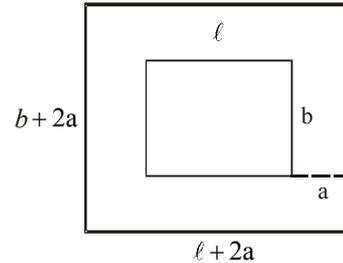
∴ other parallel side = $170 - 40 = 130 \text{ m}$

AREA OF PATHWAYS RUNNING ACROSS THE MIDDLE OF A RECTANGLE



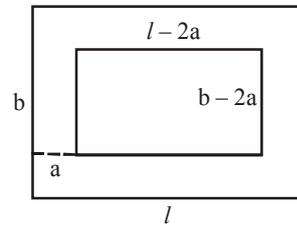
$A = a(\ell + b) - a^2$; where ℓ → length
 b → breadth,
 a → width of the pathway.

Pathways outside



$A = (l + 2a)(b + 2a) - lb$; where l → length
 b → breadth
 a → width of the pathway

Pathways inside



$A = lb - (l - 2a)(b - 2a)$; where l → length
 b → breadth
 a → width of the pathway

Shortcut Approach

If a pathway of width x is made inside or outside a rectangular plot of length l and breadth b , then area of pathway is
(i) $2x(l + b + 2x)$, if path is made outside the plot.
(ii) $2x(l + b - 2x)$, if path is made inside the plot.

EXAMPLE 8. There is garden of 140 m × 120 m and a gravel path is to be made of an equal width all around it, so as to take up just one-fourth of the garden. What must be the breadth of the path?

Sol. Since, path covers $\frac{1}{4}$ th area of the garden, that means path is inside the garden.

Given, $l = 140 \text{ m}$, $b = 120 \text{ m}$, $x = ?$

According to the question,

$2x(l + b - 2x) = \frac{1}{4} \times l \times b \Rightarrow 2x(140 + 120 - 2x) = \frac{1}{4} \times 140 \times 120$
 $\Rightarrow x(260 - 2x) = 2100 \Rightarrow x^2 - 130x + 1050 = 0 \Rightarrow x = 8.65 \text{ or } 121.3$

Leaving 121.3, since width of the park cannot be greater than length.

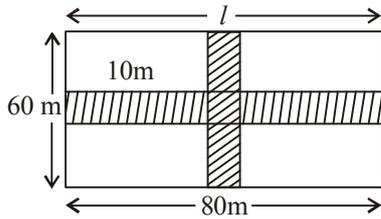
∴ Width of the park = 8.65 m

Shortcut Approach

If two paths, each of width x are made parallel to length (l) and breadth (b) of the rectangular plot in the middle of the plot, then area of the paths is $x(l + b - x)$

EXAMPLE 9. A rectangular grass plot 80 m × 60 m has two roads, each 10 m wide, running in the middle of it, one parallel to length and the other parallel to breadth. Find the area of the roads.

Sol. Then, according to the formula,

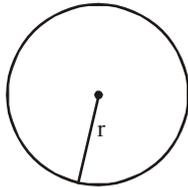


$$\text{Required area} = x(l + b - x) = 10(80 + 60 - 10) = 10 \times 130 = 1300 \text{ sq m}$$

EXAMPLE 10. A rectangular grassy plot is 112m by 78 m. It has a gravel path 2.5 m wide all round it on the inside. Find the area of the path and the cost of constructing it at ₹ 2 per square metre?

Sol. $A = lb - (l - 2a)(b - 2a)$
 $= 112 \times 78 - (112 - 5)(78 - 5)$
 $= 112 \times 78 - 107 \times 73 = 8736 - 7811 = 925 \text{ sq.m}$
 \therefore Cost of construction = rate \times area = $2 \times 925 = \text{Rs. } 1850$

CIRCLE



$$\text{Perimeter (Circumference)} = 2\pi r = \pi d$$

$$\text{Area} = \pi r^2; \quad \text{where } r \rightarrow \text{radius}$$

$$d \rightarrow \text{diameter}$$

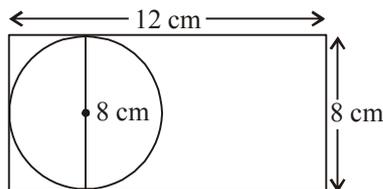
$$\text{and } \pi = \frac{22}{7} \text{ or } 3.14$$

Shortcut Approach

The length and breadth of a rectangle are l and b , then are of circle of maximum radius inscribed in that rectangle is $\frac{\pi b^2}{4}$.

EXAMPLE 11. Find the area of circle with maximum radius that can be inscribed in the rectangle of length 12 cm and breadth 8 cm.

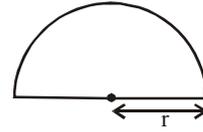
Sol. Here, $l = 12$ and $b = 8$



$$\therefore \text{Area of circle with maximum radius} = \frac{\pi b^2}{4}$$

$$= \frac{\pi(8)^2}{4} = \frac{4\pi}{4} = 16\pi \text{ cm}^2$$

SEMICIRCLE



$$\text{Perimeter} = \pi r + 2r$$

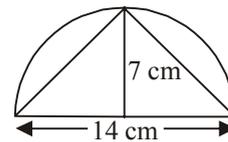
$$\text{Area} = \frac{1}{2} \times \pi r^2$$

Shortcut Approach

The area of the largest triangle inscribed in a semi-circle of radius r is equal to r^2 .

EXAMPLE 12. The largest triangle is inscribed in a semi-circle of radius 7 cm. Find the area inside the semi-circle which is not occupied by triangle.

Sol. Given that, radius = 7 cm, diameter = 14 cm
 According to the formula,
 Area of the triangle = $7^2 = 49 \text{ sq cm}$

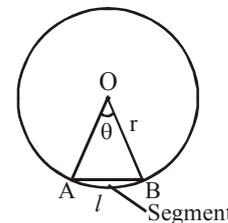


$$\text{Area of semi-circle} = \frac{\pi r^2}{2} = \frac{\frac{22}{7} \times 7^2}{2} = 11 \times 7 = 77 \text{ sq cm}$$

$$\text{Required answer} = \text{Area of semi-circle} - \text{Area of the largest triangle}$$

$$= (77 - 49) \text{ sq cm} = 28 \text{ sq cm}$$

SECTOR OF A CIRCLE



$$\text{Area of sector OAB} = \frac{\theta}{360} \times \pi r^2$$

$$\text{Length of an arc } (l) = \frac{\theta}{360} \times 2\pi r$$

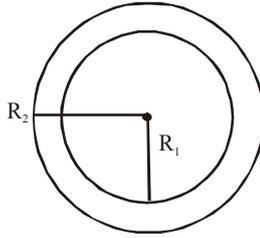
$$\text{Area of segment} = \text{Area of sector} - \text{Area of triangle OAB}$$

$$= \frac{\theta}{360^\circ} \times \pi r^2 - \frac{1}{2} r^2 \sin \theta$$

$$\text{Perimeter of segment} = \text{length of the arc} + \text{length of segment}$$

$$AB = \frac{\pi r \theta}{180} + 2r \sin \frac{\theta}{2}$$

RING



$$\text{Area of ring} = \pi(R_2^2 - R_1^2)$$

EXAMPLE 13. A wire is looped in the form of a circle of radius 28 cm. It is re-bent into a square form. Determine the length of a side of the square.

- (a) 44 cm (b) 45 cm
(c) 46 cm (d) 48 cm

Sol. (a) Length of the wire = Perimeter of the circle
 $= 2\pi \times 28$
 $= 176 \text{ cm}^2$

Side of the square $= \frac{176}{4} = 44 \text{ cm}$

EXAMPLE 14. The radius of a circular wheel is $1\frac{3}{4}$ m. How many revolutions will it make in travelling 11 km ?

Sol. Distance to be travelled = 11km = 11000 m

Radius of the wheel $= 1\frac{3}{4} \text{ m} = \frac{7}{4} \text{ m}$

\therefore Circumference of the wheel $= 2 \times \frac{22}{7} \times \frac{7}{4} = 11 \text{ m}$

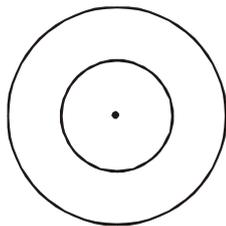
\therefore In travelling 11 m, wheel makes 1 revolution.

\therefore In travelling 11000 m the wheel makes $\frac{1}{11} \times 11000$ revolutions, i.e., 1000 revolutions.

EXAMPLE 15. The circumference of a circular garden is 1012m. Find the area of outsider road of 3.5 m width runs around it. Calculate the area of this road and find the cost of gravelling the road at ₹ 32 per 100 sqm.

Sol:

$A = \pi r^2, C = 2\pi r = 1012$



$\Rightarrow r = 1012 \times \frac{1}{2} \times \frac{7}{22} = 161 \text{ m}$

\therefore Area of garden $= \frac{22}{7} \times 161 \times 161 = 81466 \text{ sqm}$

Area of the road = area of bigger circle – area of the garden

Now, radius of bigger circle $= 161 + 3.5 = \frac{329}{2} \text{ m}$

\therefore Area of bigger circle $= \frac{22}{7} \times \frac{329}{2} \times \frac{329}{2} = 85046\frac{1}{2} \text{ sq.m}$

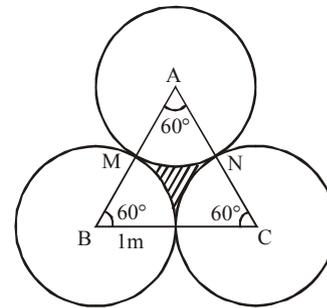
Thus, area of the road $= 85046\frac{1}{2} - 81466 = 3580\frac{1}{2} \text{ sqm.}$

Hence, cost $= ₹ \frac{7161}{2} \times \frac{32}{100} = ₹ 1145.76$

EXAMPLE 16. There is an equilateral triangle of which each side is 2m. With all the three corners as centres, circles each of radius 1 m are described.

- (i) Calculate the area common to all the circles and the triangle.
(ii) Find the area of the remaining portion of the triangle.

Sol.



Area of each sector $= \frac{\theta}{360} \times \pi r^2 = \frac{60}{360} \times \frac{22}{7} \times 1 \times 1$
 $= \frac{1}{6} \times \frac{22}{7} = \frac{11}{21} \text{ m}^2$

Area of equilateral triangle $= \frac{\sqrt{3}}{4} a^2$
 $= \frac{\sqrt{3}}{4} \times 2 \times 2 = \sqrt{3} \text{ m}^2$

(i) Common area = 3 × Area of each sector
 $= 3 \times \frac{11}{21} = \frac{11}{7} = 1.57 \text{ m}^2$

(ii) Area of the remaining portion of the triangle = Ar. of equilateral triangle – 3(Ar. of each sector)
 $\sqrt{3} - 1.57 = 1.73 - 1.57 = 0.16 \text{ m}^2$

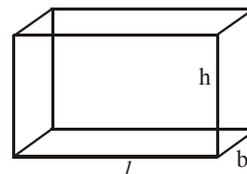
PART-II SOLID FIGURE

CUBOID

A cuboid is a three dimensional box.

Total surface area of a cuboid = 2 (lb + bh + lh)

Volume of the cuboid = lbh



Area of four walls = 2(l + b) × h

Shortcut Approach

If length, breadth and height of a cuboid are changed by $x\%$, $y\%$ and $z\%$ respectively, then its volume is increased by

$$= \left[x + y + z + \frac{xy + yz + zx}{100} + \frac{xyz}{(100)^2} \right] \%$$

Note: Increment in the value is taken as positive and decrement in value is taken as negative. Positive result shows total increment and negative result shows total decrement.

EXAMPLE 17. If all the dimensions of a cuboid are increased by 100%, by what per cent does the volume of cuboid increase?

Sol. Here, $x = y = z = 100$

According to the formula,
Percentage increase in volume

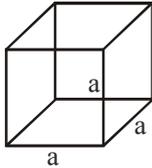
$$\begin{aligned} &= \left[x + y + z + \frac{xy + yz + zx}{100} + \frac{xyz}{100} \right] \% \\ &= \left[100 + 100 + 100 + \frac{100 \times 100 + 100 \times 100 + 100 \times 100}{100} + \frac{100 \times 100 \times 100}{(100)^2} \right] \% \\ &= \left[300 + \frac{10000 + 10000 + 10000}{100} + \frac{1000000}{10000} \right] \% \\ &= \left[300 + \frac{30000}{100} + 100 \right] \% \\ &= (300 + 300 + 100)\% = 700\% \end{aligned}$$

CUBE

A cube is a cuboid which has all its edges equal.

Total surface area of a cube = $6a^2$

Volume of the cube = a^3



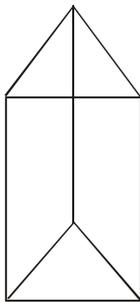
RIGHT PRISM

A prism is a solid which can have any polygon at both its ends.

Lateral or curved surface area = Perimeter of base \times height

Total surface area = Lateral surface area + 2 (area of the end)

Volume = Area of base \times height



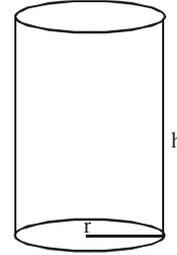
RIGHT CIRCULAR CYLINDER

It is a solid which has both its ends in the form of a circle.

Lateral surface area = $2\pi rh$

Total surface area = $2\pi r(r + h)$

Volume = $\pi r^2 h$; where r is radius of the base and h is the height



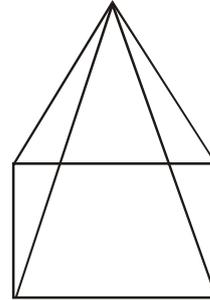
PYRAMID

A pyramid is a solid which can have any polygon at its base and its edges converge to single apex.

Lateral or curved surface area

$$= \frac{1}{2} (\text{perimeter of base}) \times \text{slant height}$$

Total surface area = lateral surface area + area of the base



$$\text{Volume} = \frac{1}{3} (\text{area of the base}) \times \text{height}$$

RIGHT CIRCULAR CONE

It is a solid which has a circle as its base and a slanting lateral surface that converges at the apex.

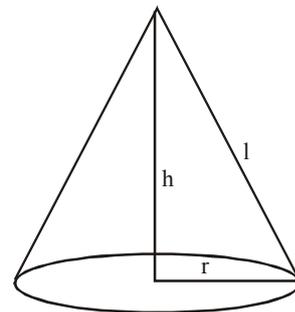
Lateral surface area = πrl

Total surface area = $\pi r(l + r)$

$$\text{Volume} = \frac{1}{3} \pi r^2 h; \quad \text{where } r : \text{radius of the base}$$

h : height

l : slant height

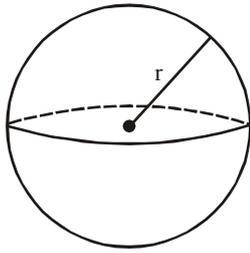


SPHERE

It is a solid in the form of a ball with radius r .

Lateral surface area = Total surface area = $4\pi r^2$

$$\text{Volume} = \frac{4}{3} \pi r^3; \quad \text{where } r \text{ is radius.}$$



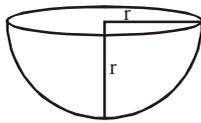
HEMISPHERE

It is a solid half of the sphere.

Lateral surface area = $2\pi r^2$

Total surface area = $3\pi r^2$

Volume = $\frac{2}{3}\pi r^3$; where r is radius



Shortcut Approach

If side of a cube or radius (or diameter) of sphere is increased

by x%, then its volume increases by $\left[\left(1 + \frac{x}{100}\right)^3 - 1\right] \times 100\%$

EXAMPLE 18. If side of a cube is increased by 10%, by how much per cent does its volume increase?

Sol. Here, x = 10

According to the formula,

Percentage increase in volume

$$= \left[\left(1 + \frac{x}{100}\right)^3 - 1\right] \times 100\% = \left[\left(1 + \frac{10}{100}\right)^3 - 1\right] \times 100\%$$

$$= \left[\left(1 + \frac{10}{100}\right)^3 - 1\right] \times 100\% = \left[\left(\frac{11}{10}\right)^3 - 1\right] \times 100\%$$

$$= \left[\frac{1331}{1000} - 1\right] \times 100\% = (1.331 - 1) \times 100\%$$

$$= (0.331 \times 100)\% = 33.1\%$$

Shortcut Approach

If in a cylinder or cone, height and radius both change by x%,

then volume changes by $\left[\left(1 + \frac{x}{100}\right)^3 - 1\right] \times 100\%$

EXAMPLE 19. If in a cylinder, both height and radius increase by 100%, by what per cent does its volume increase?

Sol. Here, x = 10

According to the formula,

Percentage increase in volume

$$= \left[\left(1 + \frac{x}{100}\right)^3 - 1\right] \times 100\% = \left[\left(1 + \frac{100}{100}\right)^3 - 1\right] \times 100\%$$

$$= [(2)^3 - 1] \times 100\% = (8 - 1) \times 100\% = 700\%$$

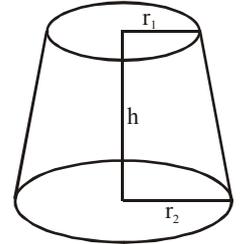
FRUSTUM OF A CONE

When a cone cut the left over part is called the frustum of the cone.

Curved surface area = $\pi l (r_1 + r_2)$

Total surface area = $\pi l (r_1 + r_2) + \pi r_1^2 + \pi r_2^2$

where $l = \sqrt{h^2 + (r_1 - r_2)^2}$



$$\text{Volume} = \frac{1}{3}\pi h (r_1^2 + r_1 r_2 + r_2^2)$$

EXAMPLE 20. The sum of length, breadth and height of a room is 19 m. The length of the diagonal is 11 m. The cost of painting the total surface area of the room at the rate of ₹10 per m² is :

- (a) ₹ 240
- (b) ₹ 2400
- (c) ₹ 420
- (d) ₹ 4200

Sol. (b) Let length, breadth and height of the room be ℓ , b and h, respectively. Then,

$$\ell + b + h = 19 \quad \dots(i)$$

$$\text{and } \sqrt{\ell^2 + b^2 + h^2} = 11$$

$$\Rightarrow \ell^2 + b^2 + h^2 = 121 \quad \dots(ii)$$

Area of the surface to be painted

$$= 2(\ell b + bh + h\ell)$$

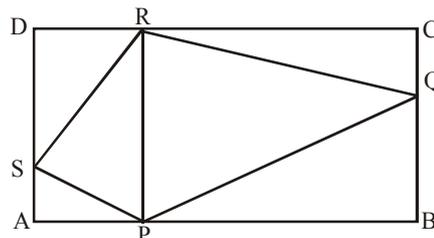
$$(\ell + b + h)^2 = \ell^2 + b^2 + h^2 + 2(\ell b + \ell h + h\ell)$$

$$\Rightarrow 2(\ell b + bh + h\ell) = (19)^2 - 121 = 361 - 121 = 240$$

Surface area of the room = 240 m².

Cost of painting the required area = $10 \times 240 = ₹ 2400$

EXAMPLE 21. ABCD is a parallelogram. P, Q, R and S are points on sides AB, BC, CD and DA, respectively such that AP = DR. If the area of the rectangle ABCD is 16 cm², then the area of the quadrilateral PQRS is :



- (a) 6 cm²
- (b) 6.4 cm²
- (c) 4 cm²
- (d) 8 cm²

Sol. (d) Area of the quadrilateral PQRS
 = Area of $\triangle SPR$ + Area of $\triangle PQR$
 $= \frac{1}{2} \times PR \times AP + \frac{1}{2} \times PR \times PB$
 $= \frac{1}{2} \times PR (AP + PB) = \frac{1}{2} \times AD \times AB$
 (PR = AD and AP + PB = AB)
 $= \frac{1}{2} \times \text{Area of rectangle ABCD} = \frac{1}{2} \times 16 = 8 \text{ cm}^2$

EXAMPLE 22. A road roller of diameter 1.75 m and length 1 m has to press a ground of area 1100 sqm. How many revolutions does it make?

Sol. Area covered in one revolution = curved surface area
 \therefore Number of revolutions = $\frac{\text{Total area to be pressed}}{\text{Curved surface area}}$
 $= \frac{1100}{2\pi rh} = \frac{1100}{2 \times \frac{22}{7} \times \frac{1.75}{2} \times 1}$
 $= 200$

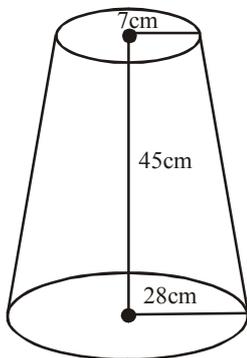
EXAMPLE 23. The annual rainfall at a place is 43 cm. Find the weight in metric tonnes of the annual rain falling there on a hectare of land, taking the weight of water to be 1 metric tonne to the cubic metre.

Sol. Area of land = 10000 sqm
 Volume of rainfall = $\frac{10000 \times 43}{100} = 4300 \text{ m}^3$
 Weight of water = $4300 \times 1 \text{ m tonnes} = 4300 \text{ m tonnes}$

EXAMPLE 24. The height of a bucket is 45 cm. The radii of the two circular ends are 28 cm and 7 cm, respectively. The volume of the bucket is:

- (a) 38610 cm³ (b) 48600 cm³
 (c) 48510 cm³ (d) None of these

Sol. (c) Here $r_1 = 7 \text{ cm}$, $r_2 = 28 \text{ cm}$ and $h = 45 \text{ cm}$



Volume of the frustum of a cone

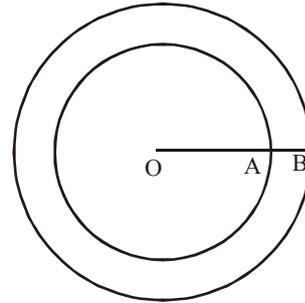
$$\text{Volume of the bucket} = \frac{1}{3} \pi h (r_1^2 + r_2^2 + r_1 r_2)$$

Hence, the required volume

$$= \frac{1}{3} \times \frac{22}{7} \times 45 (28^2 + 7^2 + 28 \times 7) = 48510 \text{ cm}^3$$

EXAMPLE 25. A hollow cylindrical tube open at both ends is made of iron 2 cm thick. If the external diameter be 50 cm and the length of the tube be 140 cm, find the number of cubic cm of iron in it.

Sol. Height = 140 cm
 External diameter = 50 cm
 \therefore External radius = 25 cm



Also, internal radius OA = OB - AB = 25 - 2 = 23 cm
 \therefore Volume of iron = $V_{\text{external}} - V_{\text{internal}}$
 $= \frac{22}{7} \times 140 (25^2 - 23^2) = 42240 \text{ cu. cm.}$

EXAMPLE 26. A cylindrical bath tub of radius 12 contains water to a depth of 20 cm. A spherical iron ball is dropped into the tub and thus the level of water is raised by 6.75 cm. What is the radius of the ball?

- (a) 80 cm² (b) 84 cm²
 (c) 104 cm² (d) 76 cm²

Sol. (b) Volume of the spherical ball = volume of the water displaced.

$$\Rightarrow \frac{4}{3} \pi r^3 = \pi (12)^2 \times 6.75$$

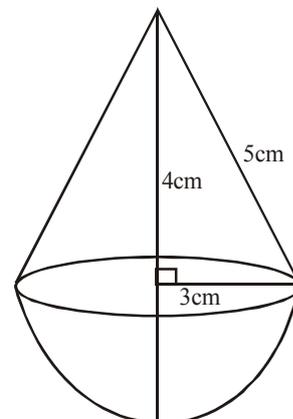
$$\Rightarrow r^3 = \frac{144 \times 6.75 \times 3}{4} = 729$$

$$\text{or } r = 9 \text{ cm,}$$

EXAMPLE 27. A toy is in the form of a cone mounted on a hemisphere with the same radius. The diameter of the base of the conical portion is 6 cm and its height is 4 cm. Determine the surface area of the toy. (Use $\pi = 3.14$).

Sol. The radius of the hemisphere = $\frac{1}{2} \times 6 = 3 \text{ cm}$

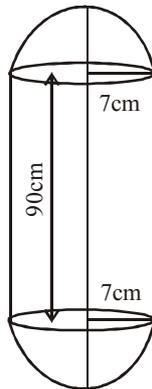
$$\text{Now, slant height of cone} = \sqrt{3^2 + 4^2} = 5 \text{ cm}$$



The surface area of the toy
 = Curved surface of the conical portion + curved surface of the hemisphere
 = $(\pi \times 3 \times 5 + 2\pi \times 3^2) \text{ cm}^2$
 = $3.14 \times 3 (5 + 6) \text{ cm}^2 = 103.62 \text{ cm}^2$.

EXAMPLE 28. A solid is composed of a cylinder with hemispherical ends. If the whole length of the solid is 104 cm and the radius of each of the hemispherical ends is 7 cm, find the cost of polishing its surface at the rate of Re. 1 per dm^2 .

Sol. Let the height of the cylinder be h cm.
 Then $h + 7 + 7 = 104$
 $\Rightarrow h = 90$
 Surface area of the solid
 = $2 \times$ curved surface area of hemisphere + curved surface area of the cylinder
 = $\left(2 \times 2 \times \frac{22}{7} \times 7 \times 7 + 2 \times \frac{22}{7} \times 7 \times 90 \right) \text{ cm}^2$
 = $616 + 3960 \text{ cm}^2 = 4576 \text{ cm}^2$
 Cost of polishing the surface of the solid
 = ₹. $\frac{4576 \times 1}{100} = ₹45.76$



EXAMPLE 29. A regular hexagonal prism has perimeter of its base as 600 cm and height equal to 200 cm. How many litres of petrol can it hold? Find the weight of petrol if density is 0.8 gm/cc.

Sol. Side of hexagon = $\frac{\text{Perimeter}}{\text{Number of sides}} = \frac{600}{6} = 100 \text{ cm}$
 Area of regular hexagon = $\frac{3\sqrt{3}}{2} \times 100 \times 100 = 25950 \text{ sq.cm.}$
 Volume = Base area \times height
 = $25950 \times 200 = 5190000 \text{ cu.cm.} = 5.19 \text{ cu.m.}$
 Weight of petrol = Volume \times Density
 = $5190000 \times 0.8 \text{ gm/cc}$
 = $4152000 \text{ gm} = 4152 \text{ kg.}$

EXAMPLE 30. A right pyramid, 12 cm high, has a square base each side of which is 10 cm. Find the volume of the pyramid.

Sol. Area of the base = $10 \times 10 = 100 \text{ sq.cm.}$
 Height = 12 cm
 \therefore Volume of the pyramid = $\frac{1}{3} \times 100 \times 12 = 400 \text{ cu.cm.}$

EXAMPLE 31. Semi-circular lawns are attached to both the edges of a rectangular field measuring $42 \text{ m} \times 35 \text{ m}$. The area of the total field is :

- (a) 3818.5 m^2 (b) 8318 m^2
 (c) 5813 m^2 (d) 1358 m^2

Sol. (a) Area of the field
 = $42 \times 35 + 2 \times \frac{1}{2} \times \frac{22}{7} \times (21)^2 + 2 \times \frac{1}{2} \times \frac{22}{7} \times (17.5)^2$
 = $1470 + 1386 + 962.5 = 3818.5 \text{ m}^2$

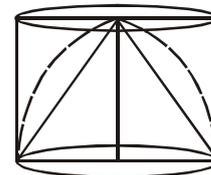
EXAMPLE 32. A frustum of a right circular cone has a diameter of base 10 cm, of top 6 cm, and a height of 5 cm; find the area of its whole surface and volume.

Sol. Here $r_1 = 5 \text{ cm}$, $r_2 = 3 \text{ cm}$ and $h = 5 \text{ cm}$.
 $\therefore l = \sqrt{h^2 + (r_1 - r_2)^2}$
 = $\sqrt{5^2 + (5 - 3)^2} = \sqrt{29} \text{ cm} = 5.385 \text{ cm}$
 \therefore Whole surface of the frustum
 = $\pi l (r_1 + r_2) + \pi r_1^2 + \pi r_2^2$
 = $\frac{22}{7} \times 5.385 (5 + 3) + \frac{22}{7} \times 5^2 + \frac{22}{7} \times 3^2 = 242.25 \text{ sq.cm.}$
 Volume = $\frac{\pi h}{3} (r_1^2 + r_1 r_2 + r_2^2)$
 = $\frac{22}{7} \times \frac{5}{3} [5^2 + 5 \times 3 + 3^2] = 256.67 \text{ cu. cm.}$

EXAMPLE 33. A cylinder is circumscribed about a hemisphere and a cone is inscribed in the cylinder so as to have its vertex at the centre of one end, and the other end as its base. The volume of the cylinder, hemisphere and the cone are, respectively in the ratio :

- (a) 2 : 3 : 2 (b) 3 : 2 : 1
 (c) 3 : 1 : 2 (d) 1 : 2 : 3

Sol. (b) We have,
 radius of the hemisphere = radius of the cone
 = height of the cone
 = height of the cylinder = r (say)
 Then, ratio of the volumes of cylinder, hemisphere and cone



= $\pi r^3 : \frac{2}{3} \pi r^3 : \frac{1}{3} \pi r^3 = 1 : \frac{2}{3} : \frac{1}{3} = 3 : 2 : 1$

EXERCISE

- The area of rectangular field is 460 square metres. If the length is 15 per cent more than the breadth, what is the breadth of the rectangular field?
 - 15 metres
 - 26 metres
 - 34.5 metres
 - Cannot be determined
 - None of these
- What will be the cost of gardening 1-metre – broad boundary around a rectangular plot having perimeter of 340 metres at the rate of ₹ 10 per square metre?
 - ₹ 3400
 - ₹ 1700
 - ₹ 3440
 - Cannot be determined
 - None of these
- The cost of paint is ₹ 60 per kilogram. A kilogram paint covers 20 square feet. How much will it cost to paint the outside of a cube having each side 10 feet?
 - ₹ 3000
 - ₹ 900
 - ₹ 1800
 - ₹ 360
 - None of these
- 20 buckets of water fill a tank when the capacity of each bucket is 13.5 litres. How many buckets will be required to fill the same tank if the capacity of each bucket is 9 litres?
 - 30
 - 32
 - 60
 - Data inadequate
 - None of these
- The breadth of a rectangular hall is two-thirds of its length. If the area of the hall is 2400 sq metres, what is the length in metres?
 - 120
 - 80
 - 60
 - 40
 - None of these
- If a pair of opposite sides of a square is increased by 5 cm each, then the ratio of the sides of the new figure is 3 : 2. What is the original area of the square?
 - 125 cm²
 - 225 cm²
 - 81 cm²
 - 100 cm²
 - None of these
- An equilateral triangle, a square and a circle have equal perimeters. If T denotes the area of the triangle, S, the area of the square and C, the area of the circle, then :
 - S > T > C
 - T > C > S
 - T > S > C
 - C > S > T
 - None of these
- The capacity of a cylindrical tank is 246.4 litres. If the height is 4 metres, what is the diameter of the base?
 - 1.4 metres
 - 2.8 metres
 - 28 metres
 - 14 metres
 - None of these
- The internal measurements of a box with lid are $115 \times 75 \times 35$ cm³ and the wood of which it is made is 2.5 cm thick. Find the volume of wood.
 - 82,125 cm³
 - 70,054 cm³
 - 78,514 cm³
 - None of these
 - None of these
- The length and the breadth of a rectangle are in the ratio of 3 : 2 respectively. If the sides of the rectangle are extended on each side by 1 metre, the ratio of length to breadth becomes 10 : 7. Find the area of the original rectangle in square metres.
 - 56
 - 50
 - 80
 - Data inadequate
 - None of these
- A right circular cone is exactly fitted inside a cube in such a way that the edges of the base of the cone are touching the edges of one of the faces of the cube and the vertex is on the opposite face of the cube. If the volume of the cube is 343 cc, what **approximately** is the volume of the cone?
 - 80 cc
 - 90 cc
 - 110 cc
 - 105 cc
 - 100 cc
- If the length of a rectangle is increased by 20% and the breadth is reduced by 20%, what will be the effect on its area?
 - 4% increase
 - 6% increase
 - 5% decrease
 - 4% decrease
 - None of these
- The ratio between the length and the breadth of a rectangular plot is 7 : 5. If the perimeter of the plot is 144 metres, what is its area?
 - 1320 sq. metres
 - 1260 sq. metres
 - 1280 sq. metres
 - 1380 sq. metres
 - None of these
- The perimeter of a rectangle is equal to the perimeter of a right-angled triangle of height 12 cm. If the base of the triangle is equal to the breadth of the rectangle, what is the length of the rectangle?
 - 18 cm
 - 24
 - 22 cm
 - Data inadequate
 - None of these
- The squared value of the diagonal of a rectangle is $(64 + B^2)$ sq cm, where B is less than 8 cm. What is the breadth of that rectangle?
 - 6 cm
 - 10 cm
 - 8 cm
 - Data inadequate
 - None of these
- If the height of a triangle is decreased by 40%, and its base is increased by 40%, what will be the effect on its area?
 - No change
 - 16% increase
 - 8% decrease
 - 16% decrease
 - None of these

17. A circular ground whose diameter is 35 metres, has a 1.4 metre-broad garden around it. What is the area of the garden in square metres?
 (a) 160.16 (b) 6.16
 (c) 122.66 (d) Data inadequate
 (e) None of these
18. The length of a rectangular plot is 20 metres more than its breadth. If the cost of fencing the plot at the rate of ₹ 26.50 per metre is ₹ 5,300, what is the length of the plot (in metres)?
 (a) 40 (b) 120
 (c) 50 (d) Data inadequate
 (e) None of these
19. A rectangular plate is of 6 in breadth and 12 in length. Two apertures of 2 in diameter each and one aperture of 1 in diameter have been made with the help of a gas cutter. What is the area of the remaining portion of the plate?
 (a) 62.5 sq. in (b) 68.5 sq. in
 (c) 64.5 sq. in (d) 66.5 sq. in
 (e) None of these
20. What would be the length of the diagonal of a square plot whose area is equal to the area of a rectangular plot of 45 m length and 40 m width?
 (a) 42.5 m (b) 60 m
 (c) 4800 m (d) Data inadequate
 (e) None of these
21. What will be the ratio between the area of a rectangle and the area of a triangle with one of the sides of rectangle as base and a vertex on the opposite side of rectangle.
 (a) 1 : 2 (b) 2 : 1
 (c) 3 : 1 (d) Data inadequate
 (e) None of these
22. Two roads XY and YZ of 15 metres and 20 metres length respectively are perpendicular to each other. What is the distance between X & Z by the shortest route?
 (a) 35 metres (b) 30 metres
 (c) 24 metres (d) 25 metres
 (e) None of these
23. What will be the area of a semi-circle of 14 metres diameter?
 (a) 154 sq metres (b) 77 sq metres
 (c) 308 sq metres (d) 22 sq metres
 (e) None of these
24. The area of a right-angled triangle is two-thirds of the area of a rectangle. The base of the triangle is 80 percent of the breadth of the rectangle. If the perimeter of the rectangle is 200 cm, what is the height of the triangle?
 (a) 20 cm (b) 30 cm
 (c) 15 cm (d) Data inadequate
 (e) None of these
25. The area of a rectangular plot is 15 times its breadth. If the difference between the length and the breadth is 10 metres, what is its breadth?
 (a) 10 metres (b) 5 metres
 (c) 7.5 metres (d) Data inadequate
 (e) None of these
26. A rectangular garden has a 5-metre-wide road outside around all the four sides. The area of the road is 600 square metres. What is the ratio between the length and the breadth of that plot?
 (a) 3 : 2 (b) 4 : 3
 (c) 5 : 4 (d) Data inadequate
 (e) None of these
27. Four sheets of 50 cm × 5 cm are to be arranged in such a manner that a square could be formed. What will be the area of inner part of the square so formed?
 (a) 2000 cm² (b) 1600 cm²
 (c) 1800 cm² (d) 2500 cm²
 (e) None of these
28. In order to fence a square Manish fixed 48 poles. If the distance between two poles, is 5 metres then what will be the area of the square so formed?
 (a) Cannot be determined (b) 2600 cm²
 (c) 2500 cm² (d) 3025 cm²
 (e) None of these
29. The area of a side of a box is 120 sq cm. The area of the other side of the box is 72 sq cm. If the area of the upper surface of the box is 60 sq cm then find the volume of the box.
 (a) 259200 cm³ (b) 86400 cm³
 (c) 720 cm³ (d) Cannot be determined
 (e) None of these
30. A circle and a rectangle have the same perimeter. The sides of the rectangle are 18 cm and 26 cm. What is the area of the circle?
 (a) 88 cm² (b) 154 cm²
 (c) 1250 cm² (d) 616 cm²
 (e) None of these
31. The cost of carpeting a room 18m long with a carpet 75 cm wide at ₹ 4.50 per metre is ₹810. The breadth of the room is:
 (a) 7m (b) 7.5m
 (c) 8m (d) 8.5m
 (e) None of these
32. If the perimeter and diagonal of a rectangle are 14 and 5 cms respectively, find its area.
 (a) 12 cm² (b) 16 cm²
 (c) 20 cm² (d) 24 cm²
 (e) None of these
33. In an isosceles right angled triangle, the perimeter is 20 metre. Find its area.
 (a) 9,320 m² (b) 8,750 m²
 (c) 7,980 m² (d) 6,890 m²
 (e) None of these
34. When the circumference and area of a circle are numerically equal, then the diameter is numerically equal to
 (a) area (b) circumference
 (c) 4 (d) 2π
 (e) None of these
35. In a parallelogram, the length of one diagonal and the perpendicular dropped on that diagonal are 30 and 20 metres respectively. Find its area.
 (a) 600 m² (b) 540 m²
 (c) 680 m² (d) 574 m²
 (e) None of these

36. The diameter of a garden roller is 1.4 m and it is 2 m long. How much area will it cover in 5 revolutions? (use $\pi = \frac{22}{7}$)
- (a) 40 m^2 (b) 44 m^2
 (c) 48 m^2 (d) 36 m^2
 (e) None of these
37. The area of a triangle is 615 m^2 . If one of its sides is 123 metre, find the length of the perpendicular dropped on that side from opposite vertex.
- (a) 15 metres (b) 12 metres
 (c) 10 metres (d) 9 metres
 (e) None of these
38. A horse is tethered to one corner of a rectangular grassy field 40 m by 24 m with a rope 14 m long. Over how much area of the field can it graze?
- (a) 154 m^2 (b) 308 m^2
 (c) 150 m^2 (d) 407 m^2
 (e) None of these
39. How many plants will be there in a circular bed whose outer edge measure 30 cms, allowing 4 cm^2 for each plant?
- (a) 18 (b) 750
 (c) 24 (d) 120
 (e) None of these
40. From a square piece of a paper having each side equal to 10 cm, the largest possible circle is being cut out. The ratio of the area of the circle to the area of the original square is nearly:
- (a) $\frac{4}{5}$ (b) $\frac{3}{5}$
 (c) $\frac{5}{6}$ (d) $\frac{6}{7}$
 (e) None of these
41. A square carpet with an area 169 m^2 must have 2 metres cut-off one of its edges in order to be a perfect fit for a rectangular room. What is the area of rectangular room?
- (a) 180 m^2 (b) 164 m^2
 (c) 152 m^2 (d) 143 m^2
 (e) None of these
42. A picture $30'' \times 20''$ has a frame $2\frac{1}{2}''$ wide. The area of the picture is approximately how many times the area of the frame?
- (a) 4 (b) $2\frac{1}{2}$
 (c) 2 (d) 5
 (e) None of these
43. A rectangular plot $15\text{ m} \times 10\text{ m}$, has a path of grass outside it. If the area of grassy pathway is 54 m^2 , find the width of the path.
- (a) 4m (b) 3m
 (c) 2m (d) 1m
 (e) None of these
44. If the area of a circle decreases by 36%, then the radius of a circle decreases by
- (a) 20% (b) 18%
 (c) 36% (d) 64%
 (e) None of these
45. The floor of a rectangular room is 15 m long and 12 m wide. The room is surrounded by a verandah of width 2 m on all its sides. The area of the verandah is:
- (a) 124 m^2 (b) 120 m^2
 (c) 108 m^2 (d) 58 m^2
 (e) None of these
46. A typist uses a paper 12" by 5" length wise and leaves a margin of 1" at the top and the bottom and a margin of $\frac{1}{2}''$ on either side. What fractional part of the paper is available to him for typing?
- (a) $\frac{2}{3}$ (b) $\frac{1}{2}$
 (c) $\frac{1}{3}$ (d) $\frac{5}{7}$
 (e) None of these
47. A rectangular lawn $70\text{ m} \times 30\text{ m}$ has two roads each 5 metres wide, running in the middle of it, one parallel to the length and the other parallel to the breadth. Find the cost of gravelling the road at the rate of ₹ 4 per square metre.
- (a) ₹ 2,000 (b) ₹ 1,800
 (c) ₹ 1,900 (d) ₹ 1,700
 (e) None of these
48. A circular grass lawn of 35 metres in radius has a path 7 metres wide running around it on the outside. Find the area of path.
- (a) 1694 m^2 (b) 1700 m^2
 (c) 1598 m^2 (d) 1500 m^2
 (e) None of these
49. A cylindrical bucket of height 36 cm and radius 21 cm is filled with sand. The bucket is emptied on the ground and a conical heap of sand is formed, the height of the heap being 12 cm. The radius of the heap at the base is:
- (a) 63 cm (b) 53 cm
 (c) 56 cm (d) 66 cm
 (e) None of these
50. The radius of the wheel of a bus is 70 cms and the speed of the bus is 66 km/h, then the r.p.m. (revolutions per minutes) of the wheel is
- (a) 200 (b) 250
 (c) 300 (d) 330
 (e) None of these
51. The altitude drawn to the base of an isosceles triangle is 8 cm and the perimeter is 32 cm. The area of the triangle is
- (a) 72 cm^2 (b) 60 cm^2
 (c) 66 cm^2 (d) 65 cm^2
 (e) None of these

52. The cross section of a canal is a trapezium in shape. If the canal is 7 metres wide at the top and 9 metres at the bottom and the area of cross-section is 1280 square metres, find the length of the canal.
 (a) 160 metres (b) 172 metres
 (c) 154 metres (d) 165 metres
 (e) None of these
53. It is required to fix a pipe such that water flowing through it at a speed of 7 metres per minute fills a tank of capacity 440 cubic metres in 10 minutes. The inner radius of the pipe should be :
 (a) $\sqrt{2}$ m (b) 2m
 (c) $\frac{1}{2}$ m (d) $\frac{1}{\sqrt{2}}$ m
 (e) None of these
54. The area of a square field is 576 km². How long will it take for a horse to run around at the speed of 12 km/h ?
 (a) 12 h (b) 10 h
 (c) 8 h (d) 6 h
 (e) None of these
55. The area of a rectangular field is 144 m². If the length had been 6 metres more, the area would have been 54 m² more. The original length of the field is
 (a) 22 metres (b) 18 metres
 (c) 16 metres (d) 24 metres
 (e) None of these
56. A rectangular parking space is marked out by painting three of its sides. If the length of the unpainted side is 9 feet, and the sum of the lengths of the painted sides is 37 feet, then what is the area of the parking space in square feet?
 (a) 46 (b) 81
 (c) 126 (d) 252
 (e) None of these
57. A farmer wishes to start a 100 square metres rectangular vegetable garden. Since he has only 30 m barbed wire, he fences three sides of the garden letting his house compound wall act as the fourth side fencing. The dimension of the garden is:
 (a) 15 m × 6.67 m (b) 20 m × 5 m
 (c) 30 m × 3.33 m (d) 40 m × 2.5 m
 (e) None of these
58. A rectangular tank measuring 5m × 4.5 m × 2.1 m is dug in the centre of the field measuring 13.5 m × 2.5. The earth dug out is spread evenly over the remaining portion of a field. How much is the level of the field raised ?
 (a) 4.0m (b) 4.1 m
 (c) 4.2m (d) 4.3m
 (e) None of these
59. A rectangular paper, when folded into two congruent parts had a perimeter of 34 cm for each part folded along one set of sides and the same is 38 cm when folded along the other set of sides. What is the area of the paper?
 (a) 140 cm² (b) 240 cm²
 (c) 560 cm² (d) 160 cm²
 (e) None of these
60. The length and breadth of the floor of the room are 20 feet and 10 feet respectively. Square tiles of 2 feet length of different colours are to be laid on the floor. Black tiles are laid in the first row on all sides. If white tiles are laid in the one-third of the remaining and blue tiles in the rest, how many blue tiles will be there?
 (a) 16 (b) 24
 (c) 32 (d) 48
 (e) None of these
61. Four equal circles are described about the four corners of a square so that each touches two of the others. If a side of the square is 14 cm, then the area enclosed between the circumferences of the circles is :
 (a) 24 cm² (b) 42 cm²
 (c) 154 cm² (d) 196 cm²
 (e) None of these

ANSWER KEY

1	(e)	8	(e)	15	(a)	22	(d)	29	(c)	36	(b)	43	(c)	50	(b)	57	(b)
2	(c)	9	(a)	16	(d)	23	(b)	30	(d)	37	(c)	44	(a)	51	(b)	58	(c)
3	(c)	10	(e)	17	(a)	24	(d)	31	(b)	38	(a)	45	(a)	52	(a)	59	(a)
4	(a)	11	(b)	18	(e)	25	(b)	32	(a)	39	(a)	46	(a)	53	(a)	60	(a)
5	(c)	12	(d)	19	(e)	26	(d)	33	(a)	40	(a)	47	(c)	54	(c)	61	(b)
6	(d)	13	(b)	20	(b)	27	(e)	34	(c)	41	(d)	48	(a)	55	(c)		
7	(d)	14	(d)	21	(b)	28	(e)	35	(a)	42	(a)	49	(a)	56	(c)		

Hints & Explanations

1. (e) Let the breadth of the rectangular field be 'x' m. Then, length of the field will be

$$x + \frac{x \times 15}{100} = \frac{23x}{20}$$

$$\text{Now, } x \times \frac{23x}{20} = 460$$

$$\text{or, } 23x^2 = 460 \times 20$$

$$\text{or, } x^2 = 20 \times 20$$

$$\text{or, } x = 20 \text{ m}$$

2. (c) Let l and b be the length and breadth of rectangular plot respectively.

\therefore According to the question, we have

$$2(l + b) = 340 \Rightarrow l + b = 170$$

Now, $(l + 2)$ and $(b + 2)$ be the length and breadth of plot with boundary.

$$\therefore \text{ Required area} = (l + 2)(b + 2) - lb$$

$$= lb + 2l + 2b + 4 - lb$$

$$= 2(l + b) + 4 = 344$$

$$\therefore \text{ Required cost} = 344 \times 10 = 3440$$

3. (c) Area of cube

$$= 6 \times (\text{side})^2 = 6 \times 10 \times 10 = 600 \text{ square feet.}$$

$$\text{Cost to paint outside of the cube} = \frac{600}{20} \times 60$$

$$= ₹ 1800$$

4. (a) Capacity of the tank = $20 \times 13.5 = 270$ litres

When the capacity of each bucket = 9 litres, then the required no. of buckets

$$= \frac{270}{9} = 30$$

5. (c) Let the length of the rectangular hall be 'x' m, then the breadth of the rectangular hall = $\frac{2x}{3}$ m.

$$\text{Area of hall} = \frac{2x}{3} \times x = \frac{2x^2}{3}$$

$$\text{or, } \frac{2x^2}{3} = 2400 \text{ or, } x = 60 \text{ m}$$

6. (d) Let the original side of the square = x cm

$$\frac{x + 5}{x} = \frac{3}{2} \text{ or } 2x + 10 = 3x$$

$$\therefore x = 10 \text{ cm}$$

$$\therefore \text{ original area} = (10)^2 = 100 \text{ cm}^2$$

7. (d) Let the perimeter of each be a .

Then, side of the equilateral triangle = $\frac{a}{3}$; side of the

square = $\frac{a}{4}$; radius of the circle = $\frac{a}{2\pi}$.

$$\therefore T = \frac{\sqrt{3}}{4} \times \left(\frac{a}{3}\right)^2 = \frac{\sqrt{3}a^2}{36}; S = \left(\frac{a}{4}\right)^2 = \frac{a^2}{16};$$

$$C = \pi \times \left(\frac{a}{2\pi}\right)^2 = \frac{a^2}{4\pi} = \frac{7a^2}{88}.$$

So, $C > S > T$.

8. (e) Capacity (volume) of a cylindrical tank = $\pi r^2 h$
(Here r = radius and h = height of the tank)

$$\text{Now, from the question, } 246.4 \times 0.001 = \frac{22}{7} \times r^2 \times 4$$

$$[\because 1 \text{ litre} = 1000 \text{ cm}^3 = 0.001 \text{ m}^3]$$

$$\text{or, } \frac{0.2464 \times 7}{22 \times 4} = r^2$$

$$\text{or, } r = 0.14 \text{ m}$$

$$\text{or, diameter} = 2r = 0.28 \text{ m}$$

9. (a) Internal volume = $115 \times 75 \times 35 = 3,01,875 \text{ cm}^3$

External volume

$$= (115 + 2 \times 2.5) \times (75 + 2 \times 2.5) \times (35 + 2 \times 2.5)$$

$$= 120 \times 80 \times 40 = 3,84,000 \text{ cm}^3$$

\therefore Volume of wood = External volume – Internal volume

$$= 3,84,000 - 3,01,875 = 82,125 \text{ cm}^3$$

10. (e) Let the length and breadth be ℓ and b respectively.

$$\frac{\ell}{b} = \frac{3}{2} \text{ or, } \ell = \frac{3}{2}b \quad \dots\dots (i)$$

$$\frac{\ell + 1}{b + 1} = \frac{10}{7} \text{ or, } 7\ell - 10b = 3 \quad \dots\dots (ii)$$

From eq. (i)

$$10.5b - 10b = 6 \text{ or, } 0.5b = 3 \text{ or, } b = 6 \text{ and } \ell = 9$$

$$\text{Area} = \ell \times b = 6 \times 9 = 54 \text{ m}^2$$

11. (b) Edge of the cube = $\sqrt[3]{343} = 7$ cm
 \therefore Radius of cone = 3.5 cm
 height = 7 cm
 volume of cone = $\frac{1}{3}\pi r^2 h$
 $\frac{1}{3}\pi r^2 h = \frac{1}{3} \times \frac{22}{7} \times (3.5)^2 \times 7 = \frac{1}{3} \times 22 \times 12.25 \approx 90$ cc

12. (d) Percentage change = $x - y - \frac{xy}{100}$
 $= 20 - 20 - \frac{20 \times 20}{100} = -4\% = 4\%$ decrease

13. (b) Let the length and breadth be $7x$ and $5x$ respectively.
 Then, $P = 2(7x + 5x) = 144 \Rightarrow x = 6$
 Area = $7 \times 6 \times 5 \times 6 = 1260$ sq.m.

14. (d) $P = 2(\ell + b) = L + B + h = L + b + 12$.

Data inadequate.

15. (a) Diagonal² = $64 + B^2$ or, $10^2 = 64 + 6^2$

16. (d) Regd effect = $\left[+40 - 40 - \frac{40 \times 40}{100} \right] \% = -16\%$

i.e., the area will decrease by 16%

17. (a) Req. area = $\pi[(17.5 + 1.4)^2 - (17.5)^2]$
 $= \frac{22}{7} \times (36.4 \times 1.4)$ [since $a^2 - b^2 = (a+b)(a-b)$]
 $= 22 \times 36.4 \times 0.2 = 160.16$ sq m

18. (e) Perimeter of the rectangular plot = $[(b + 20) + b] \times 2$
 $= \frac{5300}{26.5} = 200$

$$\therefore (2b + 20)2 = 200$$

$$\Rightarrow b = 40$$

$$\Rightarrow l = 40 + 20 = 60 \text{ m}$$

19. (e) Required area = $6 \times 12 - \left\{ 2 \times \pi \left(\frac{2}{2} \right)^2 + \pi \left(\frac{1}{2} \right)^2 \right\}$

$$= 72 - \left(2\pi + \frac{\pi}{4} \right) = 72 - \frac{9\pi}{4} = 72 - \frac{9}{4} \times \frac{22}{7}$$

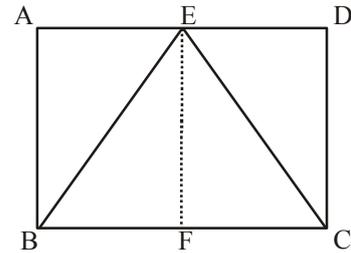
$$= 72 - \left(\frac{99}{14} \right) = 64.94 \text{ sq in.}$$

20. (b) $a^2 = 45 \times 40 = 1800$

$$\therefore a = \sqrt{1800} = 30\sqrt{2}$$

$$\therefore \text{Diagonal of the square} = \sqrt{2} a = \sqrt{2} \times 30\sqrt{2} = 30 \times 2 = 60 \text{ m}$$

21. (b)



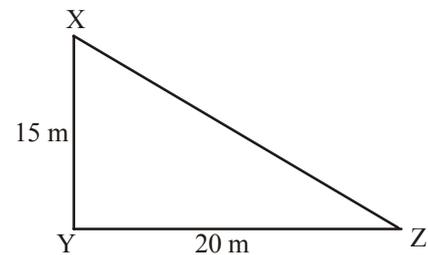
$$\text{Area of } \triangle EBC = \frac{1}{2} \times BC \times EF$$

$$= \frac{1}{2} \times BC \times AB \text{ [Since, } EF = AB]$$

$$\text{Area of } \triangle EBC = \frac{1}{2} \times \text{area of } \triangle ABCD$$

\therefore Required ratio = 2 : 1.

22. (d) XYZ is a right-angled triangle



$$XZ = \sqrt{15^2 + 20^2} = \sqrt{625} = 25 \text{ m}$$

23. (b) Area of semicircle = $\frac{1}{2}\pi r^2$

$$= \frac{1}{2} \times \frac{22}{7} \times 7 \times 7 = 77 \text{ m}^2$$

24. (d) Let the base and height of triangle, and length and breadth of rectangle be L and h , and L_1 and b_1 respectively.

$$\text{Then } \frac{1}{2} \times L \times h = \frac{2}{3} \times L_1 \times b_1 \dots(i)$$

$$L = \frac{4}{5} b_1 \dots(ii) \text{ and } L_1 + b_1 = 100 \dots(iii)$$

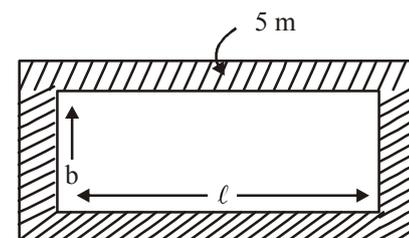
In the above we have three equations and four unknowns. Hence the value of 'h' can't be determined.

25. (b) $L \times B = 15 \times B$

$$\therefore L = 15 \text{ m}$$

$$\text{and } L - B = 10$$

$$\therefore B = 15 - 10 = 5 \text{ m}$$

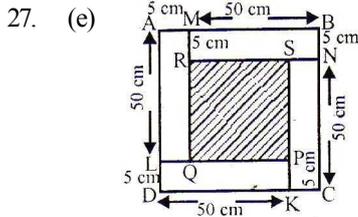


26. (d)

Area of shaded portion = 600 m.

$$\begin{aligned} \therefore (l + 10)(b + 10) - lb &= 600 \\ \text{or, } lb + 10b + 10l + 100 - lb &= 600 \\ \text{or, } 10(b + l) &= 500 \\ \therefore b + l &= 50 \end{aligned}$$

From this equation we can't get the required ratio.



The four sheets are BMRN, AMQL, NSKC and DLPK
 \therefore Side of the new square sheet = $50 + 5 = 55$ cm and
 the side of the inner part of the square $(55 - 10) = 45$ cm
 Hence, area = $(45)^2 = 2025$ sq. cm.

28. (e) Let the side of the square be x m.
 \therefore Perimeter of the square = $48 \times 5 = 4x \therefore x = 60$ m
 \therefore Area = $(60)^2 = 3600$ m²

29. (c) Volume of the box = $\sqrt{120 \times 72 \times 60} = 720$ cm³

30. (d) Perimeter of the circle = $2\pi r = 2(18 + 26)$

$$\Rightarrow 2 \times \frac{22}{7} \times r = 88 \Rightarrow r = 14$$

\therefore Area of the circle

$$= \pi r^2 = \frac{22}{7} \times 14 \times 14 = 616 \text{ cm}^2.$$

31. (b) Length of the carpet = $\left(\frac{\text{Total cost}}{\text{Rate/m}} \right)$
 $= \left(\frac{8100}{45} \right) \text{m} = 180$ m.

Area of the room = Area of the carpet

$$= \left(180 \times \frac{75}{100} \right) \text{m}^2 = 135 \text{ m}^2.$$

$$\therefore \text{Breadth of the room} = \left(\frac{\text{Area}}{\text{Length}} \right) = \left(\frac{135}{18} \right) \text{m}$$

= 7.5 m.

32. (a) In a rectangle,

$$\frac{(\text{perimeter})^2}{4} = (\text{diagonal})^2 + 2 \times \text{area}$$

$$\Rightarrow \frac{(14)^2}{4} = 5^2 + 2 \times \text{area}$$

$$49 = 25 + 2 \times \text{area}$$

$$\therefore \text{Area} = \frac{49 - 25}{2} = \frac{24}{2} = 12 \text{ cm}^2$$

33. (a) In an isosceles right angled triangle,
 Area = $23.3 \times \text{perimeter}^2$
 $= 23.3 \times 20^2 = 9320$ m²

34. (c) According to question, circumference of circle
 = Area of circle

$$\text{or } \pi d = \pi \left(\frac{d}{2} \right)^2 \quad [\text{where } d = \text{diameter}]$$

$$\therefore d = 4$$

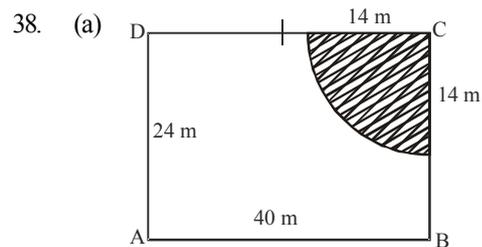
35. (a) In a parallelogram.
 Area = Diagonal \times length of perpendicular on it.
 $= 30 \times 20 = 600$ m²

36. (b) Required area covered in 5 revolutions
 $= 5 \times 2\pi rh = 5 \times 2 \times \frac{22}{7} \times 0.7 \times 2 = 44$ m²

37. (c) In a triangle,
 Area = $\frac{1}{2} \times \text{length of perpendicular} \times \text{base}$

$$\text{or } 615 = \frac{1}{2} \times \text{length of perpendicular} \times 123$$

$$\therefore \text{Length of perpendicular} = \frac{615 \times 2}{123} = 10 \text{ m.}$$



Area of the shaded portion

$$= \frac{1}{4} \times \pi (14)^2$$

$$= 154 \text{ m}^2$$

39. (a) Circumference of circular bed = 30 cm

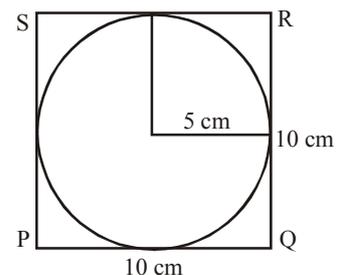
$$\text{Area of circular bed} = \frac{(30)^2}{4\pi}$$

$$\text{Space for each plant} = 4 \text{ cm}^2$$

\therefore Required number of plants

$$= \frac{(30)^2}{4\pi} \div 4 = 17.89 = 18 \text{ (Approx)}$$

40. (a) Area of the square = $(10)^2 = 100$ cm²
 The largest possible circle would be as shown in the figure below :

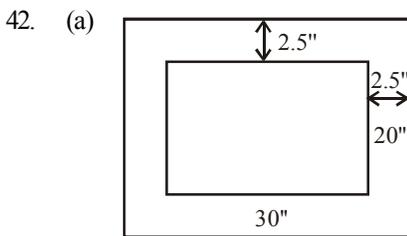


$$\text{Area of the circle} = \frac{22}{7} \times (5)^2 = \frac{22 \times 25}{7}$$

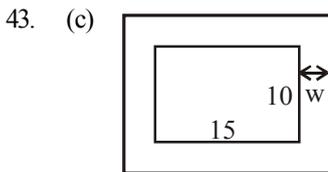
$$\text{Required ratio} = \frac{22 \times 25}{7 \times 100} = \frac{22}{28} = \frac{11}{14}$$

$$= 0.785 \approx 0.8 = \frac{4}{5}$$

41. (d) Side of square carpet = $\sqrt{\text{Area}} = \sqrt{169} = 13\text{m}$
 After cutting of one side,
 Measure of one side = $13 - 2 = 11\text{ m}$
 and other side = 13 m (remain same)
 \therefore Area of rectangular room = $13 \times 11 = 143\text{ m}^2$



Length of frame = $30 + 2.5 \times 2 = 35\text{ inch}$
 Breadth of frame = $20 + 2.5 \times 2 = 25\text{ inch}$
 Now, area of picture = $30 \times 20 = 600\text{ sq. inch}$
 Area of picture with frame = $35 \times 25 = 875\text{ sq. inch}$
 \therefore Area of frame = $875 - 600 = 275\text{ sq. inch}$



Let the width of the path = $W\text{ m}$
 then, length of plot with path = $(15 + 2W)\text{ m}$
 and breadth of plot with path = $(10 + 2W)\text{ m}$
 Therefore, Area of rectangular plot (without path)
 = $15 \times 10 = 150\text{ m}^2$

and Area of rectangular plot (with path)
 = $150 + 54 = 204\text{ m}^2$

Hence, $(15 + 2W) \times (10 + 2W) = 204$

$$\Rightarrow 4W^2 + 50W - 54 = 0$$

$$\Rightarrow 2W^2 + 25W - 27 = 0$$

$$\Rightarrow (W - 2)(W + 27) = 0$$

$$\text{Thus } W = 2 \text{ or } -27$$

\therefore width of the path = 2 m

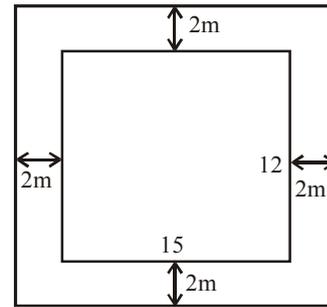
44. (a) If area of a circle decreased by $x\%$ then the radius of a circle decreases by

$$(100 - 10\sqrt{100 - x})\% = (100 - 10\sqrt{100 - 36})\%$$

$$= (100 - 10\sqrt{64})\%$$

$$= 100 - 80 = 20\%$$

45. (a) Area of the outer rectangle = $19 \times 16 = 304\text{ m}^2$



Area of the inner rectangle = $15 \times 12 = 180\text{ m}^2$

Required area = $(304 - 180) = 124\text{ m}^2$

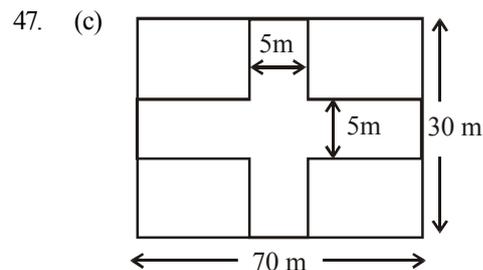
46. (a) Area of paper = $12 \times 5 = 60\text{ sq. inch}$

$$\text{Area of typing part} = (12 - 1 \times 2) \times (5 - \frac{1}{2} \times 2)$$

$$= (12 - 2) \times (5 - 1)$$

$$= (10 \times 4)\text{ sq. inch}$$

$$\therefore \text{ Required fraction} = \frac{40}{60} = \frac{2}{3}$$



Total area of road

= Area of road which parallel to length + Area of road which parallel to breadth - overlapped road

$$= 70 \times 5 + 30 \times 5 - 5 \times 5$$

$$= 350 + 150 - 25$$

$$= 500 - 25 = 475\text{ m}^2$$

\therefore Cost of gravelling the road

$$= 475 \times 4 = ₹ 1900$$

48. (a) Radius of a circular grass lawn (without path) = 35 m

$$\therefore \text{ Area} = \pi r^2 = \pi (35)^2$$

Radius of a circular grass lawn (with path)

$$= 35 + 7 = 42\text{ m}$$

$$\therefore \text{ Area} = \pi r^2 = \pi (42)^2$$

$$\therefore \text{ Area of path} = \pi (42)^2 - \pi (35)^2$$

$$= \pi (42^2 - 35^2)$$

$$= \pi (42 + 35)(42 - 35)$$

$$= \pi \times 77 \times 7 = \frac{22}{7} \times 77 \times 7 = 1694\text{ m}^2$$

49. (a) Volume of the bucket = volume of the sand emptied
 Volume of sand = $\pi (21)^2 \times 36$

Let r be the radius of the conical heap.

$$\text{Then, } \frac{1}{3}\pi r^2 \times 12 = \pi(21)^2 \times 36$$

$$\text{or } r^2 = (21)^2 \times 9 \quad \text{or } r = 21 \times 3 = 63$$

50. (b) Radius of the wheel of bus = 70 cm. Then,
circumference of wheel = $2\pi r = 140\pi = 440$ cm

Distance covered by bus in 1 minute

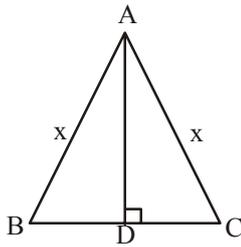
$$= \frac{66}{60} \times 1000 \times 100 \text{ cms}$$

Distance covered by one revolution of wheel
= circumference of wheel
= 440 cm

$$\therefore \text{Revolutions per minute} = \frac{6600000}{60 \times 440} = 250$$

51. (b) Let ABC be the isosceles triangle and AD be the altitude.

Let $AB = AC = x$. Then, $BC = (32 - 2x)$.



Since, in an isosceles triangle, the altitude bisects the base. So, $BD = DC = (16 - x)$.

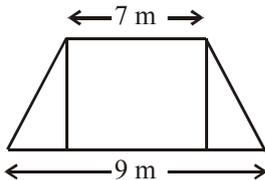
$$\begin{aligned} \text{In } \triangle ADC, AC^2 &= AD^2 + DC^2 \\ \Rightarrow x^2 &= (8)^2 + (16 - x)^2 \\ \Rightarrow 32x &= 320 \Rightarrow x = 10. \end{aligned}$$

$$\therefore BC = (32 - 2x) = (32 - 20) \text{ cm} = 12 \text{ cm.}$$

$$\text{Hence, required area} = \left(\frac{1}{2} \times BC \times AD \right)$$

$$= \left(\frac{1}{2} \times 12 \times 10 \right) \text{ cm}^2 = 60 \text{ cm}^2.$$

52. (a)



Let the length of canal = h m. Then,

$$\text{area of canal} = \frac{1}{2} \times h(9 + 7)$$

$$\text{or } 1280 = \frac{1}{2} h(16)$$

$$\therefore h = \frac{1280 \times 2}{16} = 160 \text{ m}$$

53. (a) Let inner radius of the pipe be r .

$$\text{Then, } 440 = \frac{22}{7} \times r^2 \times 7 \times 10$$

$$\text{or } r^2 = \frac{440}{22 \times 10} = 2$$

$$\text{or } r = \sqrt{2} \text{ m}$$

54. (c) Area of field = 576 km^2 . Then,

$$\text{each side of field} = \sqrt{576} = 24 \text{ km}$$

Distance covered by the horse
= Perimeter of square field
= $24 \times 4 = 96 \text{ km}$

$$\therefore \text{Time taken by horse} = \frac{\text{distance}}{\text{speed}} = \frac{96}{12} = 8 \text{ h}$$

55. (c) Let the length and breadth of the original rectangular field be x m and y m respectively.

$$\text{Area of the original field} = x \times y = 144 \text{ m}^2$$

$$\therefore x = \frac{144}{y} \quad \dots(i)$$

If the length had been 6 m more, then area will be

$$(x + 6)y = 144 + 54$$

$$\Rightarrow (x + 6)y = 198 \quad \dots(ii)$$

Putting the value of x from eq (i) in eq (ii), we get

$$\left(\frac{144}{y} + 6 \right) y = 198$$

$$\Rightarrow 144 + 6y = 198$$

$$\Rightarrow 6y = 54 \Rightarrow y = 9 \text{ m}$$

Putting the value of y in eq (i) we get $x = 16$ m

56. (c) Clearly, we have : $l = 9$ and $l + 2b = 37$ or $b = 14$.

$$\therefore \text{Area} = (l \times b) = (9 \times 14) \text{ sq. ft.} = 126 \text{ sq. ft.}$$

57. (b) We have : $2b + l = 30 \Rightarrow l = 30 - 2b$.

$$\text{Area} = 100 \text{ m}^2 \Rightarrow l \times b = 100 \Rightarrow b(30 - 2b) = 100$$

$$\Rightarrow b^2 - 15b + 50 = 0 \Rightarrow (b - 10)(b - 5) = 0$$

$$\Rightarrow b = 10 \text{ or } b = 5.$$

When $b = 10$, $l = 10$ and when $b = 5$, $l = 20$.

Since the garden is rectangular,

so its dimension is $20 \text{ m} \times 5 \text{ m}$.

58. (c) Area of the field = $13.5 \times 2.5 = 33.75 \text{ m}^2$

Area covered by the rectangular tank
= $5 \times 4.5 = 22.50 \text{ m}^2$

Area of the field on which the earth dug out is to be spread = $33.75 - 22.50 = 11.25 \text{ m}^2$

Let the required height be h .

$$\text{Then, } 11.25 \times h = 5 \times 4.5 \times 2.1$$

$$\text{or } h = 4.2 \text{ m}$$

59. (a) When folded along breadth, we have :

$$2\left(\frac{l}{2} + b\right) = 34 \text{ or } l + 2b = 34 \quad \dots(i)$$

When folded along length, we have :

$$2\left(l + \frac{b}{2}\right) = 38 \text{ or } 2l + b = 38 \quad \dots(ii)$$

Solving (i) and (ii), we get :

$$l = 14 \text{ and } b = 10.$$

$$\therefore \text{Area of the paper} = (14 \times 10) \text{ cm}^2 = 140 \text{ cm}^2.$$

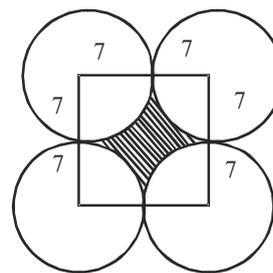
60. (a) Area left after laying black tiles
 = $[(20 - 4) \times (10 - 4)]$ sq. ft. = 96 sq. ft.

$$\text{Area under white tiles} = \left(\frac{1}{3} \times 96\right) \text{ sq. ft} = 32 \text{ sq. ft.}$$

$$\text{Area under blue tiles} = (96 - 32) \text{ sq. ft} = 64 \text{ sq. ft.}$$

$$\text{Number of blue tiles} = \frac{64}{(2 \times 2)} = 16.$$

61. (b)



The shaded area gives the required region.

Area of the shaded region = Area of the square – area of four quadrants of the circles

$$= (14)^2 - 4 \times \frac{1}{4} \pi (7)^2$$

$$= 196 - \frac{22}{7} \times 49 = 196 - 154 = 42 \text{ cm}^2$$



Clock and Calendar

CLOCK

Introduction

- A clock has two hands : Hour hand and Minute hand.
- The minute hand (M.H.) is also called the long hand and the hour hand (H.H.) is also called the short hand.
- The clock has 12 hours numbered from 1 to 12.

Also, the clock is divided into 60 equal minute divisions. Therefore, each hour number is separated by five minute divisions. Therefore,

Shortcut Approach

➤ One minute division = $\frac{360}{60} = 6^\circ$ apart. i.e. In one minute, the minute hand moves 6° .

➤ One hour division = $6^\circ \times 5 = 30^\circ$ apart. i.e. In one hour, the hour hand moves 30° apart.

Also, in one minute, the hour hand moves = $\frac{30^\circ}{60} = \frac{1^\circ}{2}$ apart.

➤ Since, in one minute, minute hand moves 6° and hour hand moves $\frac{1^\circ}{2}$, therefore, in one minute, the minute hand gains $5\frac{1}{2}$ more than hour hand.

➤ In one hour, the minute hand gains $5\frac{1}{2} \times 60 = 330^\circ$ over the hour hand. i.e. the minute hand gains 55 minutes divisions over the hour hand.

Relative position of the hands

The position of the M.H. relative to the H.H. is said to be the same, whenever the M.H. is separated from the H.H. by the same number of minute divisions and is on same side (clockwise or anticlockwise) of the H.H.

Any relative position of the hands of a clock is repeated 11 times in every 12 hours.

- When both hands are 15 minute spaces apart, they are at right angle.
- When they are 30 minute spaces apart, they point in opposite directions.

(c) The hands are in the same straight line when they are coincident or opposite to each other.

- In every hour, both the hand coincide once.
- In a day, the hands are coinciding 22 times.
- In every 12 hours, the hands of clock coincide 11 times.
- In every 12 hours, the hands of clock are in opposite direction 11 times.
- In every 12 hours, the hands of clock are at right angles 22 times.
- In every hour, the two hands are at right angles 2 times.
- In every hour, the two hands are in opposite direction once.
- In a day, the two hands are at right angles 44 times.
- If both the hands coincide, then they will again coincide

after $65\frac{5}{11}$ minutes. i.e. in correct clock, both hand

coincide at an interval of $65\frac{5}{11}$ minutes.

- If the two hands coincide in time less than $65\frac{5}{11}$ minutes, then clock is too fast and if the two hands coincides in time more than $65\frac{5}{11}$ minutes, then the clock is too slow.

Shortcut Approach

➤ **Shortcut Approach for finding degrees minutes and hours is**

$$\theta = \left(\frac{11}{2}M - 30H \right)$$

Where, M = minutes
and, H = Hours

➤ When value of θ becomes more than 360, subtract 360 from the value of θ and complete the calculation.

EXAMPLE 1. The angle between the minute hand and the other hour hand of a clock when the time is 8:30 is

- 80 degrees
- 75 degrees
- 60 degrees
- 105 degrees

Sol. Degree required (θ) = $\left[\frac{11}{2}M - 30H \right]$

$$= \frac{11}{2} \times 30 - 30 \times 8 = 165 - 240 = 75 \text{ degree}$$

EXAMPLE 2. At what time between 4 and 5 will the hands of a watch

- (i) coincide, and
- (ii) point in opposite directions.

Sol. (i) At 4 O' clock, the hands are 20 minutes apart. Clearly the minute hand must gain 20 minutes before two hands can be coincident.

But the minute-hand gains 55 minutes in 60 minutes.
Let minute hand will gain x minute in 20 minutes.

$$\text{So, } \frac{55}{20} = \frac{60}{x}$$

$$\Rightarrow x = \frac{20 \times 60}{55} = \frac{240}{11} = 21\frac{9}{11} \text{ min.}$$

\therefore The hands will be together at $21\frac{9}{11}$ min past 4.

(ii) Hands will be opposite to each other when there is a space of 30 minutes between them. This will happen when the minute hand gains $(20 + 30) = 50$ minutes.

Now, the minute hand gains 50 min in $\frac{50 \times 60}{55}$ or $54\frac{6}{11}$ min.

\therefore The hands are opposite to each other at $54\frac{6}{11}$ min past 4.

EXAMPLE 3. What is the angle between the hour hand and minute hand when it was 5 : 05 pm.

Sol. 5.05 pm means hour hand was on 5 and minute hand was on 1, i.e. there will be 20 minutes gap.

$$\therefore \text{Angle} = 20 \times 6^\circ = 120^\circ \quad [\because 1 \text{ minute} = 6^\circ]$$

INCORRECT CLOCK

If a clock indicates 6 : 10, when the correct time is 6 : 00, it is said to be 10 minute too fast and if it indicates 5 : 50 when the correct time is 6 : 00, it is said to be 10 minute too slow.

- Also, if both hands coincide at an interval x minutes

$$\text{and } x < 65\frac{5}{11},$$

$$\text{then total time gained} = \left(\frac{65\frac{5}{11} - x}{x} \right) \text{ minutes and}$$

clock is said to be 'fast'.

- If both hands coincide at an interval x minutes and

$$x > 65\frac{5}{11}, \text{ then total time lost} = \left(\frac{x - 65\frac{5}{11}}{x} \right) \text{ minutes}$$

and clock is said to be 'slow'.

EXAMPLE 4. My watch, which gains uniformly, is 2 min slow at noon on Sunday, and is 4 minutes 48 seconds fast at 2 pm on the following Sunday. When was it correct.

Sol. From Sunday noon to the following Sunday at 2 pm = 7 days 2 hours = 170 hours.

$$\text{The watch gains } \left(2 + 4\frac{48}{60} \right) = 6\frac{4}{5} \text{ minutes in 170 hours.}$$

$$\therefore \text{The watch gains 2 minutes in } \frac{2}{6\frac{4}{5}} \times 170 = 50 \text{ hours}$$

Now, 50 hours = 2 days 2 hours

2 days 2 hours from Sunday noon = 2 pm on Tuesday.

EXAMPLE 5. The minute hand of a clock overtakes the hour hand at intervals of 65 minutes of the correct time. How much a day does the clock gain or lose?

Sol. In a correct clock, the minute hand gains 55 min. spaces over the hour hand in 60 minutes.

To be together again, the minute hand must gain 60 minutes over the hour hand.

$$55 \text{ min. are gained in } \left(\frac{60}{55} \times 60 \right) \text{ min.} = 65\frac{5}{11} \text{ min.}$$

But, they are together after 65 min.

$$\therefore \text{Gain in 65 min.} = \left(65\frac{5}{11} - 65 \right) = \frac{5}{11} \text{ min.}$$

$$\text{Gain in 24 hours} = \left(\frac{5}{11} \times \frac{60 \times 24}{65} \right) \text{ min.} = 10\frac{10}{143} \text{ min.}$$

$$\therefore \text{The clock gains } 10\frac{10}{143} \text{ minutes in 24 hours.}$$

EXAMPLE 6. A man who went out between 5 or 6 and returned between 6 and 7 found that the hands of the watch had exactly changed place. When did he go out?

Sol. Between 5 and 6 to 6 and 7, hands will change place after crossing each other one time. i.e. they together will make $1 + 1 = 2$ complete revolutions.

$$\text{H.H. will move through } 2 \times \frac{60}{13} \text{ or } \frac{120}{13} \text{ minute divisions.}$$

$$\text{Between 5 and 6} \rightarrow \frac{120}{13} \text{ minute divisions.}$$

At 5, minute hand is 25 minute divisions behind the hour-hand.

$$\text{Hence it will have to gain } 25 + \frac{120}{13} \text{ minute divisions on the}$$

$$\text{hour-hand} = \frac{445}{13} \text{ minute divisions on the hour hand.}$$

$$\text{The minute hand gains } \frac{445}{13} \text{ minute divisions in } \frac{445}{13} \times \frac{12}{11}$$

$$\text{minutes} = \frac{5340}{143} = 37\frac{49}{143} \text{ minutes}$$

$$\therefore \text{The required time of departure is } 37\frac{49}{143} \text{ min past 5.}$$

CALENDAR

INTRODUCTION

An ordinary year has 365 days. Every year which is divisible by 4, is a leap year and has 366 days, But century year has 365 days except for year divisible by 400 which has 366 days.

An ordinary year contains 365 days i.e., 52 weeks + 1 day i.e. 1 odd day.

A leap year contains 366 days i.e. 52 weeks + 2 days i.e. 2 odd days.

A century (100 years) contains = 24 leap years + 76 ordinary years
 $= 24 \times 2 + 76 = 124$ odd days = 17 weeks + 5 odd days

Similarly,

200 years contains $2 \times 5 - 7 = 3$ odd days

300 years contains $3 \times 5 - 14 = 1$ odd day

400 years contains $4 \times 5 + 1 - 21 = 0$ odd days

First January, 1 A.D. was Monday.

A solar year contains 365 days 5 hours 48 minutes 48 seconds.

The first day of a century must either be Monday, Tuesday, Thursday or Saturday.

Months	Odd days
January	3
February	0/1 (ordinary/leap)
March	3
April	2
May	3
June	2
July	3
August	3
September	2
October	3
November	2
December	3

To find a particular day without given date and day

Following steps are taken into consideration to solve such questions

Step I Firstly, you have to find the number of odd upto the date for which the day is to be determined.

Step II Your required day will be according to the following conditions

- If the number of odd days = 0, then required day is Sunday.
- If the number of odd days = 1, then required day is Monday.
- If the number of odd days = 2, then required day is Tuesday.
- If the number of odd days = 3, then required day is Wednesday.
- If the number of odd days = 4, then required day is Thursday.
- If the number of odd days = 5, then required day is Friday.
- If the number of odd days = 6, then required day is Saturday.

NOTE : February in an ordinary year gives no odd days, but in a leap year gives one odd day.

EXAMPLE 7. What day of the week was 15th August 1949?

Sol. 15th August 1949 means
 1948 complete years + first 7 months of the year 1949
 + 15 days of August.

1600 years give no odd days.

300 years give 1 odd day.

48 years give $\{48 + 12\} = 60 = 4$ odd days.

[\therefore For ordinary years \rightarrow 48 odd days and for leap year 1

more day $(48 \div 4) = 12$ odd days; $60 = 7 \times 8 + 4$]

From 1st January to 15th August 1949

Odd days :

January – 3

February – 0

March – 3

April – 2

May – 3

June – 2

July – 3

August – 1

$17 \Rightarrow 3$ odd days.

\therefore 15th August 1949 $\rightarrow 1 + 4 + 3 = 8 = 1$ odd day.

This means that 15th Aug. fell on 1st day. Therefore, the required day was Monday.

EXAMPLE 8. How many times does the 29th day of the month occur in 400 consecutive years?

Sol. In 400 consecutive years, there are 97 leap years. Hence, in 400 consecutive years, February has the 29th day 97 times and the remaining eleven months have the 29th day $400 \times 11 = 4400$ times

\therefore The 29th day of the month occurs $(4400 + 97)$ or 4497 times.

EXAMPLE 9. Today is 5th February. The day of the week is Tuesday. This is a leap year. What will be the day of the week on this date after 5 years?

Sol. This is a leap year. So, next 3 years will give one odd day each. Then leap year gives 2 odd days and then again next year give 1 odd day.

Therefore $(3 + 2 + 1) = 6$ odd days will be there.

Hence the day of the week will be 6 odd days beyond Tuesday, i.e., it will be Monday.

EXAMPLE 10. What day of the week was 20th June 1837 ?

Sol. 20th June 1837 means 1836 complete years + first 5 months of the year 1837 + 20 days of June.

1600 years give no odd days.

200 years give 3 odd days.

36 years give $(36 + 9)$ or 3 odd days.

1836 years give 6 odd days.

From 1st January to 20th June there are 3 odd days.

Odd days :

January : 3

February : 0

March : 3

April : 2

May : 3

June : 6

17

Therefore, the total number of odd days = $(6 + 3)$ or 2 odd days.

This means that the 20th of June fell on the 2nd day commencing from Monday. Therefore, the required day was Tuesday.

EXERCISE

- If the two hands in a clock are 3 minutes divisions apart, then the angle between them is
 - 3°
 - 18°
 - 24°
 - 60°
 - None of these
- At what approximate time between 4 and 5 am will the hands of a clock be at right angle?
 - 4 : 40 am
 - 4 : 38 am
 - 4 : 35 am
 - 4 : 39 am
 - None of these
- What will be the acute angle between hands of a clock at 2 : 30?
 - 105°
 - 115°
 - 95°
 - 135°
 - None of these
- In 16 minutes, the minute hand gains over the hour hand by
 - 16°
 - 80°
 - 88°
 - 96°
 - None of these
- A clock is set right at 1 p.m. If it gains one minute in an hour, then what is the true time when the clock indicates 6 p.m. in the same day?
 - $55\frac{5}{61}$ minutes past 5
 - 5 minutes past 6
 - 5 minutes to 6
 - $59\frac{1}{64}$ minutes past 5
 - None of these
- At what time between 9'o clock and 10'o clock will the hands of a clock point in the opposite directions?
 - $16\frac{4}{11}$ minutes past 9
 - $16\frac{4}{11}$ minutes past 8
 - $55\frac{5}{61}$ minutes past 7
 - $55\frac{5}{61}$ minutes to 8
 - None of these
- A clock gains 15 minutes per day. It is set right at 12 noon. What time will it show at 4.00 am, the next day?
 - 4 : 10 am
 - 4 : 45 am
 - 4 : 20 am
 - 5 : 00 am
 - None of these
- What is the angle between the 2 hands of the clock at 8:24pm?
 - 100°
 - 107°
 - 106°
 - 108°
 - None of these
- In a watch, the minute hand crosses the hour hand for the third time exactly after every 3 hrs., 18 min., 15 seconds of watch time. What is the time gained or lost by this watch in one day?
 - 14 min. 10 seconds lost
 - 13 min. 50 seconds lost
 - 13min. 20 seconds gained
 - 14 min. 40 seconds gained
 - None of these
- At what time between 3 and 4 o'clock, the hands of a clock coincide?
 - $16\frac{4}{11}$ minutes past 3
 - $15\frac{5}{61}$ minutes past 3
 - $15\frac{5}{60}$ minutes to 2
 - $16\frac{4}{11}$ minutes to 4
 - None of these
- A watch which gains uniformly is 2 minutes low at noon on Monday and is 4 min. 48 sec. fast at 2 p.m. on the following Monday. When was it correct?
 - 2 p.m. on Tuesday
 - 2 p.m. on Wednesday
 - 3 p.m. on Thursday
 - 1 p.m. on Friday
 - None of these
- If a clock strikes 12 in 33 seconds, it will strike 6 in how many seconds?
 - $\frac{33}{2}$
 - 15
 - 12
 - 22
 - None of these
- At what time between 7 and 8 o'clock will the hands of a clock be in the same straight line but, not together?
 - 5 min. past 7
 - $5\frac{2}{11}$ min. past 7
 - $5\frac{3}{11}$ min. past 7
 - $5\frac{5}{11}$ min. past 7
 - None of these
- At what time between 8 and 9 o'clock will the hands of a watch be in straight line but not together?
 - $10\frac{11}{10}$ min. past 8
 - $10\frac{10}{11}$ min. past 8
 - $11\frac{10}{11}$ min. past 8
 - $12\frac{10}{11}$ min. past 8
 - None of these
- At what time between 5.30 and 6 will the hands of a clock be at right angles?
 - $43\frac{5}{11}$ min. past 5
 - $43\frac{7}{11}$ min. past 5
 - 40 min. past 5
 - 45 min. past 5
 - None of these

16. Find the angle between the hour hand and the minute hand of a clock when the time is 3.25.
- (a) 45° (b) $37\frac{1}{2}^\circ$
 (c) $47\frac{1}{2}^\circ$ (d) 46°
 (e) None of these
17. How much does a watch lose per day, if its hands coincide every 64 minutes?
- (a) $32\frac{8}{11}$ min. (b) $36\frac{5}{11}$ min.
 (c) 90 min. (d) 96 min.
 (e) None of these
18. An accurate clock shows 8 o'clock in the morning. Through how many degrees will the hour hand rotate when the clock shows 2 o'clock in the afternoon?
- (a) 144° (b) 150°
 (c) 168° (d) 180°
 (e) None of these
19. The first Republic Day of India was celebrated on 26th January, 1950. It was :
- (a) Tuesday (b) Wednesday
 (c) Thursday (d) Friday
 (e) None of these
20. What will be the day of the week on 1st January, 2010 ?
- (a) Friday (b) Saturday
 (c) Sunday (d) Monday
 (e) None of these
21. The calendar for the year 2005 is the same as for the year :
- (a) 2010 (b) 2011
 (c) 2012 (d) 2013
 (e) None of these
22. If 09/12/2001 happens to be Sunday, then 09/12/1971 would have been at
- (a) Wednesday (b) Tuesday
 (c) Saturday (d) Thursday
 (e) None of these
23. What was the day of the week on 15th August, 1947 ?
- (a) Wednesday (b) Tuesday
 (c) Friday (d) Thursday
 (e) None of these
24. The last day of a century cannot be :
- (a) Monday (b) Wednesday
 (c) Friday (d) Tuesday
 (e) None of these
25. The reflex angle between the hands of a clock at 10:25 is?
- (a) 180° (b) $192\frac{1}{2}^\circ$
 (c) 195° (d) $197\frac{1}{2}^\circ$
 (e) None of these
26. A clock gains 5 minutes. in 24 hours. It was set right at 10 a.m. on Monday. What will be the true time when the clock indicates 10:30 a.m. on the next Sunday ?
- (a) 10 a.m. (b) 11 a.m.
 (c) 25 minutes past 10 a.m. (d) 5 minutes to 11 a.m.
 (e) None of these
27. At what angle the hands of a clock are inclined at 15 minutes past 5 ?
- (a) $72\frac{1}{2}^\circ$ (b) 64°
 (c) $58\frac{1}{2}^\circ$ (d) $67\frac{1}{2}^\circ$
 (e) None of these
28. Find the day of the week on 16th July, 1776.
- (a) Tuesday (b) Wednesday
 (c) Monday (d) Thursday
 (e) None of these
29. On January 12, 1980, it was Saturday. The day of the week on January 12, 1979 was –
- (a) Saturday (b) Friday
 (c) Sunday (d) Thursday
 (e) None of these
30. The year next to 1991 having the same calendar as that of 1990 is –
- (a) 1998 (b) 2001
 (c) 2002 (d) 2003
 (e) None of these
31. A clock is set right at 5 a.m. The clock loses 16 min. in 24 hours. What will be the true time when the clock indicates 10 p.m. on the 4th day ?
- (a) 11 p.m. (b) 10 p.m.
 (c) 9 p.m. (d) 8 p.m.
 (e) None of these
32. Find the exact time between 7 am and 8 am when the two hands of a watch meet ?
- (a) 7 hrs 35 min (b) 7 hrs 36.99 min
 (c) 7 hrs 38.18 min (d) 7 hrs 42.6 min
 (e) None of these
33. A watch which gains 5 seconds in 3 minutes was set right at 7 a.m. In the afternoon of the same day, when the watch indicated quarter past 4 O'clock, the true time is –
- (a) 4 p.m. (b) $59\frac{7}{12}$ minutes past 3
 (c) $58\frac{7}{11}$ minutes past 3 (d) $2\frac{3}{11}$ minutes past 4
 (e) None of these

ANSWER KEY

1	(b)	5	(a)	9	(b)	13	(d)	17	(a)	21	(c)	25	(d)	29	(b)	33	(a)
2	(b)	6	(a)	10	(a)	14	(b)	18	(d)	22	(d)	26	(a)	30	(c)		
3	(a)	7	(a)	11	(b)	15	(b)	19	(c)	23	(c)	27	(d)	31	(a)		
4	(c)	8	(d)	12	(b)	16	(c)	20	(c)	24	(d)	28	(a)	32	(c)		

Hints & Explanations

- (b) In a clock, each minute makes 6°
 \therefore 3 minutes will make $6 \times 3 = 18^\circ$
- (b) Here $H \times 30 = 4 \times 30 = 120^\circ$.
 (Since initially the hour hand is at 4. $\therefore H = 4$).
 Required angle $A = 90^\circ$ and since, $H \times 30 > A^\circ$ so, there will be two timings.
 Required time $T = \frac{2}{11} (H \times 30 \pm A)$ minutes past H.
 \therefore One timing = $\frac{2}{11} (4 \times 30 + 90)$ minutes past 4
 $= 38 \frac{2}{11}$ minutes past 4.
 Or 4 : 38 approx.
- (a) At 2'O Clock, Minute Hand will be $10 \times 6 = 60^\circ$ behind the Hour Hand.
 In 30 minutes, Minute Hand will gain $\left(5 \frac{1}{2}\right)^\circ \times 30$
 $= 150 + 15 = 165^\circ$
 \therefore Angle between Hour Hand and Minute Hand
 $= 165 - 60 = 105^\circ$
- (c) In 1 hour, the minute hand gains 330° over the hour hand.
 i.e. in 60 minute, the minute hand gains 330° over the hour hand.
 \therefore In 16 minutes, the minute hand gains over the hour hand by $\frac{330^\circ}{60} \times 16 = 88^\circ$
- (a) Time interval indicated by incorrect clock
 $= 6 \text{ p.m} - 1 \text{ p.m} = 5 \text{ hrs.}$
 Time gained by incorrect clock in one hour
 $= +1 \text{ min.} = +\frac{1}{60} \text{ hr.}$

Using the formula, $\frac{\text{True time interval}}{\text{Time interval in incorrect clock}}$

$$= \frac{1}{1 + \text{hour gained in 1 hour by incorrect clock}}$$

$$\Rightarrow \frac{\text{True time interval}}{5} = \frac{1}{1 + \frac{1}{60}}$$

$$\Rightarrow \text{True time interval} = \frac{5 \times 60}{61} = 4 \frac{56}{61}$$

$$\therefore \text{True time} = 1 \text{ p.m.} + 4 \frac{56}{61} \text{ hrs.}$$

$$= 5 \text{ p.m.} + \frac{56}{61} \text{ hrs.} = 5 \text{ p.m.} + \frac{56}{61} \times 60 \text{ min.}$$

$$= 55 \frac{5}{61} \text{ minutes past 5.}$$

- (a) Minute and hour hand of a clock are opposite to each other when they are at an angle of 180° or they are 30 minutes apart to each other.

At 9'o clock, minute hand is 15 minutes ahead of hour hand. Therefore, minute hand must be ahead 15 minute more to become opposite to hour hand,

Now, minute hand ahead 55 minutes in 60 minutes

$$\Rightarrow \text{minute hand ahead 1 minutes in } \frac{60}{55} \text{ minutes}$$

$$\Rightarrow \text{minute hand ahead 15 minutes in } \frac{60}{55} \times 15 \text{ minutes}$$

$$= \frac{180}{11} \text{ minutes}$$

Hence, between, 9 and 10 o' clock, minutes and hour

hand are opposite to each other at $16 \frac{4}{11}$ minutes past 9.

7. (a) The clock gains 15 min in 24 hours.
Therefore, in 16 hours, it will gain 10 minutes.
Hence, the time shown by the clock will be 4.10 am.
8. (d) Required angle = $240 - 24 \times (11/2)$
 $= 240 - 132 = 108^\circ$.
9. (b) In a watch than is running correct the minute hand should cross the hour hand once in every $65 + \frac{5}{11}$ min.
So they should ideally cross 3 times once in
$$3 \times \left(\frac{720}{11}\right) = \frac{2160}{11} \text{ min} = 196.36 \text{ minutes.}$$

But in the watch under consideration, they meet after every 3hr, 18 min and 15 seconds,
i.e. $\left(3 \times 60 + 18 + \frac{15}{60}\right) = \frac{793}{4} \text{ min.} = 198.25 \text{ min}$
Thus, our watch is actually losing time (as it is slower than the normal watch). Hence when our watch elapsed
$$\left(1440 \times \frac{196.36}{198.25}\right) = 1426.27.$$

Hence the amount of time lost by our watch in one day = $(1440 - 1426.27) = 13.73$ ie 13 min and 50s (approx).
10. (a) At 3 o' clock, minutes hand big behind 15 minutes from hour hand.
Now, minute hand head 55 minutes in 60 minutes
 \Rightarrow minute hand head 1 minutes in $\frac{60}{55}$ minutes
 \Rightarrow minute hand head 15 minutes in $\frac{60}{55} \times 15$ minutes
$$= 16\frac{4}{11} \text{ minutes}$$

Hence minute hand concides with hour hand at $16\frac{4}{11}$ minutes past 3 o' clock.
11. (b) Time from 12 p.m. on Monday to 2 p.m. on the following Monday = 7 days 2 hours = 170 hours.
 \therefore The watch gains $\left(2 + 4\frac{4}{5}\right) \text{ min.}$
or $\frac{34}{5} \text{ min.}$ in 170 hrs.
Now, $\frac{34}{5} \text{ min.}$ are gained in 170 hrs.

$$\therefore 2 \text{ min. are gained in } \left(170 \times \frac{5}{34} \times 2\right) \text{ hrs.} = 50 \text{ hrs.}$$

\therefore Watch is correct 2 days 2 hrs. after 12 p.m. on Monday i.e. it will be correct at 2 p.m. on Wednesday.

12. (b) In order to strike 12, there are 11 intervals of equal time
 $= \frac{33}{11} = 3$ seconds each
Therefore, to strike 6 it has 5 equal intervals, it requires $5 \times 3 = 15$ sec.
13. (d) When the hands of the clock are in the same straight line but not together, they are 30 minute spaces apart.
At 7 o'clock, they are 25 min. spaces apart.
 \therefore Minute hand will have to gain only 5 in. spaces.
55 min. spaces are gained in 60 min.
5 min. spaces are gained in $\left(\frac{60}{55} \times 5\right) \text{ min.} = 5\frac{5}{11} \text{ min.}$
 \therefore Required time = $5\frac{5}{11} \text{ min.}$ past 7
14. (b) At 8 o'clock, the hands of the watch are 20 min. spaces apart.
To be in straight line but not together they will be 30 min. space apart.
 \therefore Minute hand will have to gain 10 min. spaces
55 min. spaces are gained in 60 min.
10 min. spaces will be gained in $\left(\frac{60}{55} \times 10\right) \text{ min}$ or $10\frac{10}{11} \text{ min}$
 \therefore Required time = $10\frac{10}{11} \text{ min.}$ past 8
15. (b) At 5 o'clock, the hands are 25 min. spaces apart.
To be at right angles and that too between 5.30 and 6, the minute hand has to gain $(25 + 15) = 40$ min. spaces
55 min. spaces are gained in 60 min.
40 min. spaces are gained in $\left(\frac{60}{55} \times 40\right) \text{ min.} = 43\frac{7}{11} \text{ min.}$
 \therefore Required time = $43\frac{7}{11} \text{ min.}$ past 5
16. (c) Angle traced by the hour hand in 12 hours = 360°
Angle traced by it in 3 hrs 25 min. i.e. $\frac{41}{12} \text{ hrs}$
$$= \left(\frac{360}{12} \times \frac{41}{12}\right)^\circ = 102\frac{1}{2}^\circ$$

$$\text{Angle traced by it in 25 min.} = \left(\frac{360}{60} \times 25\right)^\circ = 150^\circ.$$

$$\text{Required angle} = \left(150^\circ - 102\frac{1}{2}^\circ\right) = 47\frac{1}{2}^\circ.$$

17. (a) 55 min. spaces are covered in 60 min.

$$\begin{aligned} 60 \text{ min. spaces are covered in } & \left(\frac{60}{55} \times 60\right) \text{ min.} \\ & = 65\frac{5}{11} \text{ min.} \end{aligned}$$

$$\text{Loss in 64 min.} = \left(65\frac{5}{11} - 64\right) = \frac{16}{11} \text{ min.}$$

$$\text{Loss in 24 hrs.} = \left(\frac{16}{11} \times \frac{1}{64} \times 24 \times 60\right) \text{ min} = 32\frac{8}{11} \text{ min.}$$

18. (d) Angle traced by the hour hand in 6 hours

$$= \left(\frac{360}{12} \times 6\right)^\circ = 180^\circ$$

19. (c) 26th Jan., 1950 = (1949 years + Period from 1st Jan., 1950 to 26th Jan., 1950)

$$\begin{aligned} 1600 \text{ years have } & 0 \text{ odd day. } 300 \text{ years have } 1 \text{ odd day.} \\ 49 \text{ years} & = (12 \text{ leap years} + 37 \text{ ordinary years}) \\ & = [(12 \times 2) + (37 \times 1)] \text{ odd days} = 61 \text{ odd days} \\ & = 5 \text{ odd days.} \end{aligned}$$

$$\begin{aligned} \text{Number of days from 1st Jan. to 26th Jan.} & = 26 \\ & = 5 \text{ odd days} \end{aligned}$$

$$\begin{aligned} \text{Total number of odd days} & = (0 + 1 + 5 + 5) = 11 \\ & = 4 \text{ odd days} \end{aligned}$$

∴ The required days was 'Thursday'

20. (c) 2000 years have 2 odd days.

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009
Odd days	1	1	1	2	1	1	1	2	1

= 11 odd days = 4 odd days.

1st January, 2010 has 1 odd day. Total number of odd days = (2 + 4 + 1) = 7 = 0.

∴ 1st January, 2010 will be Sunday.

21. (c) Count the number of days from 2005 onwards to get 0 odd day.

Year	2005	2006	2007	2008	2010	2011
Odd days	1	1	1	2	1	1

= 7 or 0 odd day.

∴ Calendar for the year 2005 is the same as that for the year 2012.

22. (d) 09/12/2001 — Sunday

No. of days between 9/12/71 & 9/12/2001

we know every year has 1 odd days

we know leap year has 2 odd days

Here, No. of normal years = 22

And no. of leap years = 8

So odd days = 22 + 16 = 38 i.e 3 odd days

(remainder when 38 is divided by 7, i.e. 3)

Hence it was a Thursday

23. (c) 15th August, 1947 = (1946 years + Period from 1st Jan., 1947 to 15th Aug., 1947)

Counting of odd days :

1600 years have 0 odd day. 300 years have 1 odd day.

47 years = (11 leap years + 36 ordinary years)

$$= [(11 \times 2) + (36 \times 1)] \text{ odd days} = 58 \text{ odd days}$$

⇒ 2 odd days.

Jan. 31 Feb. 28 March 31 April 30 May 31 June 30 July 31 Aug. 15

= 227 days = (32 weeks + 3 days) = 3 odd days.

Total number of odd days = (0 + 1 + 2 + 3) odd days = 6 odd days.

Hence, the required day was 'Friday'.

24. (d) 100 years contain 5 odd days. So, last day of 1st century is 'Friday'

200 years contain (5 × 2) = 10 odd days = 3 odd days.

So, last day of 2nd century is 'Wednesday'.

300 years contain (5 × 3) = 15 odd days = 1 odd day.

∴ Last day of 3rd century is 'Monday'.

400 years contain 0 odd day.

∴ Last day of 4th century is 'Sunday'

Since the order is continually kept in successive cycles, we see that the last day of a century cannot be Tuesday, Thursday or Saturday.

25. (d) Angle traced by hour hand in $\frac{125}{12}$ hrs.

$$= \left(\frac{360}{12} \times \frac{125}{12}\right)^\circ = 312\frac{1}{2}^\circ$$

Angle traced by minute hand in 25 min.

$$= \left(\frac{360}{12} \times 25\right)^\circ = 150^\circ$$

$$\therefore \text{Reflex angle} = 360 - \left(312\frac{1}{2} - 150\right)^\circ = 197\frac{1}{2}^\circ$$

26. (a) Time between 10 a.m. on Monday to 10:30 a.m. on

$$\text{Sunday} = 144\frac{1}{2} \text{ hours.}$$

$24\frac{1}{2}$ hours of incorrect clock = 24 hours of correct time.

$\therefore 144\frac{1}{2}$ hours of incorrect clock = x hours of correct time.

$$\therefore x = \frac{144\frac{1}{2} \times 24}{24\frac{1}{2}} = 144 \text{ hours i.e.,}$$

The true time is 10 a.m. on Sunday.

27. (d) At 15 minutes past 5, the minute hand is at 3 and hour hand slightly advanced from 5. Angle between their 3rd and 5th position.

Angle through which hour hand shifts in 15 minutes is

$$\left(15 \times \frac{1}{2}\right)^\circ = 7\frac{1}{2}^\circ$$

$$\therefore \text{Required angle} = \left(60 + 7\frac{1}{2}\right) = 67\frac{1}{2}^\circ$$

28. (a) 16th July, 1776 mean (1775 years + 6 months + 16 days)

Now, 1600 years have 0 odd days.

100 years have 5 odd days

75 years contain 18 leap years and 57 ordinary years and therefore (36 + 57) or 93 or 2 odd days.

\therefore 1775 years given $0 + 5 + 2 = 7$ and so 0 odd days.

Also number of days from 1st Jan. 1776 to 16th July, 1776

Jan. Feb. March April May June July

$$31 + 29 + 31 + 30 + 31 + 30 + 16$$

$$= 198 \text{ days} = 28 \text{ weeks} + 2 \text{ days} = 2 \text{ odd days}$$

\therefore Total number of odd days = $0 + 2 = 2$.

Hence the day on 16th July, 1776 was 'Tuesday'.

29. (b) The year 1979 being an ordinary year, it has 1 odd day.

So, the day on 12th January 1980 is one day beyond on the day on 12th January, 1979.

But, January 12, 1980 being Saturday.

\therefore January 12, 1979 was Friday.

30. (c) We go on counting the odd days from 1991 onwards till the sum is divisible by 7. The number of such days are 14 upto the year 2001. So, the calendar for 1991 will be repeated in the year 2002.

31. (a) Time from 5 a.m. on a day to 10 p.m. on 4th day is 89 hours.

Now, 23 hrs. 44 min. of this clock are the same as 24 hours of the correct clock.

$$\text{i.e., } \frac{356}{15} \text{ hrs. of this clock} = 24 \text{ hrs. of correct clock.}$$

$$\therefore 89 \text{ hrs. of this clock} = \left(\frac{24 \times 15}{356} \times 89\right) \text{ hrs. of correct clock} = 90 \text{ hrs of correct clock.}$$

So, the correct time is 11 p.m.

32. (c) 55 min spaces are gained in 60 min

$$\Rightarrow 35 \text{ min spaces will be gained in } 38.18 \text{ min.}$$

$$\Rightarrow \text{Answer} = 7 \text{ hrs} + 38.18 \text{ min.}$$

33. (a) Time from 7 a.m. to quarter pas 4

$$= 9 \text{ hours } 15 \text{ min.} = 555 \text{ min.}$$

Now, $\frac{37}{12}$ min. of this watch = 3 min. of the correct watch.

$$555 \text{ min. of this watch} = \left(\frac{3 \times 12}{37} \times 555\right) \text{ min.}$$

$$= \left(\frac{3 \times 12}{37} \times \frac{555}{60}\right) \text{ hrs.} = 9 \text{ hrs. of the correct watch.}$$

Correct time is 9 hours after 7 a.m. i.e., 4 p.m.



Permutation and Combination

INTRODUCTION

FACTORIAL

The important mathematical term “Factorial” has extensively used in this chapter.

The product of first n consecutive **natural numbers** is defined as **factorial of n** . It is denoted by $n!$ or \underline{n} . Therefore,

$$n! = 1 \times 2 \times 3 \times \dots \times (n-1) \times n$$

For example, $5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$

Note that :

$$\frac{n!}{r!} \neq \left(\frac{n}{r}\right)!$$

$$0! = 1$$

The factorials of fractions and negative integers are not defined.

EXAMPLE 1. Prove that $n! + 1$ is not divisible by any natural number between 2 and ' n '.

Sol. Since $n! = 1 \cdot 2 \cdot 3 \cdot 4 \dots (n-1) \cdot n$

Therefore $n!$ is divisible by any number from 2 to ' n '.

Consequently $n! + 1$, when divided by any number between 2 and ' n ' leaves 1 as remainder.

Hence, $n! + 1$ is not divisible by any number between 2 and ' n '.

Fundamental Principles of Counting

- Principle of Addition :** If an event can occur in ' m ' ways and another event can occur in ' n ' ways independent of the first event, then either of the two events can occur in $(m + n)$ ways.
- Principle of Multiplication :** If an operation can be performed in ' m ' ways and after it has been performed in any one of these ways, a second operation can be performed in ' n ' ways, then the two operations in succession can be performed in $(m \times n)$ ways.

EXAMPLE 2. In a class there are 10 boys and 8 girls. The class teacher wants to select a student for monitor of the class. In how many ways the class teacher can make this selection ?

Sol. The teacher can select a student for monitor in two exclusive ways

- Select a boy among 10 boys, which can be done in 10 ways OR

- Select a girl among 8 girls, which can be done in 8 ways. Hence, by the fundamental principle of addition, either a boy or a girl can be selected in $10 + 8 = 18$ ways.

EXAMPLE 3. In a class there are 10 boys and 8 girls. The teacher wants to select a boy and a girl to represent the class in a function. In how many ways can the teacher make this selection?

Sol. The teacher has to perform two jobs :

- To select a boy among 10 boys, which can be done in 10 ways.
- To select a girl, among 8 girls, which can be done in 8 ways.

Hence, the required number of ways = $10 \times 8 = 80$.

EXAMPLE 4. There are 6 multiple choice questions in an examination. How many sequences of answers are possible, if the first three questions have 4 choices each and the next three have 5 choices each?

Sol. Each of the first three questions can be answered in 4 ways and each of the next three questions can be answered in 5 different ways.

Hence, the required number of different sequences of answers = $4 \times 4 \times 4 \times 5 \times 5 \times 5 = 8000$.

EXAMPLE 5. Five persons entered a lift cabin on the ground floor of an 8-floor house. Suppose that each of them can leave the cabin independently at any floor beginning with the first. What is the total number of ways in which each of the five persons can leave the cabin at any of the 7 floors?

Sol. Any one of the 5 persons can leave the cabin in 7 ways independent of other.

Hence the required number of ways = $7 \times 7 \times 7 \times 7 \times 7 = 7^5$.

Method of Sampling :

Sampling process can be divided into following forms :

- The order is **IMPORTANT** and the repetition is **ALLOWED**, each sample is then a **SEQUENCE**.
- The order is **IMPORTANT** and the repetition is **NOT ALLOWED**, each sample is then a **PERMUTATION**.
- The order is **NOT IMPORTANT** and repetition is **ALLOWED**, each sample is then a **MULTISET**.
- The order is **NOT IMPORTANT** and repetition is **NOT ALLOWED**, each sample is then a **COMBINATION**.

EXAMPLE 11. In how many ways can 5 boys and 5 girls be seated at a round table no two girls may be together ?

Sol. Leaving one seat vacant between two boys may be seated in $4!$ ways. Then at remaining 5 seats, 5 girls any sit in $5!$ ways. Hence the required number $= 4! \times 5!$

Conditional Permutations

1. Number of permutations of n things taking r at a time, in which a particular thing always occurs $= r \cdot {}^{n-1}P_{r-1}$.

Distinguishable Permutations

Suppose a set of n objects has n_1 of one kind of object, n_2 of a second kind, n_3 of a third kind, and so on, with $n = n_1 + n_2 + n_3 + \dots + n_k$. Then the number of distinguishable

permutations of the n objects is $\frac{n!}{n_1! n_2! n_3! \dots n_k!}$

EXAMPLE 12. In how many distinguishable ways can the letters in BANANA be written?

Sol. This word has six letters, of which three are A's, two are N's, and one is a B. Thus, the number of distinguishable ways the letters can be written is

$$\frac{6!}{3! 2! 1!} = \frac{6 \times 5 \times 4 \times 3!}{3! 2!} = 60$$

EXAMPLE 13. How many 4 digits number (repetition is not allowed) can be made by using digits 1-7 if 4 will always be there in the number?

Sol. Total digits (n) = 7

Total ways of making the number if 4 is always there $= r \times {}^{n-1}P_{r-1} = 4 \times {}^6P_3 = 480$.

2. Number of permutations of n things taking r at a time, in which a particular thing never occurs $= {}^{n-1}P_r$.

EXAMPLE 14. How many different 3 letter words can be made by 5 vowels, if vowel 'A' will never be included?

Sol. Total letters (n) = 5

So total number of ways $= {}^{n-1}P_r = {}^{5-1}P_3 = {}^4P_3 = 24$.

3. Number of permutations of n different things taking all at a time, in which m specified things always come together $= m!(n-m)!$.
4. Number of permutations of n different things taking all at a time, in which m specified things never come together $= n! - m!(n-m)!$

EXAMPLE 15. In how many ways can we arrange the five vowels, a, e, i, o & u if:

- (i) two of the vowels e and i are always together.
 (ii) two of the vowels e and i are never together.

Sol. (i) Using the formula $m!(n-m)!$

Here $n = 5$, $m = 2$ (e & i)

\Rightarrow Required no. of ways $= 2!(5-2+1)! = 2 \times 4! = 48$

Alternative :

As the two vowels e & i are always together we can consider them as one, which can be arranged among themselves in $2!$ ways.

Further the 4 vowels (after considering e & i as one) can be arranged in $4!$ ways.

Total no. of ways $= 2! \times 4! = 48$

(ii) No. of ways when e & i are never together

$=$ total no. of ways of arranging the 5 vowels

$-$ no. of ways when e & i are together $= 5! - 48 = 72$

Or use $n! - m!(n-m+1)! = 5! - 48 = 72$

5. The number of permutations of ' n ' things taken all at a time, when ' p ' are alike of one kind, ' q ' are alike of second,

' r ' alike of third, and so on $= \frac{n!}{p! q! r!}$.

EXAMPLE 16. How many different words can be formed with the letters of the word MISSISSIPPI.

Sol. In the word MISSISSIPPI, there are 4 I's, 4S's and 2P's.

Thus required number of words $= \frac{(11)!}{4! 2! 4!} = 34650$

6. The number of permutations of ' n ' different things, taking ' r ' at a time, when each thing can be repeated ' r ' times $= n^r$

EXAMPLE 17. In how many ways can 5 prizes be given away to 4 boys, when each boy is eligible for all the prizes?

Sol. Any one of the prizes can be given in 4 ways; then any one of the remaining 4 prizes can be given again in 4 ways, since it may even be obtained by the boy who has already received a prize.

Hence 5 prizes can be given $4 \times 4 \times 4 \times 4 \times 4 = 4^5$ ways.

EXAMPLE 18. How many numbers of 3 digits can be formed with the digits 1, 2, 3, 4, 5 when digits may be repeated?

Sol. The unit place can be filled in 5 ways and since the repetitions of digits are allowed, therefore, tenth place can be filled in 5 ways.

Furthermore, the hundredth place can be filled in 5 ways also.

Therefore, required number of three digit numbers is $5 \times 5 \times 5 = 125$.

EXAMPLE 19. In how many ways 8 persons can be arranged in a circle?

Sol. The eight persons can be arranged in a circle in $(8-1)! = 7! = 5040$.

EXAMPLE 20. Find the number of ways in which 18 different beads can be arranged to form a necklace.

Sol. 18 different beads can be arranged among themselves in a circular order in $(18-1)! = 17!$ ways. Now in the case of necklace there is no distinct between clockwise and anticlockwise arrangements. So, the required number of

arrangements $= \frac{1}{2} (17!) = \frac{17!}{2}$

EXAMPLE 27. In a class of 25 students, find the total number

of ways to select two representative,

- (i) if a particular person will never be selected.
- (ii) if a particular person is always there.

Sol. (i) Total students (n) = 25
 A particular student will not be selected (p) = 1,
 So total number of ways = ${}^{25-1}C_2 = {}^{24}C_2 = 276$.
 (ii) Using ${}^{n-p}C_{r-p}$ no. of ways = ${}^{25-1}C_{2-1} = {}^{24}C_1 = 24$.

NOTE : If a person is always there then we have to select only 1 from the remaining $25 - 1 = 24$

Shortcut Approach

Let there are n persons in a hall. If every person shakes his hand with every other person only once, then total number of handshakes

$$= {}^nC_2 = \frac{n(n-1)}{2}$$

Note: If in place of handshakes each person gives a gift to another person, then formula changes to = $n(n-1)$

EXAMPLE 28. In a party, every person shakes his hand with every other person only once. If total number of handshakes is 210, then find the number of persons.

Sol. Let number of persons be n. Then, according to the question,
 ${}^nC_2 = 210$
 $\Rightarrow \frac{n(n-1)}{2} = 210$
 $\Rightarrow n(n-1) = 420 = 21 \times 20$
 $\Rightarrow n = 21$

EXAMPLE 29. There are 10 lamps in a hall. Each of them can be switched on independently. The number of ways in which the hall can be illuminated is

- (a) 10^2
- (b) 1023
- (c) 2^{10}
- (d) $10!$

Sol. Since each bulb has two choices, either switched on or off, therefore required number = $2^{10} - 1 = 1023$.

7. The number of ways of dividing 'm + n' things into two groups containing 'm' and 'n' things respectively

$$= {}^{m+n}C_m \cdot {}^nC_n = \frac{(m+n)!}{m!n!}$$

8. The number of ways of dividing 'm + n + p' things into three groups containing 'm', 'n' and 'p' things respectively

$$= {}^{m+n+p}C_m \cdot {}^{n+p}C_p = \frac{(m+n+p)!}{m!n!p!}$$

(i) If $m = n = p$ i.e. '3m' things are divided into three equal groups then the number of combinations is

$$\frac{(3m)!}{m!m!m!3!} = \frac{(3m)!}{(m!)^3 3!}$$

(ii) But if '3m' things are to be divided among three persons, then the number of divisions is $\frac{(3m)!}{(m!)^3}$

9. If mn distinct objects are to be divided into m groups. Then, the number of combination is

$\frac{(mn)!}{m!(n!)^m}$, when the order of groups is not important and

$\frac{(mn)!}{(n!)^m}$, when the order of groups is important

EXAMPLE 30. The number of ways in which 52 cards can be divided into 4 sets, three of them having 17 cards each and the fourth one having just one card

- (a) $\frac{52!}{(17!)^3}$
- (b) $\frac{52!}{(17!)^3 3!}$
- (c) $\frac{51!}{(17!)^3}$
- (d) $\frac{51!}{(17!)^3 3!}$

Sol. Here we have to divide 52 cards into 4 sets, three of them having 17 cards each and the fourth one having just one card. First we divide 52 cards into two groups of 1 card and

51 cards. this can be done in $\frac{52!}{1!51!}$ ways.

Now every group of 51 cards can be divided into 3 groups

of 17 each in $\frac{51!}{(17!)^3 3!}$.

Hence the required number of ways

$$= \frac{52!}{1!51!} \cdot \frac{51!}{(17!)^3 3!} = \frac{52!}{(17!)^3 3!}$$

NUMBER OF RECTANGLES AND SQUARES

(a) Number of rectangles of any size in a square of size $n \times n$ is

$$\sum_{r=1}^n r^3 \text{ and number of squares of any size is } \sum_{r=1}^n r^2.$$

(b) Number of rectangles of any size in a rectangle size $n \times p$ ($n < p$) is $\frac{np}{4}(n+1)(p+1)$ and number of squares of

any size is $\sum_{r=1}^n (n+1-r)(p+1-r)$.

EXAMPLE 31. The number of squares that can be formed on a chessboard is

- (a) 64
- (b) 160
- (c) 224
- (d) 204

Sol. (d) A chessboard is made up of 9 equispaced horizontal and vertical line. To make a 1×1 square, we must choose two consecutive horizontal and vertical lines from

among these. This can be done in $8 \times 8 = 8^2$ ways. A 2×2 square needs three consecutive horizontal and vertical lines, and we can do this in $7 \times 7 = 7^2$ ways. Continuing in this manner, the total number of square is

$$8^2 + 7^2 + 6^2 + \dots + 2^2 + 1^2 = \frac{8(8+1)[(2 \times 8) + 1]}{6} = 204.$$

Shortcut Approach

If there are n non-collinear points in a plane, then

- (i) Number of straight lines formed = ${}^n C_2$
- (ii) Number of triangles formed = ${}^n C_3$
- (iii) Number of quadrilaterals formed = ${}^n C_4$

EXAMPLE 32. In a plane, there are 16 non-collinear points.

Find the number of straight lines formed.

Sol. Here, $n = 16$

\therefore Required number of straight lines formed = ${}^n C_2$

$$= {}^{16} C_2 = \frac{16!}{2!(16-2)!} = \frac{16 \times 15 \times 14!}{2 \times 14!}$$

$$= 8 \times 15 = 120$$

Shortcut Approach

If there are n points in a plane out of which m are collinear, then

- (i) Number of straight lines formed = ${}^n C_2 - {}^m C_2 + 1$
- (ii) Number of triangles formed = ${}^n C_3 - {}^m C_3$

EXAMPLE 33. In a plane, there are 11 points, out of which 5 are collinear. Find the number of triangles made by these points.

Sol. Here, $n = 11$, $m = 5$

Then, required number of triangles = ${}^n C_3 - {}^m C_3 = {}^{11} C_3 - {}^5 C_3$

$$= \frac{11 \times 10 \times 9}{3 \times 2 \times 1} - \frac{5 \times 4 \times 3}{3 \times 2 \times 1}$$

$$= 165 - 10 = 155$$

Shortcut Approach

Number of diagonals in a polygon of n sides = ${}^n C_2 - n$

EXAMPLE 34. How many diagonals will be there in an 5-sided regular polygon?

Sol. The number of diagonals = ${}^5 C_2 - 5 = \frac{5 \times 4}{2 \times 1} - 5 = 5$

EXERCISE

1. In how many different ways can the letters of the word SOFTWARE be arranged in such a way that the vowels always come together?
 - (a) 13440
 - (b) 1440
 - (c) 360
 - (d) 120
 - (e) None of these
2. In how many different ways can a group of 4 men and 4 women be formed out of 7 men and 8 women?
 - (a) 2450
 - (b) 105
 - (c) 1170
 - (d) Cannot be determined
 - (e) None of these
3. A bag contains 2 red, 3 green and 2 blue balls. 2 balls are to be drawn randomly. What is the probability that the balls drawn contain no blue ball?
 - (a) $\frac{5}{7}$
 - (b) $\frac{10}{21}$
 - (c) $\frac{2}{7}$
 - (d) $\frac{11}{21}$
 - (e) None of these
4. In how many different ways can the letters of the word BOOKLET be arranged such that B and T always come together?
 - (a) 360
 - (b) 720
 - (c) 480
 - (d) 5040
 - (e) None of these
5. In a box there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that it is neither red nor green?
 - (a) $\frac{7}{19}$
 - (b) $\frac{2}{3}$
 - (c) $\frac{3}{4}$
 - (d) $\frac{9}{21}$
 - (e) None of these
6. In how many different ways can the letters of the word RUMOUR be arranged?
 - (a) 180
 - (b) 720
 - (c) 30
 - (d) 90
 - (e) None of these
7. 765 chairs are to be arranged in a column in such a way that the number of chairs in each column should be equal to the columns. How many chairs will be excluded to make this arrangement possible?
 - (a) 6
 - (b) 36
 - (c) 19
 - (d) 27
 - (e) None of these
8. In how many different ways can the letters of the word JUDGE be arranged so that the vowels always come together?
 - (a) 48
 - (b) 24
 - (c) 120
 - (d) 60
 - (e) None of these
9. How many words can be formed from the letters of the word SIGNATURE so that the vowels always come together?
 - (a) 720
 - (b) 1440
 - (c) 3600
 - (d) 2880
 - (e) None of these
10. In how many ways a committee consisting of 5 men and 6 women can be formed from 8 men and 10 women?
 - (a) 266
 - (b) 86400
 - (c) 11760
 - (d) 5040
 - (e) None of these
11. Out of 15 students studying in a class, 7 are from Maharashtra, 5 are from Karnataka and 3 are from Goa. Four students are to be selected at random. What are the chances that at least one is from Karnataka?
 - (a) $\frac{12}{13}$
 - (b) $\frac{11}{13}$
 - (c) $\frac{10}{15}$
 - (d) $\frac{1}{15}$
 - (e) None of these
12. 4 boys and 2 girls are to be seated in a row in such a way that the two girls are always together. In how many different ways can they be seated?
 - (a) 120
 - (b) 720
 - (c) 148
 - (d) 240
 - (e) None of these
13. In how many different ways can the letters of the word DETAIL be arranged in such a way that the vowels occupy only the odd positions?
 - (a) 120
 - (b) 60
 - (c) 48
 - (d) 32
 - (e) None of these
14. In a box carrying one dozen of oranges, one-third have become bad. If 3 oranges are taken out from the box at random, what is the probability that at least one orange out of the three oranges picked up is good?
 - (a) $\frac{1}{55}$
 - (b) $\frac{54}{55}$
 - (c) $\frac{45}{55}$
 - (d) $\frac{3}{55}$
 - (e) None of these
15. Letters of the word DIRECTOR are arranged in such a way that all the vowels come together. Find out the total number of ways for making such arrangement.
 - (a) 4320
 - (b) 2720
 - (c) 2160
 - (d) 1120
 - (e) None of these

16. A box contains 5 green, 4 yellow and 3 white marbles, 3 marbles are drawn at random. What is the probability that they are not of the same colour?
- (a) $\frac{13}{44}$ (b) $\frac{41}{44}$
 (c) $\frac{13}{55}$ (d) $\frac{52}{55}$
 (e) None of these
17. How many different letter arrangements can be made from the letters of the word RECOVER?
- (a) 1210 (b) 5040
 (c) 1260 (d) 1200
 (e) None of these
18. How many three digit numbers can having only two consecutive digits identical is
- (a) 153 (b) 162
 (c) 168 (d) 163
 (e) None of these
19. How many total numbers of seven-digit numbers can be formed having sum of whose digits is even is
- (a) 9000000 (b) 4500000
 (c) 8100000 (d) 4400000
 (e) None of these
20. How many total numbers of not more than 20 digits that can be formed by using the digits 0, 1, 2, 3, and 4 is
- (a) 5^{20} (b) $5^{20} - 1$
 (c) $5^{20} + 1$ (d) 6^{20}
 (e) None of these
21. The number of six digit numbers that can be formed from the digits 1, 2, 3, 4, 5, 6 and 7 so that digits do not repeat and the terminal digits are even is
- (a) 144 (b) 72
 (c) 288 (d) 720
 (e) None of these
22. Three dice are rolled. The number of possible outcomes in which at least one dice shows 5 is
- (a) 215 (b) 36
 (c) 125 (d) 91
 (e) None of these
23. The number of ways in which ten candidates A_1, A_2, \dots, A_{10} can be ranked so that A_1 is always above A_2 is
- (a) $\frac{10!}{2}$ (b) $10!$
 (c) $9!$ (d) $\frac{8!}{2}$
 (e) None of these
24. How many total number of ways in which n distinct objects can be put into two different boxes is
- (a) n^2 (b) 2^n
 (c) $2n$ (d) 3^n
 (e) None of these
25. In how many ways can the letters of the word 'PRAISE' be arranged. So that vowels do not come together?
- (a) 720 (b) 576
 (c) 440 (d) 144
 (e) None of these
26. There are 6 tasks and 6 persons. Task 1 cannot be assigned either to person 1 or to person 2; task 2 must be assigned to either person 3 or person 4. Every person is to be assigned one task. In how many ways can the assignment be done?
- (a) 144 (b) 180
 (c) 192 (d) 360
 (e) None of these
27. The number of ways in which one or more balls can be selected out of 10 white, 9 green and 7 blue balls is
- (a) 892 (b) 881
 (c) 891 (d) 879
 (e) None of these
28. If 12 persons are seated in a row, the number of ways of selecting 3 persons from them, so that no two of them are seated next to each other is
- (a) 85 (b) 100
 (c) 120 (d) 240
 (e) None of these
29. The number of all possible selections of one or more questions from 10 given questions, each question having one alternative is
- (a) 3^{10} (b) $2^{10} - 1$
 (c) $3^{10} - 1$ (d) 2^{10}
 (e) None of these
30. A lady gives a dinner party to 5 guests to be selected from nine friends. The number of ways of forming the party of 5, given that two of the friends will not attend the party together is
- (a) 56 (b) 126
 (c) 91 (d) 94
 (e) None of these
31. All possible two factors products are formed from the numbers 1, 2, 3, 4, ..., 200. The number of factors out of total obtained which are multiples of 5 is
- (a) 5040 (b) 7180
 (c) 8150 (d) 7280
 (e) None of these
- Directions (Qs. 32-33):** Answer these questions on the basis of the information given below:
 From a group of 6 men and 4 women a committee of 4 persons is to be formed.
32. In how many different ways can it be done so that the committee has at least one woman?
- (a) 210 (b) 225
 (c) 195 (d) 185
 (e) None of these
33. In how many different ways can it be done so that the committee has at least 2 men?
- (a) 210 (b) 225
 (c) 195 (d) 185
 (e) None of these
34. In how many different ways can the letters of the word ORGANISE be arranged in such a way that all the vowels always come together and all the consonants always come together?
- (a) 576 (b) 1152
 (c) 2880 (d) 1440
 (e) None of these

ANSWER KEY

1	(e)	5	(e)	9	(e)	13	(e)	17	(c)	21	(d)	25	(b)	29	(c)	33	(d)
2	(a)	6	(a)	10	(c)	14	(b)	18	(b)	22	(d)	26	(a)	30	(c)	34	(b)
3	(b)	7	(b)	11	(b)	15	(c)	19	(b)	23	(a)	27	(d)	31	(b)		
4	(b)	8	(a)	12	(d)	16	(b)	20	(a)	24	(b)	28	(c)	32	(c)		

Hints & Explanations

1. (e)

O, A, E	S	F	T	W	R
---------	---	---	---	---	---

When the vowels are always together, then treat all the vowels as a single letter and then all the letters can be arranged in $6!$ ways and also all three vowels can be arranged in $3!$ ways. Hence, required no. of arrangements = $6! \times 3! = 4320$.

2. (a) Req'd no. of ways = ${}^7C_4 \times {}^8C_4$

$$= \frac{7 \times 6 \times 5 \times 4}{1 \times 2 \times 3 \times 4} \times \frac{8 \times 7 \times 6 \times 5}{1 \times 2 \times 3 \times 4}$$

$$= 35 \times 70 = 2450$$

3. (b) Req'd probability = $\frac{{}^5C_2}{{}^7C_2} = \frac{5 \times 4}{7 \times 6} = \frac{10}{21}$

4. (b) Treat B and T as a single letter. Then the remaining letters ($5 + 1 = 6$) can be arranged in $6!$ ways. Since, O is repeated twice, we have to divide by 2 and the B and T letters can be arranged in $2!$ ways.

$$\text{Total no. of ways} = \frac{6! \times 2!}{2} = 720$$

5. (e) If the drawn ball is neither red nor green, then it must be blue, which can be picked in ${}^7C_1 = 7$ ways. One ball can be picked from the total ($8 + 7 + 6 = 21$) in ${}^{21}C_1 = 21$ ways.

$$\therefore \text{Req'd probability} = \frac{7}{21} = \frac{1}{3}$$

6. (a) Req'd. number of ways

$$\frac{6!}{2! \times 2!} = \frac{6 \times 5 \times 4 \times 3}{1 \times 2} = 180$$

7. (b) $27^2 < 765 < 28^2$

$$\therefore \text{required no. of chairs to be excluded} = 765 - 729 = 36$$

8. (a) Req'd. number = $4! \times 2! = 24 \times 2 = 48$

9. (e) The word SIGNATURE consists of nine letters comprising four vowels (A, E, I and U) and five consonants (G, N, R, T and S). When the four vowels are considered as one letter, we have six letters which can be arranged in 6P_6 ways i.e. $6!$ ways. Note that the four vowels can be arranged in $4!$ ways.

Hence required number of words

$$= 6! \times 4!$$

$$= 720 \times 24 = 17280$$

10. (c) Here, 5 men out of 8 men and 6 women out of 10 women can be chosen in

$${}^8C_5 \times {}^{10}C_6 \text{ ways, i.e., } 11760 \text{ ways.}$$

11. (b) Total possible ways of selecting 4 students out of 15

$$\text{students} = {}^{15}C_4 = \frac{15 \times 14 \times 13 \times 12}{1 \times 2 \times 3 \times 4} = 1365$$

The no. of ways of selecting 4 students in which no student belongs to Karnataka = ${}^{10}C_4$

\therefore Hence no. of ways of selecting at least one student from Karnataka = ${}^{15}C_4 - {}^{10}C_4 = 1155$

$$\therefore \text{Probability} = \frac{1155}{1365} = \frac{77}{91} = \frac{11}{13}$$

12. (d) Assume the 2 given students to be together (i.e one). Now there are five students.

$$\text{Possible ways of arranging them are} = 5! = 120$$

Now, they (two girls) can arrange themselves in $2!$ ways. Hence total ways = $120 \times 2 = 240$

13. (e) 3 vowels can be arranged in three odd places in $3!$ ways. Similarly, 3 consonants can be arranged in three even places in $3!$ ways. Hence, the total number of words in which vowels occupy odd positions = $3! \times 3! = 6 \times 6 = 36$ ways.

14. (b) $n(S)$ = No. of selection of 3 oranges out of the total 12 oranges

$$= {}^{12}C_3 = 2 \times 11 \times 10 = 220$$

No. of selection of 3 bad oranges out of the total 4 bad oranges = ${}^4C_3 = 4$

$$\therefore n(E) = \text{no. of desired selection of oranges} = 220 - 4 = 216$$

$$\therefore P(E) = \frac{n(E)}{n(S)} = \frac{216}{220} = \frac{54}{55}$$

15. (c) Taking all vowels (IEO) as a single letter (since they come together) there are six letters

$$\text{Hence no. of arrangements} = \frac{6!}{2!} \times 3! = 2160$$

[Three vowels can be arranged $3!$ ways among themselves, hence multiplied with $3!$.]

16. (b) Total no. of ways of drawing 3 marbles

$$= {}^{12}C_3 = \frac{12 \times 11 \times 10}{1 \times 2 \times 3} = 220$$
 Total no. of ways of drawing marbles, which are of same colour = ${}^5C_3 + {}^4C_3 + {}^3C_3 = 10 + 4 + 1 = 15$
 \therefore Probability of same colour = $\frac{15}{220} = \frac{3}{44}$
 \therefore Probability of not same colour = $1 - \frac{3}{44} = \frac{41}{44}$
17. (c) Possible arrangements are :

$$\frac{7!}{2!2!} = 1260$$
 [division by 2 times 2! is because of the repetition of E and R]
18. (b) When 0 is the repeated digit like
 100, 200, ..., 9 in number
 When 0 occurs only once like
 110, 220, ..., 9 in number
 When 0 does not occur like
 112, 211, ..., $2 \times (8 \times 9) = 144$ in number.
 Hence, total = $9 + 9 + 144 = 162$.
19. (b) Suppose $x_1 x_2 x_3 x_4 x_5 x_6 x_7$ represents a seven digit number. Then x_1 takes the value 1, 2, 3, ..., 9 and x_2, x_3, \dots, x_7 all take values 0, 1, 2, 3, ..., 9.
 If we keep x_1, x_2, \dots, x_6 fixed, then the sum $x_1 + x_2 + \dots + x_6$ is either even or odd. Since x_7 takes 10 values 0, 1, 2, ..., 9, five of the numbers so formed will have sum of digits even and 5 have sum odd.
 Hence the required number of numbers
 $= 9 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 10 \cdot 5 = 4500000$.
20. (a) Number of single digit numbers = 5
 Number of two digits numbers = 4×5
 [∵ 0 cannot occur at first place and repetition is allowed]
 Number of three digits numbers
 $= 4 \times 5 \times 5 = 4 \times 5^2$

 Number of 20 digits numbers = 4×5^{19}
 \therefore Total number of numbers
 $= 5 + 4 \cdot 5 + 4 \cdot 5^2 + 4 \cdot 5^3 + \dots + 4 \cdot 5^{19}$
 $= 5 + 4 \cdot \frac{5(5^{19} - 1)}{5 - 1} = 5 + 5^{20} - 5 = 5^{20}$
21. (d) The first and the last (terminal) digits are even and there are three even digits. This arrangement can be done in 3P_2 ways. For any one of these arrangements, two even digits are used; and the remaining digits are 5 (4 odd and 1 even) and the four digits in the six digits (leaving out the terminal digits) may be arranged using these 5 digits in 5P_4 ways. The required number of numbers is ${}^3P_2 \times {}^5P_4 = 6 \times 120 = 720$.
22. (d) Required number of possible outcomes
 $=$ Total number of possible outcomes –
 Number of possible outcomes in which 5 does not appear on any dice. (hence 5 possibilities in each throw)
 $= 6^3 - 5^3 = 216 - 125 = 91$
23. (a) Ten candidates can be ranked in $10!$ ways. In half of these ways A_1 is above A_2 and in another half A_2 is above A_1 . So, required number of ways is $\frac{10!}{2}$.
24. (b) Let the two boxes be B_1 and B_2 . There are two choices for each of the n objects. So, the total number of ways is $2 \times 2 \times \dots \times 2 = 2^n$ (n-times).
25. (b) Required number of possible outcomes
 $=$ Total number of possible outcomes –
 Number of possible outcomes in which all vowels are together
 $= 6! - 3! \times 4! = 720 - 144 = 576$
26. (a) Task 1 can not be assigned to either person 1 or 2 i.e. there are 4 options.
 Task 2 can be assigned to 3 or 4
 So, there are only 2 options for task 2.
 So required no. of ways = 2 options for task 2 \times 3 options for task 1 \times 4 options for task 3 \times 3 options for task 4 \times 2 options for task 5 \times 1 option for task 6.
 $= 2 \times 3 \times 4 \times 3 \times 2 \times 1 = 144$
27. (d) The required number of ways
 $= (10+1)(9+1)(7+1) - 1 = 879$.
28. (c) The number of ways of selecting 3 persons from 12 people under the given condition :
 Number of ways of arranging 3 people among 9 people seated in a row, so that no two of them are consecutive
 $=$ Number of ways of choosing 3 places out of the 10 [8 in between and 2 extremes]
 $= {}^{10}C_3 = \frac{10 \times 9 \times 8}{3 \times 2 \times 1} = 5 \times 3 \times 8 = 120$
29. (c) Since each question can be selected in 3 ways, by selecting it or by selecting its alternative or by rejecting it. Thus, the total number of ways of dealing with 10 given questions is 3^{10} including a way in which we reject all the questions.
 Hence, the number of all possible selections is $3^{10} - 1$.
30. (c) Number of ways of selecting 5 guests from nine friends
 $= {}^9C_5$
 Out of these, 7C_3 ways are those in which two of the friends occur together [3 more persons to be selected out of remaining 7]
 \therefore Number of ways, in which two of the friends will not attend the party together = ${}^9C_5 - {}^7C_3 = 91$.

31. (b) The total number of two factor products = ${}^{200}C_2$. The number of numbers from 1 to 200 which are not multiples of 5 is 160. Therefore the total number of two factor products which are not multiple of 5 is ${}^{160}C_2$. Hence, the required number of factors which are multiples of 5 = ${}^{200}C_2 - {}^{160}C_2 = 7180$.

32. (c) Reqd. no. of ways

$$= {}^4C_1 \times {}^6C_3 + {}^4C_2 \times {}^6C_2 + {}^4C_3 \times {}^6C_1 + {}^4C_4$$

$$= 4 \times \frac{6 \times 5 \times 4}{1 \times 2 \times 3} + \frac{4 \times 3}{1 \times 2} \times \frac{6 \times 5}{1 \times 2} + \frac{4 \times 3 \times 2}{1 \times 2 \times 3} \times 6 + 1$$

$$= 80 + 90 + 24 + 1 = 195$$

33. (d) Reqd. no. of ways

$$= {}^6C_2 \times {}^4C_2 + {}^6C_3 \times {}^4C_1 + {}^6C_4$$

$$= \frac{6 \times 5}{1 \times 2} \times \frac{4 \times 3}{1 \times 2} + \frac{6 \times 5 \times 4}{1 \times 2 \times 3} \times 4 + \frac{6 \times 5 \times 4 \times 3}{1 \times 2 \times 3 \times 4}$$

$$= 90 + 80 + 15 = 185.$$

34. (b) The word ORGANISE has 4 vowels and 4 consonants. Now, both groups (vowels and consonants) can be treated as two letters. This can be arranged in $2!$ ways. Now, the 4 letters of each group can be arranged in $4!$ ways.

$$\text{So, total possible ways of arrangement}$$

$$= 2! \times 4! \times 4!$$

$$= 2 \times 24 \times 24 = 1152.$$



Probability

INTRODUCTION

Random Experiment :

It is an experiment which if conducted repeatedly under homogeneous condition does not give the same result.

The total number of possible outcomes of an experiment in any trial is known as the **exhaustive number** of events.

For example

- In throwing a die, the exhaustive number of cases is 6 since any one of the six faces marked with 1, 2, 3, 4, 5, 6 may come uppermost.
- In tossing a coin, the exhaustive number of cases is 2, since either head or tail may turn over.
- If a pair of dice is thrown, then the exhaustive number of cases is $6 \times 6 = 36$
- In drawing four cards from a well-shuffled pack of cards, the exhaustive number of cases is ${}^{52}C_4$.

Events are said to be **mutually exclusive** if no two or more of them can occur simultaneously in the same trial.

For example,

- In tossing of a coin the events head (H) and tail (T) are mutually exclusive.
- In throwing of a die all the six faces are mutually exclusive.
- In throwing of two dice, the events of the face marked 5 appearing on one die and face 5 (or other) appearing on the other are not mutually exclusive.

Outcomes of a trial are **equally likely** if there is no reason for an event to occur in preference to any other event or if the chances of their happening are equal.

For example,

- In throwing of an unbiased die, all the six faces are equally likely to occur.
- In drawing a card from a well-shuffled pack of 52 cards, there are 52 equally likely possible outcomes.

The **favourable cases** to an event are the outcomes, which entail the happening of an event.

For example,

- In the tossing of a die, the number of cases which are favourable to the "appearance of a multiple of 3" is 2, viz, 3 and 6.
- In drawing two cards from a pack, the number of cases favourable to "drawing 2 aces" is 4C_2 .
- In throwing of two dice, the number of cases favourable to "getting 8 as the sum" is 5, : (2, 6), (6, 2), (4, 4), (3, 5), (5, 3).

Events are said to be **independent if the happening** (or non-happening) of one event is not affected by the happening or non-happening of others.

CLASSICAL DEFINITION OF PROBABILITY

If there are n -mutually exclusive, exhaustive and equally likely outcomes to a random experiment and 'm' of them are favourable to an event A, then the probability of happening of A is denoted

by $P(A)$ and is defined by $P(A) = \frac{m}{n}$.

$$P(A) = \frac{\text{No. of elementary events favourable to A}}{\text{Total no. of equally likely elementary events}}$$

Obviously, $0 \leq m \leq n$, therefore $0 \leq \frac{m}{n} \leq 1$ so that

$$0 \leq P(A) \leq 1.$$

$P(A)$ can never be negative.

Since, the number of cases in which the event A will not happen is ' $n - m$ ', then the probability $P(\bar{A})$ of not happening of A is given by

$$P(\bar{A}) = \frac{n - m}{n} = 1 - \frac{m}{n} = 1 - P(A)$$

$$\Rightarrow \boxed{P(A) + P(\bar{A}) = 1}$$

The **ODDS IN FAVOUR** of occurrence of A are given by

$$m : (n - m) \text{ or } P(A) : P(\bar{A})$$

The **ODDS AGAINST** the occurrence of A are given by

$$(n - m) : m \text{ or } P(\bar{A}) : P(A).$$

EXAMPLE 1. Two dice are thrown simultaneously. The probability of obtaining a total score of seven is

- (a) $\frac{1}{6}$ (b) $\frac{1}{3}$ (c) $\frac{2}{7}$ (d) $\frac{5}{6}$

(e) None of these

Sol.

- (a) When two are thrown then there are 6×6 exhaustive cases $\therefore n = 36$. Let A denote the event "total score of 7" when 2 dice are thrown then $A = [(1, 6), (2, 5), (3, 4), (4, 3), (5, 2), (6, 1)]$.

Thus there are 6 favourable cases.

$$\therefore m = 6 \quad \text{By definition } P(A) = \frac{m}{n}$$

$$\therefore P(A) = \frac{6}{36} = \frac{1}{6}.$$

EXAMPLE 2. A bag contains 5 green and 7 red balls. Two balls are drawn. The probability that one is green and the other is red is

(a) $\frac{5}{132}$ (b) $\frac{7}{132}$ (c) $\frac{35}{66}$ (d) $\frac{31}{66}$

(e) None of these

Sol.

(c) There are $5 + 7 = 12$ balls in the bag and out of these two balls can be drawn in ${}^{12}C_2$ ways. There are 5 green balls, therefore, one green ball can be drawn in 5C_1 ways; similarly, one red ball can be drawn in 7C_1 ways so that the number of ways in which we can draw one green ball and the other red is ${}^5C_1 \times {}^7C_1$.
Hence, $P(\text{one green and the other red})$

$$= \frac{{}^5C_1 \times {}^7C_1}{{}^{12}C_2} = \frac{5}{1} \times \frac{7}{1} \times \frac{1 \cdot 2}{12 \cdot 11} = \frac{35}{66}.$$

EXAMPLE 3. A bag contains 5 white and 7 black balls and a man draws 4 balls at random. The odds against these being all black is :

(a) 7 : 92 (b) 92 : 7 (c) 92 : 99 (d) 99 : 92

(e) None of these

Sol.

(b) There are $7 + 5 = 12$ balls in the bag and the number of ways in which 4 balls can be drawn is ${}^{12}C_4$ and the number of ways of drawing 4 black balls (out of seven) is 7C_4 .
Hence, $P(4 \text{ black balls})$

$$= \frac{{}^7C_4}{{}^{12}C_4} = \frac{7 \cdot 6 \cdot 5 \cdot 4}{1 \cdot 2 \cdot 3 \cdot 4} \times \frac{1 \cdot 2 \cdot 3 \cdot 4}{12 \cdot 11 \cdot 10 \cdot 9} = \frac{7}{99}$$

Thus the odds against the event 'all black balls' are

$$(1 - \frac{7}{99}) : \frac{7}{99} \text{ i.e., } \frac{92}{99} : \frac{7}{99} \text{ or } 92 : 7.$$

EXAMPLE 4. The letters of the word SOCIETY are placed at random in a row. The probability that the three vowels come together is

(a) $\frac{1}{6}$ (b) $\frac{1}{7}$ (c) $\frac{2}{7}$ (d) $\frac{5}{6}$

(e) None of these

Sol.

(b) The word 'SOCIETY' contains seven distinct letters and they can be arranged at random in a row in 7P_7 ways, i.e. in $7! = 5040$ ways.

Let us now consider those arrangements in which all the three vowels come together. So in this case we have to arrange four letters, S, C, T, Y and a pack of three vowels in a row which can be done in 5P_5 i.e. $5! = 120$ ways.

Also, the three vowels in their pack can be arranged in 3P_3 i.e. $3! = 6$ ways.

Hence, the number of arrangements in which the three vowels come together is $120 \times 6 = 720$

\therefore The probability that the vowels come together

$$= \frac{720}{5040} = \frac{1}{7}$$

EXAMPLE 5. There are three events E_1, E_2 and E_3 , one of which must, and only one can happen. The odds are 7 to 4 against E_1 and 5 to 3 against E_2 . The odds against E_3 is

(a) 4 : 11 (b) 3 : 8 (c) 23 : 88 (d) 65 : 23

(e) None of these

Sol.

(d) Since, one and only one of the three events E_1, E_2 and E_3 can happen, therefore $P(E_1) + P(E_2) + P(E_3) = 1$ (1)

\therefore Odds against E_1 are 7 : 4

$$\Rightarrow P(E_1) = \frac{4}{4+7} = \frac{4}{11} \quad \text{.....(2)}$$

\therefore Odds against E_2 are 5 : 3

$$\Rightarrow P(E_2) = \frac{3}{3+5} = \frac{3}{8} \quad \text{.....(3)}$$

From (1), (2) and (3), we have, $\frac{4}{11} + \frac{3}{8} + P(E_3) = 1$.

$$\text{i.e. } P(E_3) = 1 - \frac{4}{11} - \frac{3}{8} = \frac{88 - 32 - 33}{88} = \frac{23}{88} = \frac{23}{23+65}$$

Hence odds against E_3 is 65 : 23.

ALGEBRA OF EVENTS

Let A and B be two events related to a random experiment. We define

(i) The event "A or B" denoted by " $A \cup B$ ", which occurs when A or B or both occur. Thus,

$P(A \cup B)$ = Probability that at least one of the events occur

(ii) The event "A and B", denoted by " $A \cap B$ ", which occurs when A and B both occur. Thus,

$P(A \cap B)$ = Probability of simultaneous occurrence of A and B.

(iii) The event "Not - A" denoted by \bar{A} , which occurs when and only when A does not occur. Thus

$P(\bar{A})$ = Probability of non-occurrence of the event A.

(iv) $\bar{A} \cap \bar{B}$ denotes the "non-occurrence of both A and B".

(v) " $A \subset B$ " denotes the "occurrence of A implies the occurrence of B".

For example :

Consider a single throw of die and following two events

A = the number is even = {2, 4, 6}

B = the number is a multiple of 3 = {3, 6}

$$\text{Then } P(A \cup B) = \frac{4}{6} = \frac{2}{3}, \quad P(A \cap B) = \frac{1}{6}$$

$$P(\bar{A}) = \frac{1}{2}, \quad P(\bar{A} \cap \bar{B}) = P(\overline{A \cup B}) = 1 - \frac{2}{3} = \frac{1}{3}.$$

ADDITION THEOREM ON PROBABILITY

1. **ADDITION THEOREM :** If A and B are two events associated with a random experiment, then

$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

2. ADDITION THEOREM FOR THREE EVENTS: If A, B, C are three events associated with a random experiment, then
- $$P(A \cup B \cup C) = P(A) + P(B) + P(C) - P(A \cap B) - P(B \cap C) - P(A \cap C) + P(A \cap B \cap C)$$
3. If A and B are **two mutually exclusive events** and the probability of their occurrence are P(A) and P(B) respectively, then probability of either A or B occurring is given by
- $$P(A \text{ or } B) = P(A) + P(B)$$
- $$\Rightarrow P(A + B) = P(A) + P(B)$$

EXAMPLE 6. A and B are two events odds against A are 2 to 1. odds in favour of $A \cup B$ are 3 to 1. If $x \leq P(B) \leq y$. then the ordered pair (x, y) is :

- (a) $\left(\frac{5}{12}, \frac{3}{4}\right)$ (b) $\left(\frac{2}{3}, \frac{3}{4}\right)$ (c) $\left(\frac{1}{3}, \frac{3}{4}\right)$ (d) $\left(\frac{1}{2}, \frac{3}{7}\right)$
 (e) None of these

Sol.

$$(a) P(A) = \frac{1}{3}; P(A \cup B) = \frac{3}{4}$$

$$\Rightarrow P(A) + P(B) - P(A \cap B) = \frac{3}{4}$$

$$\Rightarrow \frac{1}{3} + P(B) - P(A \cap B) = \frac{3}{4}$$

$$\Rightarrow P(B) = \frac{5}{12} + P(A \cap B) \geq \frac{5}{12}$$

$$\text{Also, } P(B) = \frac{5}{12} + P(A \cap B) \leq \frac{5}{12} + \frac{1}{3} = \frac{3}{4}$$

$$\left[\because P(A \cap B) \leq P(A) = \frac{1}{3} \right]$$

Hence, (x, y) is $\left(\frac{5}{12}, \frac{3}{4}\right)$.

EXAMPLE 7. Two cards are drawn from a pack of 52 cards. The probability that either both are red or both are kings is

- (a) $\frac{1}{2}$ (b) $\frac{1}{321}$ (c) $\frac{325}{1326}$ (d) $\frac{1}{327}$
 (e) None of these

Sol.

- (d) 2 cards can be drawn from the pack in ${}^{52}C_2$ ways. Let A be the event "Two cards are red" and B be the event "Two cards drawn are kings". The required probability is $P(A \cup B)$. From addition theorem, we have
- $$P(A \cup B) = P(A) + P(B) - P(A \cap B) \quad \dots(1)$$
- Now, P(A) = Probability of drawing two red cards
- $$= \frac{{}^{26}C_2}{{}^{52}C_2} \quad [\because \text{There are total 26 red cards}]$$
- P(B) = Probability of drawing two king cards

$$= \frac{{}^4C_2}{{}^{52}C_2} \quad [\because \text{There are 4 king cards}]$$

$P(A \cap B)$ = Probability of drawing 2 red king cards

$$= \frac{{}^2C_2}{{}^{52}C_2} \quad [\because \text{There are just 2 red kings}]$$

Substituting the values in (1), we get

$$P(A \cup B) = \frac{{}^{26}C_2}{{}^{52}C_2} + \frac{{}^4C_2}{{}^{52}C_2} - \frac{{}^2C_2}{{}^{52}C_2} = \frac{325}{1326} + \frac{6}{1326} - \frac{1}{1326}$$

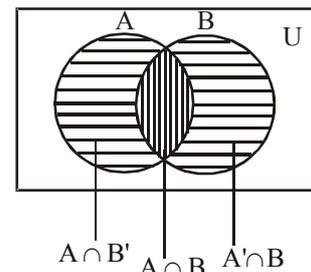
$$= \frac{55}{221}$$

EXAMPLE 8. If A and B are two events, the probability that at most one of these events occurs is :

- (a) $P(A') + P(B') - P(A' \cap B')$
 (b) $P(A') + P(B') + P(A \cup B) - 1$
 (c) $P(A \cap B') + P(A' \cap B) + P(A' \cap B')$
 (d) All above are correct.
 (e) None of these

Sol.

- (d)



At most one of two events occurs if the event $A' \cup B'$ occurs.

$$P(A' \cup B') = 1 - P(A \cap B)$$

$$\text{Now, } P(A' \cup B') = P(A') + P(B') - P(A' \cap B')$$

$$= P(A') + P(B') - [1 - P(A \cup B)]$$

$$= P(A') + P(B') + P(A \cup B) - 1.$$

Finally, since

$$P(A' \cup B') = P[(A') \cap B'] + P[A' \cap (B)'] + P(A' \cap B)$$

$$= P(A \cap B') + P(A' \cap B) + P(A' \cap B)$$

$$[\because P(A \cup B) = P(A' \cap B) + P(A \cap B') + P(A \cap B)]$$

[See the Venn diagram].

CONDITIONAL PROBABILITY

Let A and B be two events associated with a random experiment.

Then $P\left(\frac{A}{B}\right)$, represents the conditional probability of occurrence of A relative to B.

$$\text{Also, } P\left(\frac{A}{B}\right) = \frac{P(A \cap B)}{P(B)} \quad \text{and} \quad P\left(\frac{B}{A}\right) = \frac{P(A \cap B)}{P(A)}$$

For example :

Suppose a bag contains 5 white and 4 red balls. Two balls are drawn one after the other without replacement. If A denotes the event “drawing a white ball in the first draw” and B denotes the event “drawing a red ball in the second draw”.

$P(B/A)$ = Probability of drawing a red ball in second draw when it is known that a white ball has already been drawn in the first

$$\text{draw} = \frac{4}{8} = \frac{1}{2}$$

Obviously, $P(A/B)$ is meaning less in this problem.

MULTIPLICATION THEOREM

If A and B are two events, then

$$P(A \cap B) = P(A) P(B/A), \text{ if } P(A) > 0$$

$$= P(B) P(A/B) \text{ if } P(B) > 0$$

From this theorem we get

$$P(B/A) = \frac{P(A \cap B)}{P(A)} \text{ and } P(A/B) = \frac{P(A \cap B)}{P(B)}$$

For example :

Consider an experiment of throwing a pair of dice. Let A denotes the event “ the sum of the point is 8” and B event “ there is an even number on first die”

$$\text{Then } A = \{(2, 6), (6, 2), (3, 5), (5, 3), (4, 4)\},$$

$$B = \{(2, 1), (2, 2), \dots, (2, 6), (4, 1), (4, 2), \dots, (4, 6), (6, 1), (6, 2), \dots, (6, 6)\}$$

$$P(A) = \frac{5}{36}, P(B) = \frac{18}{36} = \frac{1}{2}, P(A \cap B) = \frac{3}{36} = \frac{1}{12}$$

Now, $P(A/B)$ = Prob. of occurrence of A when B has already occurred = prob. of getting 8 as the sum, when there is an even number on the first die

$$= \frac{3}{18} = \frac{1}{6} \text{ and similarly } P(B/A) = \frac{3}{5}$$

INDEPENDENCE

An event B is said to be independent of an event A if the probability that B occurs is not influenced by whether A has or has not occurred. For two independent events A and B.

$$P(A \cap B) = P(A) P(B)$$

Event A_1, A_2, \dots, A_n are independent if

- (i) $P(A_i \cap A_j) = P(A_i) P(A_j)$ for all $i, j, i \neq j$. That is, the events are pairwise independent.
- (ii) The probability of simultaneous occurrence of (any) finite number of them is equal to the product of their separate probabilities, that is, they are mutually independent.

For example :

Let a pair of fair coin be tossed, here $S = \{HH, HT, TH, TT\}$
 A = heads on the first coin = $\{HH, HT\}$
 B = heads on the second coin = $\{TH, HH\}$
 C = heads on exactly one coin = $\{HT, TH\}$

$$\text{Then } P(A) = P(B) = P(C) = \frac{2}{4} = \frac{1}{2} \text{ and}$$

$$P(A \cap B) = P(\{HH\}) = \frac{1}{4} = P(A)P(B)$$

$$P(B \cap C) = P(\{TH\}) = \frac{1}{4} = P(B)P(C)$$

$$P(A \cap C) = P(\{HT\}) = \frac{1}{4} = P(A)P(C)$$

Hence the events are pairwise independent.

$$\text{Also } P(A \cap B \cap C) = P(\phi) = 0 \neq P(A)P(B)P(C)$$

Hence, the events A, B, C are not mutually independent.

EXAMPLE 9. The odds against P solving a problem are 8 : 6 and odds in favour of Q solving the same problem are 14 : 10 the probability of the problem being solved, if both of them try it, is

- (a) $\frac{5}{21}$ (b) $\frac{16}{21}$ (c) $\frac{5}{12}$ (d) $\frac{5}{7}$
- (e) None of these

Sol.

- (b) The odd against P solving a problem = 8 : 6.

$$\therefore \text{Probability of P not solving the problem} = \frac{8}{14} = \frac{4}{7}$$

$$\text{The odds in favour of Q solving problem} = 14 : 10$$

$$\therefore \text{Probability of Q not solving the problem} = \frac{10}{24} = \frac{5}{12}$$

Hence, the probability of P and Q not solving the problem

$$= \frac{4}{7} \times \frac{5}{12} = \frac{5}{21}$$

\therefore Probability of the problem being solved

$$= 1 - \text{probability of the problem not being solved}$$

$$= 1 - \frac{5}{21} = \frac{16}{21}$$

EXAMPLE 10. A and B are two independent events. The probability that both A and B occur is $\frac{1}{6}$ and the probability that

neither of them occurs is $\frac{1}{3}$. The probability of occurrence of A is.

- (a) $\frac{1}{2}$ (b) $\frac{1}{3}$ (c) $\frac{5}{6}$ (d) $\frac{1}{6}$
- (e) None of these

Sol.

- (a) Let $P(A) = a$ and $P(B) = b$ Then $P(A \cap B) = \frac{1}{6}$

$$\Rightarrow P(A)P(B) = \frac{1}{6}, \text{ because A and B are independent.}$$

$$\therefore ab = \frac{1}{6} \quad \dots(i)$$

Also $P(\overline{A} \cap \overline{B}) = [1 - P(A)][1 - P(B)]$; .

$$\therefore [1 - a][1 - b] = \frac{1}{3} \Rightarrow 1 - a - b + ab = \frac{1}{3} \quad \dots(ii)$$

From (i) and (ii) we have $a + b = \frac{5}{6} \quad \dots(iii)$

Solving (i) and (iii) we get, $a = \frac{1}{2}$, $b = \frac{1}{3}$, $\therefore P(A) = \frac{1}{2}$.

EXAMPLE 11. In each of a set of games it is 2 to 1 in favour of the winner of the previous game. The chance that the player who wins the first game shall win three at least of the next four is

- (a) $\frac{8}{27}$ (b) $\frac{4}{81}$ (c) $\frac{4}{9}$ (d) $\frac{2}{3}$
 (e) None of these

Sol.

(c) Let W stand for the winning of a game and L for losing it. Then there are 4 mutually exclusive possibilities

- (i) W, W, W (ii) W, W, L, W
 (iii) W, L, W, W (iv) L, W, W, W.

[Note that case (i) includes both the cases whether he losses or wins the fourth game.]

By the given conditions of the question, the probabilities for (i), (ii), (iii) and (iv) respectively are

$$\frac{2}{3} \cdot \frac{2}{3} \cdot \frac{2}{3}; \frac{2}{3} \cdot \frac{2}{3} \cdot \frac{1}{3} \cdot \frac{1}{3}; \frac{2}{3} \cdot \frac{1}{3} \cdot \frac{1}{3} \cdot \frac{2}{3} \text{ and } \frac{1}{3} \cdot \frac{1}{3} \cdot \frac{2}{3} \cdot \frac{2}{3}$$

Hence the required probability

$$= \frac{8}{27} + \frac{4}{81} + \frac{4}{81} + \frac{4}{81} = \frac{36}{81} = \frac{4}{9}$$

[\therefore The probability of winning the game if previous

game was also won is $\frac{2}{1+2} = \frac{2}{3}$ and the probability of

winning the game if previous game was a loss is

$$\frac{1}{1+2} = \frac{1}{3}].$$

EXAMPLE 12. Three numbers are selected at random without replacement from the set of numbers $\{1, 2, \dots, N\}$. The conditional probability that the third number lies between the first two, if the first number is known to be smaller than the second, is

- (a) $1/6$ (b) $1/3$ (c) $1/2$ (d) $3/4$
 (e) None of these

Sol.

(b) The number of ways of choosing three numbers out of N is ${}^N C_3$. If these numbers are a_1, a_2 and a_3 , they must satisfy exactly one of the following inequalities for a successful outcome.

$$a_1 < a_2 < a_3 \quad a_1 < a_3 < a_2, \quad a_2 < a_1 < a_3,$$

$$a_2 < a_3 < a_1, \quad a_3 < a_1 < a_2, \quad a_3 < a_2 < a_1.$$

Thus the number of ways of arranging the three numbers in a given order is $({}^N C_3) (6)$, and there are 3 ways in which the first number is less than the second. Now if A denotes the event : the first number is less than the second number, and B the event : the third number lies

between the first and the second, we need to find $P(B|A)$. Since

$$P(B \cap A) = \frac{{}^N C_3}{{}^N C_3(6)} = \frac{1}{6} \text{ and } P(A) = \frac{({}^N C_3)(3)}{{}^N C_3(6)} = \frac{1}{2},$$

$$\text{We get } P(B|A) = \frac{P(B \cap A)}{P(A)} = \frac{1/6}{1/2} = \frac{1}{3}.$$

EXAMPLE 13. Given two bags A and B as follows : Bag A contains 3 red and 2 white balls and bag B contains 2 red and 5 white balls. A bag is selected at random, a ball is drawn and put into the other bag, then a ball is drawn from the second bag. The probability that both balls drawn are of the same colour is

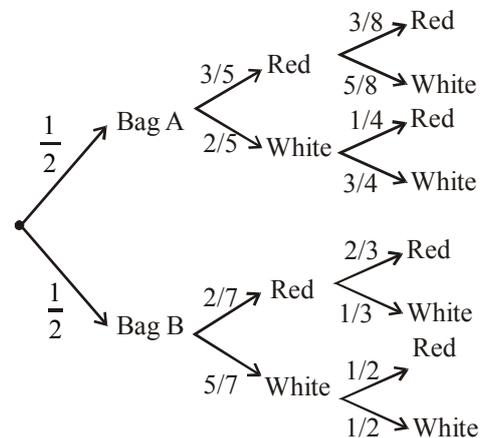
- (a) $\frac{187}{1680}$ (b) $\frac{901}{1680}$ (c) $\frac{439}{1680}$ (d) $\frac{437}{1679}$
 (e) None of these

Sol.

(b) The whole event consists of the following mutually exclusive ways.

- (1) Selecting the bag A, drawing a red ball from A and putting it into bag B and then drawing a red ball from B.
- (2) Selecting the bag A, drawing a white ball from A and putting it into bag B and then drawing a white ball from B.
- (3) Selecting the bag B, drawing a red ball from B and putting it into A and then drawing a red ball from A.
- (4) Selecting the bag B, drawing a white ball from B and putting it into A and then drawing a white ball from A.

The tree diagram of the above processes are shown below, with respective probability of each step



The required probability is

$$= \frac{1}{2} \times \frac{3}{5} \times \frac{3}{8} + \frac{1}{2} \times \frac{2}{5} \times \frac{3}{4} + \frac{1}{2} \times \frac{2}{7} \times \frac{2}{3} + \frac{1}{2} \times \frac{5}{7} \times \frac{1}{2}$$

$$= \frac{9}{80} + \frac{3}{20} + \frac{2}{21} + \frac{5}{28} = \frac{901}{1680}$$

EXERCISE

- In a given race the odds in favour of three horses A, B, C are 1 : 3; 1 : 4; 1 : 5 respectively. Assuming that dead head is impossible the probability that one of them wins is
 - $\frac{7}{60}$
 - $\frac{37}{60}$
 - $\frac{1}{5}$
 - $\frac{1}{8}$
 - None of these
- A man and his wife appear for an interview for two posts. The probability of the husband's selection is $\frac{1}{7}$ and that of the wife's selection is $\frac{1}{5}$. The probability that only one of them will be selected is
 - $\frac{6}{7}$
 - $\frac{4}{35}$
 - $\frac{6}{35}$
 - $\frac{2}{7}$
 - None of these
- The probability that the 13th day of a randomly chosen month is a Friday, is
 - $\frac{1}{12}$
 - $\frac{1}{7}$
 - $\frac{1}{84}$
 - $\frac{1}{13}$
 - None of these
- If a leap year selected at random, the chance that it will contain 53 Sunday is
 - $\frac{3}{7}$
 - $\frac{1}{7}$
 - $\frac{2}{7}$
 - $\frac{4}{7}$
 - None of these
- A Positive integer N is selected such that $100 < N < 200$. The probability that it is divisible by either 4 or 7 is :
 - $\frac{38}{99}$
 - $\frac{24}{99}$
 - $\frac{34}{99}$
 - $\frac{14}{99}$
 - None of these
- In a single throw with four dice, the probability of throwing seven is
 - $\frac{4}{6^4}$
 - $\frac{8}{6^4}$
 - $\frac{16}{6^4}$
 - $\frac{20}{6^4}$
 - None of these
- If A and B are two independent events with $P(A) = 0.6$, $P(B) = 0.3$, then $P(A \cap B')$ is equal to :
 - 0.18
 - 0.28
 - 0.82
 - 0.72
 - None of these
- If three vertices of a regular hexagon are chosen at random, then the chance that they form an equilateral triangle is :
 - $\frac{1}{3}$
 - $\frac{1}{5}$
 - $\frac{1}{10}$
 - $\frac{1}{2}$
 - None of these
- Six dice are thrown. The probability that different number will turn up is :
 - $\frac{129}{1296}$
 - $\frac{1}{54}$
 - $\frac{5}{324}$
 - $\frac{5}{54}$
 - None of these
- Four balls are drawn at random from a bag containing 5 white, 4 green and 3 black balls. The probability that exactly two of them are white is :
 - $\frac{14}{33}$
 - $\frac{7}{16}$
 - $\frac{18}{33}$
 - $\frac{9}{16}$
 - None of these
- The probability that a person will hit a target in shooting practice is 0.3. If he shoots 10 times, the probability that he hits the target is
 - 1
 - $1 - (0.7)^{10}$
 - $(0.7)^{10}$
 - $(0.3)^{10}$
 - None of these
- The probability that at least one of the events A and B occurs is 0.7 and they occur simultaneously with probability 0.2. Then $P(\bar{A}) + P(\bar{B}) =$
 - 1.8
 - 0.6
 - 1.1
 - 0.4
 - None of these

13. The probability that A can solve a problem is $\frac{2}{3}$ and B can solve it is $\frac{3}{4}$. If both attempt the problem, what is the probability that the problem gets solved?
- (a) $\frac{11}{12}$ (b) $\frac{7}{12}$
 (c) $\frac{5}{12}$ (d) $\frac{9}{12}$
 (e) None of these
14. Three integers are chosen at random from the first 20 integers. The probability that their product is even, is
- (a) $\frac{2}{19}$ (b) $\frac{3}{29}$
 (c) $\frac{17}{19}$ (d) $\frac{4}{29}$
 (e) None of these
15. A die is loaded in such a way that each odd number is twice as likely to occur as each even number. If E is the event of a number greater than or equal to 4 on a single toss of the die, then P(E) is :
- (a) $\frac{4}{9}$ (b) $\frac{2}{3}$
 (c) $\frac{1}{2}$ (d) $\frac{1}{3}$
 (e) None of these
16. The probability that two integers chosen at random and their product will have the same last digit is :
- (a) $\frac{3}{10}$ (b) $\frac{1}{25}$
 (c) $\frac{4}{15}$ (d) $\frac{7}{15}$
 (e) None of these
17. Seven people seat themselves indiscriminately at round table. The probability that two distinguished persons will be next to each other is
- (a) $\frac{1}{3}$ (b) $\frac{1}{2}$
 (c) $\frac{1}{4}$ (d) $\frac{2}{3}$
 (e) None of these
18. Two dice are thrown. The probability that the sum of the numbers coming up on them is 9, if it is known that the number 5 always occurs on the first die, is
- (a) $\frac{1}{6}$ (b) $\frac{1}{3}$
 (c) $\frac{2}{3}$ (d) $\frac{1}{2}$
 (e) None of these
19. A speaks the truth in 70 percent cases and B in 80 percent. The probability that they will contradict each other when describing a single event is
- (a) 0.36 (b) 0.38
 (c) 0.4 (d) 0.42
 (e) None of these
20. One ticket is selected at random from 100 tickets numbered 00, 01, 02, ..., 99. Suppose S and T are the sum and product of the digits of the number on the ticket, then P(S = 9 / T = 0) is
- (a) $\frac{19}{100}$ (b) $\frac{1}{4}$
 (c) $\frac{2}{19}$ (d) $\frac{1}{50}$
 (e) None of these
21. A die is loaded such that the probability of throwing the number i is proportional to its reciprocal. The probability that 3 appears in a single throw is :
- (a) $\frac{3}{22}$ (b) $\frac{3}{11}$
 (c) $\frac{9}{22}$ (d) $\frac{20}{147}$
 (e) None of these
22. The probability of getting 10 in a single throw of three fair dice is :
- (a) $\frac{1}{6}$ (b) $\frac{1}{8}$
 (c) $\frac{1}{9}$ (d) $\frac{1}{5}$
 (e) None of these
23. The probability that when 12 balls are distributed among three boxes, the first will contain three balls is,
- (a) $\frac{2^9}{3^{12}}$ (b) $\frac{{}^{12}C_3 \cdot 2^9}{3^{12}}$
 (c) $\frac{{}^{12}C_3 \cdot 2^{12}}{3^{12}}$ (d) $\frac{{}^{12}C_3 \cdot 2^{11}}{3^{11}}$
 (e) None of these
24. A and B toss a fair coin each simultaneously 50 times. The probability that both of them will not get tail at the same toss is
- (a) $\left(\frac{3}{4}\right)^{50}$ (b) $\left(\frac{2}{7}\right)^{50}$
 (c) $\left(\frac{1}{8}\right)^{50}$ (d) $\left(\frac{7}{8}\right)^{50}$
 (e) None of these

25. If n integers taken at random are multiplied together, then the probability that the last digit of the product is 1, 3, 7 or 9 is
- (a) $\frac{2^n}{5^n}$ (b) $\frac{4^n - 2^n}{5^n}$
 (c) $\frac{4^n}{5^n}$ (d) $\frac{4^n}{7^n}$
 (e) None of these
26. A coin is tossed 5 times. What is the probability that head appears an odd number of times?
- (a) $\frac{2}{5}$ (b) $\frac{1}{5}$
 (c) $\frac{1}{2}$ (d) $\frac{4}{25}$
 (e) None of these
27. Atul can hit a target 3 times in 6 shots, Bhola can hit the target 2 times in 6 shots and Chandra can hit the 4 times in 4 shots. What is the probability that at least 2 shots (out of 1 shot taken by each one of them) hit the target ?
- (a) $\frac{1}{2}$ (b) $\frac{2}{3}$
 (c) $\frac{1}{3}$ (d) $\frac{5}{6}$
 (e) None of these
28. A bag contain 5 white, 7 red and 8 black balls. If 4 balls are drawn one by one with replacement, what is the probability that all are white ?
- (a) $\frac{1}{256}$ (b) $\frac{1}{16}$
 (c) $\frac{4}{20}$ (d) $\frac{4}{8}$
 (e) None of these
29. A dice is thrown 6 times. If 'getting an odd number' is a 'success', the probability of 5 successes is :
- (a) $\frac{1}{10}$ (b) $\frac{3}{32}$
 (c) $\frac{5}{6}$ (d) $\frac{25}{26}$
 (e) None of these
30. A bag has 4 red and 5 black balls. A second bag has 3 red and 7 black balls. One ball is drawn from the first bag and two from the second. The probability that there are two black balls and a red ball is :
- (a) $\frac{14}{45}$ (b) $\frac{11}{45}$
 (c) $\frac{7}{15}$ (d) $\frac{9}{54}$
 (e) None of these
31. Two dice are tossed. The probability that the total score is a prime number is :
- (a) $\frac{1}{6}$ (b) $\frac{5}{12}$
 (c) $\frac{1}{2}$ (d) $\frac{7}{9}$
 (e) None of these
32. A bag contains 3 white balls and 2 black balls. Another bag contains 2 white balls and 4 black balls. A bag is taken and a ball is picked at random from it. The probability that the ball will be white is:
- (a) $\frac{7}{11}$ (b) $\frac{7}{30}$
 (c) $\frac{5}{11}$ (d) $\frac{7}{15}$
 (e) None of these
33. Suppose six coins are tossed simultaneously. Then the probability of getting at least one tail is :
- (a) $\frac{71}{72}$ (b) $\frac{53}{54}$
 (c) $\frac{63}{64}$ (d) $\frac{1}{12}$
 (e) None of these
34. A bag contains 2 red, 3 green and 2 blue balls. 2 balls are to be drawn randomly. What is probability that the balls drawn contain no blue ball ?
- (a) $\frac{5}{7}$ (b) $\frac{10}{21}$
 (c) $\frac{2}{7}$ (d) $\frac{11}{21}$
 (e) None of these
35. A fair coin is tossed repeatedly. If the tail appears on first four tosses, then the probability of the head appearing on the fifth toss equals
- (a) $\frac{1}{2}$ (b) $\frac{1}{32}$
 (c) $\frac{31}{32}$ (d) $\frac{1}{5}$
 (e) None of these
36. The probability that the birth days of six different persons will fall in exactly two calendar months is
- (a) $\frac{1}{6}$ (b) ${}^{12}C_2 \times \frac{2^6}{12^6}$
 (c) ${}^{12}C_2 \times \frac{2^6 - 1}{12^6}$ (d) $\frac{341}{12^5}$
 (e) None of these

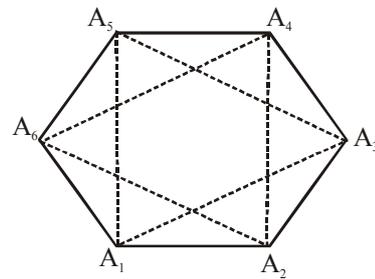
37. A problem in mathematics is given to three students A, B, C and their respective probability of solving the problem is $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$. Probability that the problem is solved is
- (a) $\frac{3}{4}$ (b) $\frac{1}{2}$
 (c) $\frac{2}{3}$ (d) $\frac{1}{3}$
 (e) None of these
38. A and B are events such that $P(A \cup B) = \frac{3}{4}$, $P(A \cap B) = \frac{1}{4}$, $P(\bar{A}) = \frac{2}{3}$ then $P(\bar{A} \cap B)$ is
- (a) $\frac{5}{12}$ (b) $\frac{3}{8}$
 (c) $\frac{5}{8}$ (d) $\frac{1}{4}$
 (e) None of these
39. Five horses are in a race. Mr. A selects two of the horses at random and bets on them. The probability that Mr. A selected the winning horse is
- (a) $\frac{2}{5}$ (b) $\frac{4}{5}$
 (c) $\frac{3}{5}$ (d) $\frac{1}{5}$
 (e) None of these
40. The probability that A speaks truth is $\frac{4}{5}$, while this probability for B is $\frac{3}{4}$. The probability that they contradict each other when asked to speak on a fact is
- (a) $\frac{4}{5}$ (b) $\frac{1}{5}$
 (c) $\frac{7}{20}$ (d) $\frac{3}{20}$
 (e) None of these
41. $2n$ boys are randomly divided into two subgroups containing n boys each. The probability that the two tallest boys are in different groups is
- (a) $\frac{n}{2n-1}$ (b) $\frac{n-1}{2n-1}$
 (c) $\frac{2n-1}{4n^2}$ (d) $\frac{n+1}{2n+1}$
 (e) None of these
42. Fifteen persons, among whom are A and B sit down at random at a round table. The probability that there are 4 persons between A and B is
- (a) $\frac{9!}{14!}$ (b) $\frac{10!}{14!}$
 (c) $\frac{9!}{15!}$ (d) $\frac{1}{7}$
 (e) None of these
43. A and B play a game where each is asked to select a number from 1 to 25. If the two numbers match, both of them win a prize. The probability that they will not win a prize in a single trial is
- (a) $\frac{1}{25}$ (b) $\frac{24}{25}$
 (c) $\frac{2}{25}$ (d) $\frac{1}{27}$
 (e) None of these

ANSWER KEY

1	(b)	7	(b)	13	(a)	19	(b)	25	(a)	31	(b)	37	(a)	43	(b)
2	(d)	8	(c)	14	(c)	20	(c)	26	(c)	32	(d)	38	(a)		
3	(c)	9	(c)	15	(a)	21	(d)	27	(b)	33	(c)	39	(a)		
4	(c)	10	(a)	16	(b)	22	(b)	28	(a)	34	(b)	40	(c)		
5	(c)	11	(b)	17	(a)	23	(b)	29	(b)	35	(a)	41	(a)		
6	(d)	12	(c)	18	(a)	24	(a)	30	(c)	36	(d)	42	(d)		

Hints & Explanations

1. (b) Suppose E_1 , E_2 and E_3 are the events of winning the race by the horses A, B and C respectively
- $$\therefore P(E_1) = \frac{1}{1+3} = \frac{1}{4}, \quad P(E_2) = \frac{1}{1+4} = \frac{1}{5}$$
- $$P(E_3) = \frac{1}{1+5} = \frac{1}{6}$$
- \therefore Probability of winning the race by one of the horses A, B and C
- $$= P(E_1 \text{ or } E_2 \text{ or } E_3) = P(E_1) + P(E_2) + P(E_3)$$
- $$= \frac{1}{4} + \frac{1}{5} + \frac{1}{6} = \frac{37}{60}$$
2. (d) Probability that only husband is selected
- $$= P(H)P(\bar{W}) = \frac{1}{7} \left(1 - \frac{1}{5}\right) = \frac{1}{7} \times \frac{4}{5} = \frac{4}{35}$$
- Probability that only wife is selected
- $$= P(\bar{H})P(W) = \left(1 - \frac{1}{7}\right) \left(\frac{1}{5}\right) = \frac{6}{7} \times \frac{1}{5} = \frac{6}{35}$$
- \therefore Probability that only one of them is selected
- $$= \frac{4}{35} + \frac{6}{35} = \frac{10}{35} = \frac{2}{7}$$
3. (c) Probability of selecting a month = $\frac{1}{12}$.
- 13th day of the month is Friday if its first day is Sunday and the probability of this = $\frac{1}{7}$.
- $$\therefore \text{Required probability} = \frac{1}{12} \cdot \frac{1}{7} = \frac{1}{84}$$
4. (c) A leap-year has 366 days i.e. 52 complete weeks and two days more these two days be two consecutive days of a week. A leap year will have 53 Sundays if out of the two consecutive days of a week selected at random one is a Sunday.
- Let S be the sample space and E be the event that out of the two consecutive days of a week one is Sunday, then
- $$S = \{(\text{Sunday, Monday}), (\text{Monday, Tuesday}), (\text{Tuesday, Wednesday}), (\text{Wednesday, Thursday}), (\text{Thursday, Friday}), (\text{Friday, Saturday}), (\text{Saturday, Sunday})\}$$
- $$\therefore n(S) = 7$$
- and $E = \{(\text{Sunday, Monday}), (\text{Saturday, Sunday})\}$
- $$\therefore n(E) = 2$$
- Now, required Probability, $P(E) = \frac{n(E)}{n(S)} = \frac{2}{7}$
5. (c) Numbers divisible by 4 are 104, 108..., 196; 24 in number. Numbers divisible by 7 are 105, 112, ..., 196; 14 in number. Numbers divisible by both, i.e. divisible by 28 are 112, 140, 168, 196; 4 in number. Hence, required probability
- $$= \frac{24}{99} + \frac{14}{99} - \frac{4}{99} = \frac{34}{99}$$
6. (d) Total of seven can be obtained in the following ways
- 1, 1, 1, 4 in $\frac{4!}{3!} = 4$ ways
- [there are four objects, three repeated]
- Similarly,
- 1, 1, 2, 3 in $\frac{4!}{2!} = 12$ ways
- 1, 2, 2, 2 in $\frac{4!}{3!} = 4$ ways
- Hence, required probability = $\frac{4+12+4}{6^4} = \frac{20}{6^4}$
- [\therefore Exhaustive no. of cases = $6 \times 6 \times 6 \times 6 = 6^4$]
7. (b) Since, A and B are independent events \therefore A' and B' are also independent events
- $$\Rightarrow P(A' \cap B') = P(A') \cdot P(B')$$
- $$= (0.4)(0.7) = 0.28$$
- [$\therefore P(A') = 1 - P(A)$, $P(B') = 1 - P(B)$]
8. (c) Three vertices can be selected in 6C_3 ways.



The only equilateral triangles possible are $A_1A_3A_5$ and $A_2A_4A_6$

$$p = \frac{2}{{}^6C_3} = \frac{2}{20} = \frac{1}{10}$$

9. (c) The number of ways of getting the different number 1, 2, ..., 6 in six dice = $6!$. Total number of ways = 6^6

Hence, required probability = $\frac{6!}{6^6}$

$$= \frac{1 \times 2 \times 3 \times 4 \times 5 \times 6}{6^6} = \frac{5}{324}$$

10. (a) Total number of balls = 12

$$\text{Hence, required probability} = \frac{{}^5C_2 \times {}^7C_2}{{}^{12}C_4} = \frac{14}{33}$$

\therefore No of ways of drawing 2 white balls from 5 white balls = 5C_2 .

Also, No of ways of drawing 2 other from remaining 7 balls = 7C_2

11. (b) The probability that the person hits the target = 0.3
 \therefore The probability that he does not hit the target in a trial = $1 - 0.3 = 0.7$
 \therefore The probability that he does not hit the target in any of the ten trials = $(0.7)^{10}$
 \therefore Probability that he hits the target
 = Probability that at least one of the trials succeeds
 = $1 - (0.7)^{10}$.

12. (c) We have $P(A \cup B) = 0.7$ and $P(A \cap B) = 0.2$

$$\text{Now, } P(A \cup B) = P(A) + P(B) - P(A \cap B)$$

$$\Rightarrow P(A) + P(B) = 0.9 \Rightarrow 1 - P(\bar{A}) + 1 - P(\bar{B}) = 0.9$$

$$\Rightarrow P(\bar{A}) + P(\bar{B}) = 1.1$$

13. (a) The probability that A cannot solve the problem
 $= 1 - \frac{2}{3} = \frac{1}{3}$

The probability that B cannot solve the problem

$$= 1 - \frac{3}{4} = \frac{1}{4}$$

The probability that both A and B cannot solve the problem = $\frac{1}{3} \times \frac{1}{4} = \frac{1}{12}$

\therefore The probability that at least one of A and B can solve the problem = $1 - \frac{1}{12} = \frac{11}{12}$

\therefore The probability that the problem is solved = $\frac{11}{12}$

14. (c) The total number of ways in which 3 integers can be chosen from first 20 integers is ${}^{20}C_3$.
 The product of three integers will be even if at least one of the integers is even. Therefore, the required probability = $1 - \text{Prob. that none of the three integers is even}$

$$= 1 - \frac{{}^{10}C_3}{{}^{20}C_3} = 1 - \frac{2}{19} = \frac{17}{19}$$

[Three odd integers can be chosen in ${}^{10}C_3$ ways as there are 10 even and 10 odd integers.]

15. (a) If a probability p is assigned to each even number, then 2p is the probability to be assigned to each odd number which gives $2p \times 3 + p \times 3 = 9p = 1$.

$$\Rightarrow p = \frac{1}{9}$$

$\therefore P(E) = \text{Probability of getting 4, 5 or 6}$

$$= \frac{1}{9} + \frac{2}{9} + \frac{1}{9} = \frac{4}{9}$$

16. (b) The condition implies that the last digit in both the integers should be 0, 1, 5 or 6 and the probability

$$= 4 \left(\frac{1}{10} \right)^2 = \frac{4}{100} = \frac{1}{25}$$

[\therefore The squares of numbers ending in 0 or 1 or 5 or 6 also 0 or 1 or 5 or 6 respectively]

17. (a) Seven people can seat themselves at a round table in 6! ways. The number of ways in which two distinguished persons will be next to each other = 2(5)!, Hence, the required probability

$$= \frac{2(5)!}{6!} = \frac{1}{3}$$

18. (a) $\therefore S = \{1, 2, 3, 4, 5, 6\} \times \{1, 2, 3, 4, 5, 6\}$

$$\therefore n(S) = 36$$

& Let $E_1 \equiv$ the event that the sum of the numbers coming up is 9.

& $E_2 \equiv$ the event of occurrence of 5 on the first die.

$$E_1 \equiv \{(3, 6), (6, 3), (4, 5), (5, 4)\}$$

$$\therefore n(E_1) = 4 \text{ and}$$

$$E_2 = \{(5, 1), (5, 2), (5, 3), (5, 4), (5, 5), (5, 6)\}$$

$$\therefore n(E_2) = 6$$

$$E_1 \cap E_2 = \{(5, 4)\} \quad \therefore n(E_1 \cap E_2) = 1$$

$$\text{Now, } P(E_1 \cap E_2) = \frac{n(E_1 \cap E_2)}{n(S)} = \frac{1}{36}$$

$$\text{and } P(E_2) = \frac{n(E_2)}{n(S)} = \frac{6}{36} = \frac{1}{6}$$

\therefore Required Probability

$$= P \left(\frac{E_1}{E_2} \right) = \frac{P(E_1 \cap E_2)}{P(E_2)} = \frac{\frac{1}{36}}{\frac{1}{6}} = \frac{1}{6}$$

19. (b) A and B will contradict each other if one of the events $A \cap B'$ or $A' \cap B$ occurs. The probability of this happening is

$$P[(A \cap B') \cup (A' \cap B)] = P(A \cap B') + P(A' \cap B)$$

$$= P(A)P(B') + P(A')P(B),$$

because A and B are independent. Therefore, putting $P(A) = 0.7$ and $P(B) = 0.8$ the required probability is $(0.7)(0.2) + (0.3)(0.8) = 0.38$.

20. (c) We have $(S = 9) = \{09, 18, 27, 36, 45, 54, 63, 72, 81, 90\}$
 and $(T = 0) = \{0, 01, \dots, 09, 10, 20, \dots, 90\}$

$$\text{Also } (S = 9) \cap (T = 0) = \{09, 90\}$$

$$\text{Thus } P((S = 9) \cap (T = 0)) = 2/100$$

Hence $P(S = 9/T = 0)$

$$= \frac{P((S = 9) \cap (T = 0))}{P(T = 0)} = \frac{2/100}{19/100} = \frac{2}{19}$$

$$21. \quad (d) \quad P(i) = \frac{k}{i}$$

$$\Rightarrow 1 = \sum_{i=1}^6 P(i) = k \sum_{i=1}^6 \frac{1}{i} = k \frac{49}{20} \Rightarrow k = \frac{20}{49}$$

$$\therefore P(3) = \frac{k}{3} = \frac{20}{49 \times 3} = \frac{20}{147}$$

22. (b) Exhaustive no. of cases = 6^3
10 can appear on three dice either as distinct number as following (1, 3, 6); (1, 4, 5); (2, 3, 5) and each can occur in $3!$ ways. Or 10 can appear on three dice as repeated digits as following (2, 2, 6), (2, 4, 4), (3, 3, 4)

and each can occur in $\frac{3!}{2!}$ ways.

$$\therefore \text{No. of favourable cases} = 3 \times 3! + 3 \times \frac{3!}{2!} = 27$$

$$\text{Hence, the required probability} = \frac{27}{6^3} = \frac{1}{8}$$

23. (b) Since each ball can be put into any one of the three boxes. So, the total number of ways in which 12 balls can be put into three boxes is 3^{12} .

Out of 12 balls, 3 balls can be chosen in ${}^{12}C_3$ ways. Now, remaining 9 balls can be put in the remaining 2 boxes in 2^9 ways. So, the total number of ways in which 3 balls are put in the first box and the remaining in other two boxes is ${}^{12}C_3 \times 2^9$.

$$\text{Hence, required probability} = \frac{{}^{12}C_3 \cdot 2^9}{3^{12}}$$

24. (a) For each toss there are four choices

- (i) A gets head, B gets head
- (ii) A gets tail, B gets head
- (iii) A gets head, B gets tail
- (iv) A gets tail, B gets tail

thus, exhaustive number of ways = 4^{50} . Out of the four choices listed above (iv) is not favourable to the required event in a toss. Therefore favourable number of cases is 3^{50} .

$$\text{Hence, the required probability} = \left(\frac{3}{4}\right)^{50}$$

25. (a) In any number the last digit can be one of 0, 1, 2, ..., 8, 9. Therefore, the last digit of each number can be chosen in 10 ways. Thus, exhaustive number of ways = 10^n . If the last digit be 1, 3, 7 or 9 none of the numbers can be even or end in 0 or 5. Thus, we have a choice of 4 digits viz. 1, 3, 7 or 9 with which each of n number should end. So, favourable number of ways = 4^n .

$$\text{Hence, the required probability} = \frac{4^n}{10^n} = \left(\frac{2}{5}\right)^n$$

26. (c) Probability of occurrence of head in a toss of a coin is $1/2$.

Required probability = Prob[Head appears once] + Prob.[Head appears thrice] + Prob.[Head appears five times]

$$= {}^5C_1 \left(\frac{1}{2}\right)^5 + {}^5C_3 \left(\frac{1}{2}\right)^5 + {}^5C_5 \left(\frac{1}{2}\right)^5$$

$$= \left(\frac{1}{2}\right)^5 [5 + 10 + 1] = \frac{16}{32} = \frac{1}{2}$$

27. (b) Chandra hits the target 4 times in 4 shots. Hence, he hits the target definitely.

The required probability, therefore, is given by.

$P(\text{both Atul and Bhola hit}) + P(\text{Atul hits, Bhola does not hit}) + P(\text{Atul does not hit, Bhola hits})$

$$= \frac{3}{6} \times \frac{2}{6} + \frac{3}{6} \times \frac{4}{6} + \frac{3}{6} \times \frac{2}{6}$$

$$= \frac{1}{6} + \frac{1}{3} + \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$$

28. (a) Total number of balls = $5 + 7 + 8 = 20$

Probability that the first ball drawn is white

$$= \frac{{}^5C_1}{{}^{20}C_1} = \frac{1}{4}$$

If balls are drawn with replacement, all the four events will have equal probability.

Therefore, required probability

$$= \frac{1}{4} \times \frac{1}{4} \times \frac{1}{4} \times \frac{1}{4} = \frac{1}{256}$$

29. (b) Let A be the event of getting an odd number.

Here, $n(S) = 6$ and

$$n(A) = 3$$

$$\text{Probability of getting an odd number} = \frac{3}{6} = \frac{1}{2}$$

Hence, probability of not getting an odd number

$$= 1 - \frac{1}{2} = \frac{1}{2}$$

Required probability of 5 successes

$$= {}^6C_5 \times \left(\frac{1}{2}\right)^5 \times \frac{1}{2} = \frac{3}{32}$$

30. (c) Required probability

= Probability that ball from bag A is red and both the balls from bag B are black + Probability that ball from bag A is black and one black and one red balls are drawn from bag B

$$= \frac{{}^4C_1 \times {}^7C_2}{{}^9C_1} + \frac{{}^5C_1 \times {}^3C_1 \times {}^7C_1}{{}^9C_2}$$

$$= \frac{4}{9} \times \frac{7}{15} + \frac{5}{9} \times \frac{7}{15} = \frac{7}{15}$$

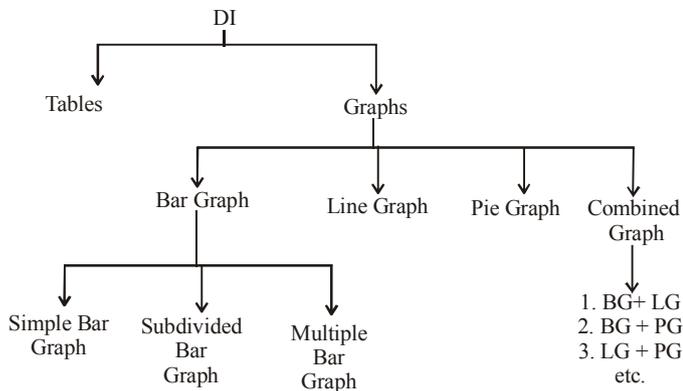
31. (b) Total no. of outcomes when two dice are thrown = $n(S) = 36$ and the possible cases for the event that the sum of numbers on two dice is a prime number, are (1, 1), (1, 2), (1, 4), (1, 6), (2, 1), (2, 3), (2, 5), (3, 2), (3, 4), (4, 1), (4, 3), (5, 1), (5, 6), (6, 1), (6, 5)
Number of outcomes favouring the event = $n(A) = 15$
Required probability = $\frac{n(A)}{n(S)} = \frac{15}{36} = \frac{5}{12}$
32. (d) The probability of selecting a bag = $\frac{1}{2}$
Now, probability of getting a white ball from the first bag = $\frac{1}{2} \times \frac{3}{5} = \frac{3}{10}$
and probability of getting a white ball from the second bag = $\frac{1}{2} \times \frac{2}{6} = \frac{1}{6}$
Required Probability = The probability that a white ball is drawn either from the first or the second bag
= $\frac{3}{10} + \frac{1}{6} = \frac{7}{15}$
33. (c) If six coins are tossed, then the total no. of outcomes = $(2)^6 = 64$
Now, probability of getting no tail = $\frac{1}{64}$
Probability of getting at least one tail
= $1 - \frac{1}{64} = \frac{63}{64}$
34. (b) 2 balls can be drawn in the following ways
1 red and 1 green or 2 red or 2 green
Required probability = $\frac{{}^2C_1 \times {}^3C_1}{{}^7C_2} + \frac{{}^2C_2}{{}^7C_2} + \frac{{}^3C_2}{{}^7C_2}$
= $\frac{6}{21} + \frac{1}{21} + \frac{3}{21} = \frac{10}{21}$
35. (a) The event that the fifth toss results a head is independent of the event that the first four tosses results tails.
 \therefore Probability of the required event = $1/2$
36. (d) Exhaustive number of cases = 12
Favourable cases = ${}^{12}C_2 (2^6 - 2)$
 \therefore Probability = $\frac{{}^{12}C_2 (2^6 - 2)}{12^6} = \frac{341}{12^5}$
37. (a) $P(E_1) = \frac{1}{2}$, $P(E_2) = \frac{1}{3}$ and $P(E_3) = \frac{1}{4}$;
 $P(E_1 \cup E_2 \cup E_3) = 1 - P(\bar{E}_1)P(\bar{E}_2)P(\bar{E}_3)$
= $1 - \left(1 - \frac{1}{2}\right)\left(1 - \frac{1}{3}\right)\left(1 - \frac{1}{4}\right) = 1 - \frac{1}{2} \times \frac{2}{3} \times \frac{3}{4} = \frac{3}{4}$
38. (a) $P(A \cup B) = P(A) + P(B) - P(A \cap B)$;
 $\Rightarrow \frac{3}{4} = 1 - P(\bar{A}) + P(B) - \frac{1}{4}$
 $\Rightarrow 1 = 1 - \frac{2}{3} + P(B) \Rightarrow P(B) = \frac{2}{3}$;
Now, $P(\bar{A} \cap B) = P(B) - P(A \cap B) = \frac{2}{3} - \frac{1}{4} = \frac{5}{12}$.
39. (a) $n(S) = {}^5C_2$; $n(E) = {}^2C_1 + {}^2C_1$
 $P(E) = \frac{n(E)}{n(S)} = \frac{{}^2C_1 + {}^2C_1}{{}^5C_2} = \frac{2}{5}$
40. (c) A and B will contradict each other if one speaks truth and other false. So, the required
Probability = $\frac{4}{5} \left(1 - \frac{3}{4}\right) + \left(1 - \frac{4}{5}\right) \frac{3}{4}$
= $\frac{4}{5} \times \frac{1}{4} + \frac{1}{5} \times \frac{3}{4} = \frac{7}{20}$
41. (a) Number of ways of forming two groups = $\frac{(2n)!}{n! n!}$
We can divide $2n - 2$ boys into two groups in $\frac{(2n-2)!}{(n-1)!(n-1)!}$. But the two tallest boys can be in any of the groups (each in different). So favourable number of cases = $\frac{2(2n-2)!}{(n-1)!(n-1)!}$
42. (d) Exhaustive number of cases = $(15 - 1)! = 14!$
Favourable cases
 ${}^{13}C_4 (10 - 1)! \times 2! \times 4! = 2! \times 13!$
[A, B and four persons are treated as one, A and B can interchange positions]
 \therefore Probability = $\frac{2 \times 13!}{14!} = \frac{1}{7}$
43. (b) Total number of possibilities = 25×25
Favourable cases for their winning = 25
 $\therefore P(\text{they win a prize}) = \frac{25}{25 \times 25} = \frac{1}{25}$
 $\therefore P(\text{they will not win a prize}) = 1 - \frac{1}{25} = \frac{24}{25}$

Data Interpretation

INTRODUCTION

Data Interpretation questions are based on the information given in the tables and graphs.

Classification of Data Interpretation



TABLES

A table is one of the easiest way for summarising data. A statistical table is the logical listing of related quantitative data in vertical columns and horizontal rows of numbers with sufficient explanatory and qualifying words, phrases and statements in the form of titles, heading and notes to make clear the meaning of data.



REMEMBER

$$\text{Average} = \frac{\text{Sum of all items}}{\text{Total number of items}}$$

λ = The bars are drawn proportional in length to the total and then divided in the ratios of their components.

% change (increase or decrease)

$$= \frac{\text{Final value} - \text{Initial value}}{\text{Initial value}} \times 100$$

GRAPHS

Graphs are a convenient way to represent information. The graphs should be labelled properly to show what part of the graphs shows what a value.

1. Bar Graph

Bar diagram consists of a number of equidistant rectangles. One for each category of the data in which the magnitudes are represented by the length or height of rectangle, whereas

width of rectangles are immaterial. Thus, a bar is just one dimensional as only the length of the bar is to be considered and not the width. All the bars drawn in a diagram are generally of uniform width which depends on the number of bars to be constructed and the availability of the space.

Types of Bar Graphs are–

(i) Simple Bar Graph

It is used to represent only one dependent variable.

(ii) Sub-divided Bar Graphs

These are used to represent the break down of a total into its component bars. A bar is divided into different segments, each segment represents a given component. Different shades, colours, designs etc. are used to distinguish the various components. An index is given to represent the various components. To compare, the order of various components in the different bars is same.

(iii) Multiple Bar Graph (MBG)

When a combination of inter-related variables are to be represented graphically, multiple bar diagrams are used. These are extended form of simple bar diagrams. In M.B.G. many aspects of the data are presented simultaneously with separated bars or various shades of colours. An index is given to explain the shades or colours used.

2. Line Graph (LG)

LG are used to show how a quantity changes, very often the quantity is measured as time changes. If the line goes up, the quantity is increasing and the line goes down, the quantity is decreasing. If the line is horizontal, the quantity is not changing.

3. Pie Graph (PG)

It is a pictorial representation of numerical data by non-intersecting adjacent sectors of a circle sector's area of each sector is proportional to the magnitude of the data represented by the sector.

$$1\% \text{ of total value} = \frac{360}{100} = 3.6^\circ$$

The % of components parts can be converted to degrees by multiplying 3.6°.

Degree of any component part

$$= \frac{\text{component value}}{\text{total value}} \times 360.$$

EXERCISE

Directions (Qs.1-5): Study the following table to answer the given questions:

Percentage of marks obtained by seven students in six subjects

Subject (Max, Marks ↓ Students	Eng (100)	His (100)	Com (100)	Math (100)	Science (100)	Econ (100)
Meera	100	80	50	90	90	60
Subodh	80	70	80	100	80	40
Kunal	90	70	60	90	70	70
Soni	60	60	65	80	80	80
Richu	50	90	62	80	85	95
Irene	40	60	64	70	65	85
Vgay	80	80	35	65	50	75

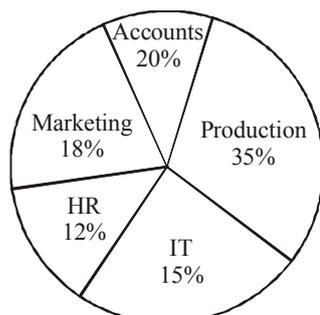
- What is the total marks obtained by Meera in all the subject?
(a) 448 (b) 580
(c) 470 (d) 74.67
(e) None of these
- What is the average marks obtained by these seven students in History? (rounded off to two digits)
(a) 72.86 (b) 27.32
(c) 24.86 (d) 29.14
(e) None of these
- How many students have got 60% or more marks in all the subjects?
(a) One (b) Two
(c) Three (d) Four
(e) None of these
- What is the overall percentage of Kunal ?
(a) 64 (b) 65
(c) 75 (d) 64.24
(e) None of these
- In which subject is the overall percentage the best ?
(a) Maths (b) Economics
(c) History (d) Science
(e) None of these

Directions (Qs. 6- 10): Study the given pie-charts carefully to answer the questions that follow :

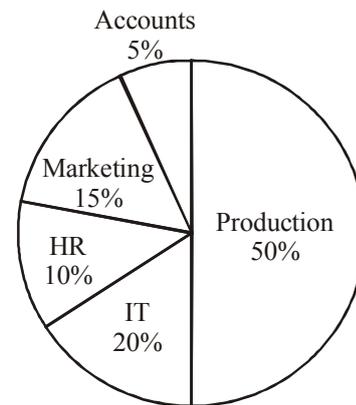
Breakup of Number of Employees working in Different Departments of an Organisation, the Number of Males and the Number of Employees Who Recently Got Promoted. In Each Department Break-UP of Employees Working In Different Departments:

Total Number of Employees = 3,600

Employees Working in Different Departments

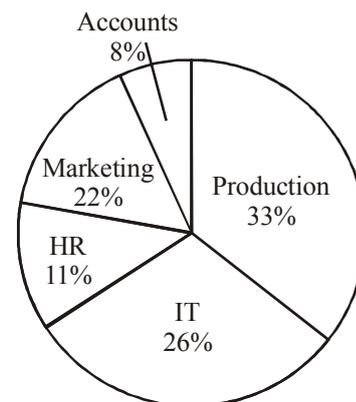


Break-UP of Number of Males In Each Department Total Number Of Males In the Organisation = 2,040 Break-UP of Number of Males Working In Each Department



Break-UP of Number of Employees who recently got promoted In Each Department

Total Number of Employees who got promoted = 1,200 Number of Employees Who Recently Got Promoted From Each Department



- If half of the number of employees who got promoted from the IT department were males, what was the **approximate** percentage of males who got promoted from the IT department?
(a) 61 (b) 29
(c) 54 (d) 42
(e) 38
- What is the total number of females working in the Production and Marketing departments together ?
(a) 468 (b) 812
(c) 582 (d) 972
(e) None of these
- How many females work in the Accounts department ?
(a) 618 (b) 592
(c) 566 (d) 624
(e) None of these

9. The total number of employees who got promoted from all the departments together was what percent of the total number of employees working in all the departments together ? (Rounded off to the nearest integer)
- (a) 56 (b) 21
(c) 45 (d) 33
(e) 51
10. The number of employees who got promoted from the HR department was what percent of the total number of employees working in that department ? (rounded off to two digits after decimal)
- (a) 36.18 (b) 30.56
(c) 47.22 (d) 28.16
(e) None of these

Directions (Qs. 11 - 15): Study the information carefully to answer the questions that follow:

A school consisting of a total of 1560 students has boys and girls in the ratio of 7 : 5 respectively. All the students are enrolled in different types of hobby classes, viz: Singing, Dancing and Painting. One-fifth of the boys are enrolled in only Dancing classes. Twenty percent of the girls are enrolled in only Painting classes. Ten percent of the boys are enrolled in only Singing classes. Twenty four percent of the girls are enrolled in both Singing and Dancing classes together. The number of girls enrolled in only Singing classes is two hundred percent of the boys enrolled in the same. One-thirteenth of the boys are enrolled in all the three classes together. The respective ratio of boys enrolled in Dancing and Painting classes together to the girls enrolled in the same is 2 : 1 respectively. Ten percent of the girls are enrolled in only Dancing classes whereas eight percent of the girls are enrolled in both Dancing and Painting classes together. The remaining girls are enrolled in all the three classes together. The number of boys enrolled in Singing and Dancing classes together is fifty percent of the number of girls enrolled in the same. The remaining boys are enrolled in only Painting classes.

11. What is the total number of boys who are enrolled in Dancing ?
- (a) 318 (b) 364
(c) 292 (d) 434
(e) None of these
12. Total number of girls enrolled in Singing is **approximately** what percent of the total number of students in the school?
- (a) 37 (b) 19
(c) 32 (d) 14
(e) 26
13. What is the total number of students enrolled in all the three classes together ?
- (a) 135 (b) 164
(c) 187 (d) 142
(e) None of these
14. Number of girls enrolled in only Dancing classes is what percent of the boys enrolled in the same ? (rounded off to two digits after decimal)
- (a) 38.67 (b) 35.71
(c) 41.83 (d) 28.62
(e) None of these
15. What is the respective ratio of the number of girls enrolled in only Painting classes to the number of boys enrolled in the same?
- (a) 77 : 26 (b) 21 : 73
(c) 26 : 77 (d) 73 : 21
(e) None of these

Directions (Qs. 16-20) : Study the following tables carefully and answer the questions given below:

Number & Percentage of Candidates Qualified in a Competitive Examination:

Number of Candidates appeared in a Competitive Examination From Five Centres Over The Years

Centre → Year ↓	Mumbai	Delhi	Kolkata	Hyderabad	Chennai
2001	35145	65139	45192	51124	37346
2002	17264	58248	52314	50248	48932
2003	24800	63309	56469	52368	51406
2004	28316	70316	71253	54196	52315
2005	36503	69294	69632	58360	55492
2006	29129	59216	64178	48230	57365
2007	32438	61345	56304	49178	58492

Approximate Percentages of Candidates Qualified To Appeared In the Competitive Examination From Five Centres Over the year

Centre → Year ↓	Mumbai	Delhi	Kolkata	Hyderabad	Chennai
2001	12	24	18	17	9
2002	10	28	12	21	12
2003	15	21	23	25	10
2004	11	27	19	24	8
2005	13	23	16	23	13
2006	14	20	21	19	11
2007	16	19	24	20	14

16. In which of the following years was the difference in number of candidates appeared from Mumbai over the previous year the minimum ?
- (a) 2004 (b) 2006
(c) 2007 (d) 2002
(e) None of these
17. In which of the following years was the number of candidates qualified from Chennai, the maximum among the given years ?
- (a) 2007 (b) 2006
(c) 2005 (d) 2003
(e) None of these
18. **Approximately** what was the total number of candidates qualified from Delhi in 2002 and 2006 together ?
- (a) 27250 (b) 25230
(c) 30150 (d) 28150
(e) 26250
19. **Approximately** how many candidates appearing from Kolkata in 2004 qualified in the competitive examination ?
- (a) 13230 (b) 13540
(c) 15130 (d) 15400
(e) 19240
20. **Approximately** what was the difference between the number of candidates qualified from Hyderabad in 2001 and 2002 ?
- (a) 1680 (b) 2440
(c) 1450 (d) 2060
(e) 1860

Directions (Qs. 21–25): Study the following information carefully and answer the questions that follow :

An Organisation consists of 2400 employees working in different departments, viz; HR, Marketing, IT, production and Accounts. The ratio of male to female employees in the Organisation is 5 : 3 respectively. Twelve per cent of the males work in the HR department. Twenty four per cent of the females work in the Accounts department. The ratio of males to females working in the HR department is 6 : 11 respectively. One-ninth of the females work in the IT department. Forty two percent of the males work in the production department. Number of females working in the production department is ten percent of the males working in the same. The remaining females work in the Marketing department. The total number of employees working in the IT department is 285. Twenty two percent of the males work in the Marketing department and the remaining work in the Accounts department.

21. The number of males working in the IT department forms **approximately** What percent of the total : number of males in the Organisation ?
 (a) 5 (b) 12
 (c) 21 (d) 8
 (e) 18
22. How many males work in the Accounts department ?
 (a) 170 (b) 165
 (c) 185 (d) 160
 (e) None of these
23. The total number of employees working in the Accounts department forms what percent of the total number of employees in the organisation ? (rounded off to two digits after decimal)
 (a) 19.34 (b) 16.29
 (c) 11.47 (d) 23.15
 (e) None of these
24. The number of females working in the production department forms what percent of the total number of females in the Organisation ?
 (a) 7 (b) 12
 (c) 4 (d) 15
 (e) None of these
25. What is the total number of females working in the HR and Marketing department together ?
 (a) 363 (b) 433
 (c) 545 (d) 521
 (e) None of these

Directions (Qs.26-31): Study the following table to answer the given questions:

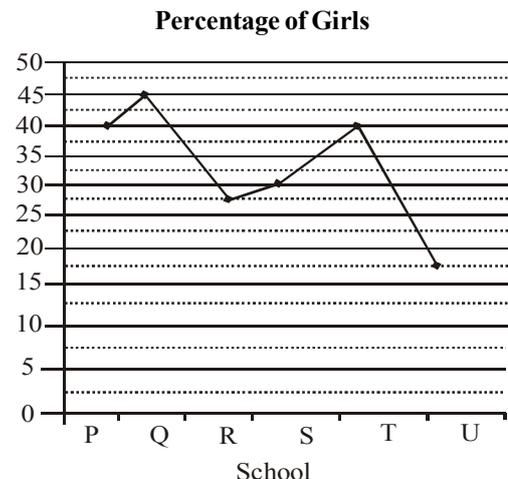
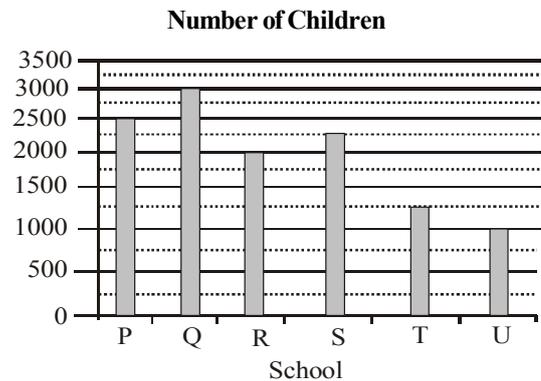
Production (in crore units) of six companies over the year

Company	Years						Total
	1997	1998	1999	2000	2001	2002	
TP	103	150	105	107	110	132	707
ZIR	75	80	83	86	90	91	505
AVC	300	300	300	360	370	340	1970
CTU	275	280	281	280	285	287	1688
PEN	25	30	35	40	42	45	217
SIO	85	87	89	91	92	96	540
Total	863	927	893	964	989	991	5627

26. The production of Company AVC in 2000 is **approximately** what per cent of its average production over the given years?
 (a) 300 (b) 110
 (c) 136 (d) 18.25
 (e) 95
27. For SIO, which year was the per cent increase or decrease in production from the previous year, the highest?
 (a) 2001 (b) 1998
 (c) 2002 (d) 2000
 (e) None of these
28. Which company has less average production in the last three years compared to that of first three years?
 (a) No company (b) CTU
 (c) ZIR (d) SIO
 (e) None of these
29. The total production of the six companies in the first two given years is what per cent of that of last two given years? (round off up to two decimal places)
 (a) 87.08 (b) 104.55
 (c) 90.40 (d) 10.62
 (e) None of these
30. For ZIR, which of the following is the difference between production in 2002 and that in 2001?
 (a) 10,00,00,000 (b) 1,00,00,000
 (c) 10,00,000 (d) 40,00,000
 (e) None of these
31. For how many companies did the production increase every year from that of the previous year?
 (a) One (b) Two
 (c) Three (d) Four
 (e) None of these

Directions (Qs. 32–36) : Study the graphs carefully to answer the questions that follow :

Total number of children in 6 different schools and the percentage of girls in them



32. What is the total percentage of boys in schools R and U together (rounded off to two digits after decimal)
 (a) 78.55 (b) 72.45
 (c) 76.28 (d) 75.83
 (e) None of these
33. What is the total number of boys in School T ?
 (a) 500 (b) 600
 (c) 750 (d) 850
 (e) None of these
34. The total number of students in school R, is **approximately** what percent of the total number of students in school S ?
 (a) 89 (b) 75
 (c) 78 (d) 82
 (e) 94
35. What is the average number of boys in schools P and Q together ?
 (a) 1425 (b) 1575
 (c) 1450 (d) 1625
 (e) None of these
36. What is the respective ratio of the number of girls in school P to the number of girls in school Q ?
 (a) 27 : 20 (b) 17 : 21
 (c) 20 : 27 (d) 21 : 17
 (e) None of these

Directions (Qs. 37–41) : Study the tables carefully and answer the questions that follow :

Number of candidates (in lakhs) appearing in an entrance examination from six different cities and the ratio of candidates passing and failing in the same

City	Number of Candidates
A	1.25
B	3.14
C	1.08
D	2.27
E	1.85
F	2.73

Ratio of candidates passing and failing within the city

City	Passing	:	Failing
A	7	:	3
B	5	:	3
C	4	:	5
D	1	:	3
E	3	:	2
F	7	:	5

37. What is the respective ratio of the number of candidates failing in the Exam from City D to those failing in the exam from City A ?
 (a) 289 : 42 (b) 42 : 289
 (c) 227 : 50 (d) 50 : 227
 (e) None of these
38. The number of candidates appearing for the exam from City C is what percent of the total number of candidates appearing for the exam from City B ? (rounded off to the nearest integer)
 (a) 27 (b) 34
 (c) 42 (d) 21
 (e) 38

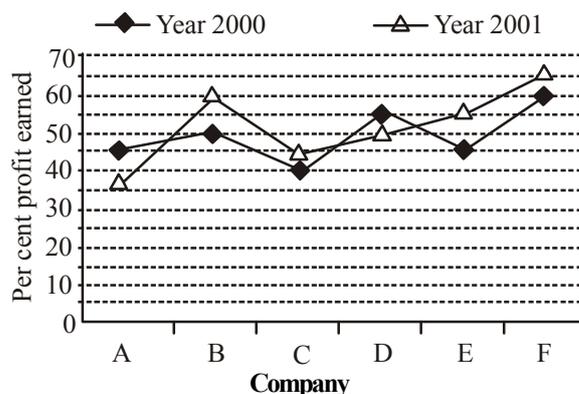
39. Number of candidates passing in the exam from City F is what percent of the total number of candidates appearing from all the Cities together ? (rounded off to two digits after the decimal)
 (a) 12.93 (b) 14.46
 (c) 10.84 (d) 11.37
 (e) None of these
40. Which city has the highest number of students failing in the entrance exam ?
 (a) F (b) C
 (c) B (d) D
 (e) None of these
41. What is the number of candidates passing in the exam from city E ?
 (a) 13,000 (b) 11,10,000
 (c) 1,13,000 (d) 11,000
 (e) None of these

Directions (Qs. 42–46): These questions are based on the graph given below:

Per cent profit earned by six companies during 2000 and 2001

$$\text{Profit} = \text{Income} - \text{Expenditure}$$

$$\% \text{ Profit} = \frac{\text{Income} - \text{Expenditure}}{\text{Expenditure}} \times 100$$



42. If the income of company C in the year 2000 was ₹ 35 lakhs, what was its expenditure in that year?
 (a) ₹ 24 lakhs (b) ₹ 21 lakhs
 (c) ₹ 25 lakhs (d) Can't be determined
 (e) None of these
43. If, in the year 2001, total expenditure of companies B and C was ₹ 48 lakhs, then what was their total income in the same year?
 (a) ₹ 32 lakhs (b) ₹ 28.6 lakhs
 (c) ₹ 34.2 lakhs (d) Can't be determined
 (e) None of these
44. If, in the year 2000, expenditure of Company C was ₹ 32 lakhs, what was the income of the company in the same year?
 (a) ₹ 44.2 lakhs (b) ₹ 48.4 lakhs
 (c) ₹ 46.4 lakhs (d) ₹ 38 lakhs
 (e) None of these
45. If the expenditures of Company E in the years 2000 and 2001 were the same, what was the ratio of the incomes of the company in the same years respectively?
 (a) 19 : 21 (b) 11 : 12
 (c) 29 : 31 (d) 9 : 11
 (e) None of these

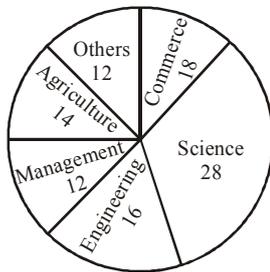
46. The income of Company D in the year 2000 was ₹ 31 lakhs. What was the earned profit?
- (a) ₹ 11 lakhs (b) ₹ 20 lakhs
(c) ₹ 17 lakhs (d) ₹ 12 lakhs
(e) None of these

Directions (Qs. 47–51) : Study the following pie-charts carefully and answer the questions given below :

Disciplinewise Break up of Number of candidates appeared in Interview and Disciplinewise Break up of Number of Candidates selected by an organisation

Disciplinewise Break up of Number of candidates appeared in Interview by the organisation

Total Number of candidates Appeared In the Interview = 25780 percentage



Disciplinewise Break up of Number of candidates selected after Interview by the organisation

Total Number of candidates selected After Interview = 7390 percentage

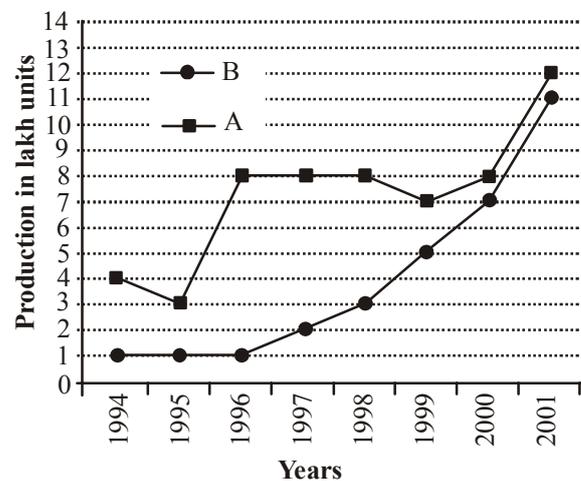


47. What was the ratio between the number of candidates appeared in interview from other disciplines and number of candidates selected from Engineering discipline respectively (round off to the nearest integer) ?
- (a) 3609 : 813 (b) 3094 : 813
(c) 3094 : 1035 (d) 4 125 : 1035
(e) 3981 : 767
48. The total number of candidates appeared in interview from Management and other disciplines was what percent of number of candidates appeared from Engineering discipline?
- (a) 50 (b) 150
(c) 200 (d) Cannot be determined
(e) None of these
49. **Approximately** what was the difference between the number of candidates selected from Agriculture discipline and number of candidates selected from Engineering discipline?
- (a) 517 (b) 665
(c) 346 (d) 813
(e) 296

50. For which discipline was the difference in number of candidates selected to number of candidates appeared in interview the maximum ?
- (a) Management (b) Engineering
(c) Science (d) Agriculture
(e) None of these
51. **Approximately** what was the total number of candidates selected from Commerce and Agriculture discipline together?
- (a) 1700 (b) 1800
(c) 2217 (d) 1996
(e) 1550

Directions (Qs. 52–56) : Study the following graph to answer the given questions.

Production of two companies A & B over the years (Production in lakh units)



52. For Company A, what is the per cent decrease in production from 1994 to 1995?
- (a) 75 (b) 50
(c) 25 (d) 10
(e) None of these
53. In 2001, the production of Company B is **approximately** what per cent of that in 2000?
- (a) 60 (b) 157
(c) 192 (d) 50
(e) 92
54. For Company A, in which year is the percentage increase/decrease in the production from the previous year the highest?
- (a) 2001 (b) 1995
(c) 1999 (d) 1996
(e) None of these
55. What is the difference in the total production of the two companies for the given years?
- (a) 2700000 (b) 3100000
(c) 270000 (d) 310000
(e) None of these
56. Which of the following is the closest average production (in lakh units) of Company B for the given years?
- (a) 4.1 (b) 3.5
(c) 4.3 (d) 3.75
(e) 3.9

Directions (Qs. 57-61): Study the following table to answer the given questions.

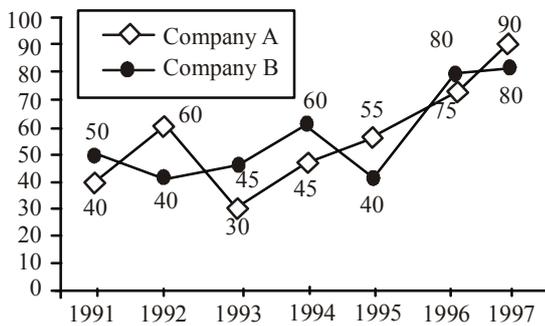
Centrewise and Postwise number of candidates

Post Specialist Centre	Officer	Clerk	Field Officer	Supervisor	Specialist officer
Bangalore	2000	5000	50	2050	750
Delhi	15000	17000	160	11000	750
Mumbai	17000	19500	70	7000	900
Hyderabad	3500	20000	300	9000	1150
Kolkata	14900	17650	70	1300	1200
Lucknow	11360	15300	30	1500	650
Chennai	9000	11000	95	1650	500

57. In Kolkata, number of Specialist Officers is **approximately** what per cent of Officers?
 (a) 8.7 (b) 9
 (c) 6.5 (d) 8
 (e) 6.9
58. What is the difference between total number of Officers and Clerks?
 (a) 29680 (b) 34180
 (c) 32690 (d) 28680
 (e) None of these
59. In Chennai, the number of Clerks is **approximately** how much per cent more than that of Officers?
 (a) 18 (b) 22
 (c) 20 (d) 2
 (e) 13
60. Which centre has 300% more number of Clerks as compared to those in Bangalore?
 (a) Lucknow (b) Mumbai
 (c) Hyderabad (d) Chennai
 (e) None of these
61. Which centre has the highest number of candidates?
 (a) Delhi (b) Kolkata
 (c) Hyderabad (d) Mumbai
 (e) None of these

Directions (Qs. 62-66): Study the following graph carefully and answer the questions given below it :

Per cent profit earned by two companies A and B over the years 1991 to 1997



62. Investment of company 'B' in 1997 is more by 40% than that in the previous year. Income in 1997 was what per cent of the investment in 1996?
 (a) 280% (b) 252%
 (c) 242% (d) 52%
 (e) None of these

63. Average investment of company 'A' over the years was ₹ 26 lakhs. What was its average income over the years?
 (a) ₹ 40.56 lakhs (b) ₹ 41.60 lakhs
 (c) ₹ 50.26 lakhs (d) Data inadequate
 (e) None of these
64. Income of company 'A' in 1995 was ₹ 21.7 lakhs. What was the investment ?
 (a) ₹ 14.5 lakhs (b) ₹ 15.4 lakhs
 (c) ₹ 15.8 lakhs (d) ₹ 14.6 lakhs
 (e) None of these
65. Income of company 'A' in 1995 is equal to the investment of the company 'B' in 1996. What is the ratio of the investment of company 'A' in 1995 to the investment of company 'B' in 1996?
 (a) 31 : 36 (b) 31 : 20
 (c) 20 : 31 (d) Data inadequate
 (e) None of these
66. Investment of company 'B' in 1993 was ₹ 1540000. What was its income in that year?
 (a) ₹ 23.33 lakhs (b) ₹ 22.33 lakhs
 (c) ₹ 22.23 lakhs (d) ₹ 23.23 lakhs
 (e) None of these

Directions (Qs. 67-71): Study the following table carefully and answer the questions given below it.

A factory was opened in 1994 with certain initial strengths in different units as shown in the table. At the beginning of the subsequent years some of the workers left and some new workers were deployed. No worker left or joined in between. Details are given in the table given below. Study it carefully and answer the questions that follow.

Year	UNIT									
	A		B		C		D		E	
1994	156		132		98		76		125	
(Initial Strength)	L	J	L	J	L	J	L	J	L	J
1995	12	15	23	32	12	36	6	26	11	13
1996	17	18	16	14	8	19	17	28	11	15
1997	9	20	12	12	17	14	9	16	19	16
1998	32	40	14	17	23	35	12	23	23	14
1999	22	35	11	15	18	25	14	24	32	38
2000	26	32	17	21	13	18	11	19	21	36

Note : L = Left, J = Joined

67. What was the strength of Unit 'B' in 1998?
 (a) 142 (b) 125
 (c) 159 (d) 207
 (e) None of these
68. In 1999 the strength of workers was maximum in which unit?
 (a) E (b) D
 (c) C (d) B
 (e) A
69. The strength of workers in unit C in 1996 is **approximately** what per cent of the strength in unit E in 1997?
 (a) 97 (b) 110
 (c) 104 (d) 98
 (e) 112
70. What was the total strength of workers in all the five units in 1996?
 (a) 647 (b) 570
 (c) 690 (d) 697
 (e) None of these

71. What was the **approximate** increase/decrease in the strength of the workers in unit *D* in 1998 with respect to its initial strength?
- (a) 47.37% increase (b) 64.47% decrease
(c) 64.47% increase (d) 47.37% decrease
(e) 59.38% increase

Directions (Qs. 72-75): Study the following table carefully and answer the questions given below: Per cent marks obtained by 6 students in different subject

Student	Subject					
	Physics (out of 150)	Chemistry (out of 75)	Maths (out of 200)	History (out of 100)	Geography (out of 50)	English (out of 75)
A	77	63	89	55	64	72
B	69	72	71	78	69	66
C	82	78	69	65	75	57
D	73	81	76	67	58	63
E	58	69	54	74	66	75
F	66	57	61	62	71	59

72. What is the total marks obtained by *B* in all the subjects?
- (a) 542 (b) 560.5
(c) 425 (d) 459.5
(e) None of these
73. What is the average marks obtained by 6 students in Chemistry out of 75 marks?
- (a) 52.5 (b) 70
(c) 55.5 (d) 62.5
(e) None of these
74. What is the difference in the total marks obtained by *C* in Physics and Chemistry and that obtained by *E* in the same subjects?
- (a) 38.75 (b) 33
(c) 42.75 (d) 43
(e) None of these
75. What is the per cent marks obtained by *A* in both Maths and History? Find up to two decimal places.
- (a) 72 (b) 77.67
(c) 48 (d) 73.33
(e) None of these

Directions (Qs. 76-78): These questions are based on the following information. Study the information carefully and answer the questions.

The students of a school have an option to study only Hindi, only Sanskrit or a composite subject Hindi and Sanskrit. Out of, the 175 students in the school, boys and girls are in the ratio of 3 : 4 respectively. 40% of boys have opted for only Hindi. 44% of the students have opted for only Sanskrit. Out of the total number of girls 32% have opted for the composite subject. The number of boys who opted for only Sanskrit and that for composite subject are in the ratio of 2 : 1 respectively.

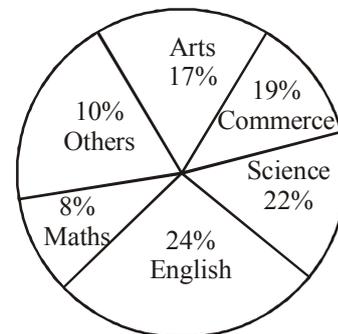
76. What is the ratio between the number of boys who have opted for only Hindi and the number of girls who have opted for the composite subject respectively?
- (a) 15 : 16 (b) 10 : 7
(c) 10 : 9 (d) 11 : 12
(e) None of these

77. How many boys have opted for the composite subject?
- (a) 30 (b) 15
(c) 21 (d) 32
(e) None of these
78. How many girls have opted for only Sanskrit?
- (a) 72 (b) 47
(c) 51 (d) 77
(e) None of these

Directions (79-83): In the following pie-charts, the percentage wise distribution of candidates who have applied for different subjects in a college and that of selected candidates has been given. Read the following pie-charts to answer the questions.

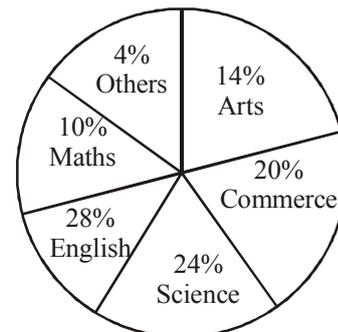
Percentage of Candidates

Applied Number of candidates = 88000



Percentage of Candidates Qualified

Number of candidates = 14400



79. What is the difference between the total number of candidates who got selected in Science and the number of candidates who applied for the same ?
- (a) 15904 (b) 14904
(c) 15940 (d) 16940
(e) None of these
80. What is the sum of the total number of candidates who applied for Arts and the number of candidates who got selected in Maths and English both ?
- (a) 19432 (b) 20432
(c) 20342 (d) 19432
(e) None of these
81. What is the ratio between the number of candidates who qualified in Arts and commerce together and the number of candidates who qualified in English and Science ?
- (a) 17 : 25 (b) 17 : 29
(c) 17 : 26 (d) 29 : 17
(e) None of these
82. What percent of candidates qualified in English of the total candidates applied for the same ?

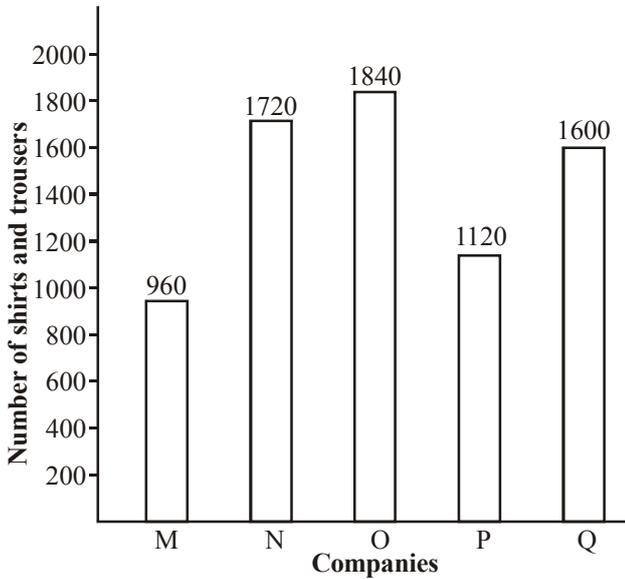
- (a) 15
- (b) 16
- (c) 17
- (d) 19
- (e) 22

83. Find the average number of candidates who got selected for English, Science and Arts.

- (a) 3618
- (b) 3682
- (c) 3628
- (d) 3268
- (e) 3168

Directions (Qs. 84-88) : In the following bar diagram number of shirts and trousers manufactured by five different companies M, N, O, P and Q has been given. The ratio of shirts and trousers has been given in the adjoining table. Read both the data and answer the questions.

Number of Shirts and Trousers manufactured by five companies M, N, O, P and Q



Companies	Shirts	Trousers
M	5	3
N	24	19
O	7	9
P	3	5
Q	8	17

- 84. What is the average of the number of shirts manufactured by the companies M, O and Q ?
 - (a) 639
 - (b) 539
 - (c) 693
 - (d) 369
 - (e) None of these
- 85. The number of shirts manufactured by company P is
 - (a) 320
 - (b) 420
 - (c) 480
 - (d) 460
 - (e) None of these
- 86. What is the total number of trousers manufactured by companies N and P ?
 - (a) 1360
 - (b) 1260
 - (c) 1460
 - (d) 1406
 - (e) None of these
- 87. The number of shirts manufactured by company Q is what per cent of its total production ?
 - (a) 25%
 - (b) 28%
 - (c) 30%
 - (d) 32%
 - (e) None of these
- 88. The ratio between the number of shirts manufactured by company M and that of trousers manufactured by company P is
 - (a) 9 : 7
 - (b) 8 : 7
 - (c) 7 : 8
 - (d) 5 : 7
 - (e) 6 : 7

Directions (Qs. 89-93) : In the following table, the number of vehicles passing over a bridge during different time intervals on different days of a week is given. Read the table carefully to answer the following questions. Number of Vehicles (In thousands)

Time Intervals	8-11 am	11 am - 1 pm	1 pm - 4 pm	4 pm - 7 pm	7 pm - 10 pm
Monday	12	10	8	11	6
Tuesday	15	12	10	12	5
Wednesday	10	8	6	8	6
Thursday	11	7	7	7	7
Friday	13	10	8	10	6
Saturday	8	6	7	8	5

- 89. What is the difference between the total number of vehicles, crossing during 7pm-10 pm and the number of vehicles crossing during 11am-1pm on Tuesday, Thursday and Saturday?
 - (a) 8000
 - (b) 8500
 - (c) 7500
 - (d) 7800
 - (e) None of these
- 90. Find the difference between the number of vehicles crossing on Tuesday and Saturday during 1pm-4pm and the number of vehicles crossing on Thursday during 1pm-4pm.
 - (a) 7000
 - (b) 10000
 - (c) 24000
 - (d) 14000
 - (e) None of these
- 91. What is the percentage decrease in the number of vehicles crossing from time interval 8-11am to 7pm-10pm on Wednesday?
 - (a) 45%
 - (b) 38%
 - (c) 40%
 - (d) 50%
 - (e) 46%
- 92. Find the average number of vehicles crossing the bridge during 8-11 am.
 - (a) 11056
 - (b) 12500
 - (c) 11050
 - (d) 11500
 - (e) None of these
- 93. Find the total number of vehicles crossing the bridge during 11 am -1 pm on Thursday and Friday.
 - (a) 11000
 - (b) 19500
 - (c) 17500
 - (d) 19000
 - (e) 17000

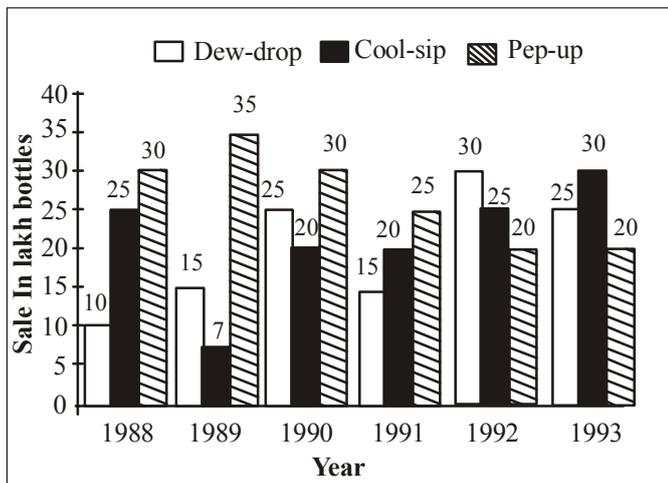
Directions (Qs. 94-98): Study the following table carefully and answer the questions given below:

Number of bales of wool processed by 5 woollen mills

Name of the Company					
Month	Polar	Shepherd	Kiwi	Warmwear	Comfy
Jan	900	850	350	1000	850
Feb	800	700	1050	1100	850
March	1050	800	1000	1100	950
April	800	850	850	1100	850
May	950	900	1050	1150	850
Total	4500	4100	4900	5450	4350

94. In the case of which mill is the processing of wool in March the highest percentage of the total processing by that mill during the five month period?
 - (a) Polar
 - (b) Shepherd
 - (c) Kiwi
 - (d) Warmwear
 - (e) Comfy
95. The wool-processing by Warmwear in April is what percent of its wool-processing in January?
 - (a) 91
 - (b) 110
 - (c) 115
 - (d) 10
 - (e) 11
96. Which of the five mills has the highest ratio of wool processing done in April to that done in February?
 - (a) Polar
 - (b) Shepherd
 - (c) Kiwi
 - (d) Warmwear
 - (e) Comfy
97. In the case of which mill is the wool-processing in February and March together the lowest among the five mills processing during the same period?
 - (a) Comfy
 - (b) Warmwear
 - (c) Kiwi
 - (d) Shepherd
 - (e) Polar
98. The total of wool-processing done by Kiwi during the given period is approximately what per cent of that done by Shepherd?
 - (a) 80
 - (b) 87
 - (c) 8
 - (d) 108
 - (e) 120

Directions (Qs. 99-103): Study the following graph carefully and answer the questions given below:



99. In which year was the sale of 'Pep-up' the maximum?
 - (a) 1990
 - (b) 1991
 - (c) 1992
 - (d) 1993
 - (e) None of these

100. In the case of which soft drink was the average annual sale maximum in the given period?
 - (a) Pep-up only
 - (b) Cool-sip only
 - (c) Dew-drop only
 - (d) Cool-sip and Dew-drop
 - (e) Pep-up and Dew-drop
101. In the case of Cool-sip drink, what was the **approximate** per cent increase in sale in 1992 over its sale in 1991?
 - (a) Less than 20
 - (b) 20-25
 - (c) 25
 - (d) 31-35
 - (e) 36-40
102. In the year 1990, what was the difference between the number of 'Pep-up' and 'Cool-sip' bottles sold?
 - (a) 50,00,000
 - (b) 5,00,000
 - (c) 50,000
 - (d) 5,000
 - (e) 10,00,000
103. What was the **approximate** per cent drop in sale of Pep-up in 1990 over its sale in 1989?
 - (a) 5
 - (b) 12
 - (c) 14
 - (d) 20
 - (e) None of these

Directions (Qs.104-108): Read the following information carefully and answer the questions based on it: In 6 educational years, number of students taking admission and leaving from the 5 different schools which are founded in 1990 are given below

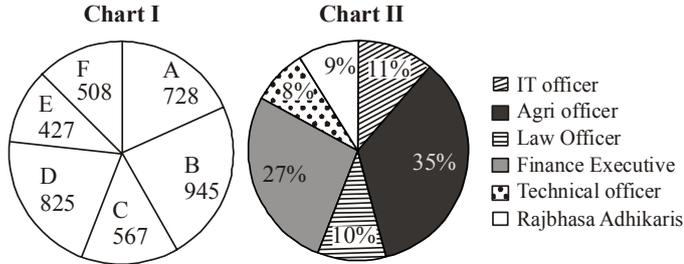
School	A		B		C		D		E	
	Ad	L	Ad	L	Ad	L	Ad	L	Ad	L
1990	1025	-	950	-	1100	-	1500	-	1450	-
1991	230	120	350	150	320	130	340	150	250	125
1992	190	110	225	115	300	150	300	160	280	130
1993	245	100	185	110	260	125	295	120	310	120
1994	280	150	200	90	240	140	320	125	340	110
1995	250	130	240	120	310	180	360	140	325	115

In the above table shown Ad = Admitted, L = Left

104. What is the average number of students studying in all the five schools in 1992?
 - (a) 1494
 - (b) 1294
 - (c) 1590
 - (d) 1640
 - (e) None of these
105. What was the number of students studying in school B in 1994?
 - (a) 2030
 - (b) 1060
 - (c) 1445
 - (d) 1150
 - (e) None of these
106. Number of students leaving school C from the year 1990 to 1995 is **approximately** what percentage of number of students taking admission in the same school and in the same year?
 - (a) 50%
 - (b) 25%
 - (c) 48%
 - (d) 36%
 - (e) 29%
107. What is the difference in the number of students taking admission between the years 1991 and 1995 in school D and B?
 - (a) 514
 - (b) 1065
 - (c) 965
 - (d) 415
 - (e) None of these
108. In which of the following schools, percentage increase in the number of students from the year 1990 to 1995 is maximum?
 - (a) A
 - (b) B
 - (c) C
 - (d) D
 - (e) E

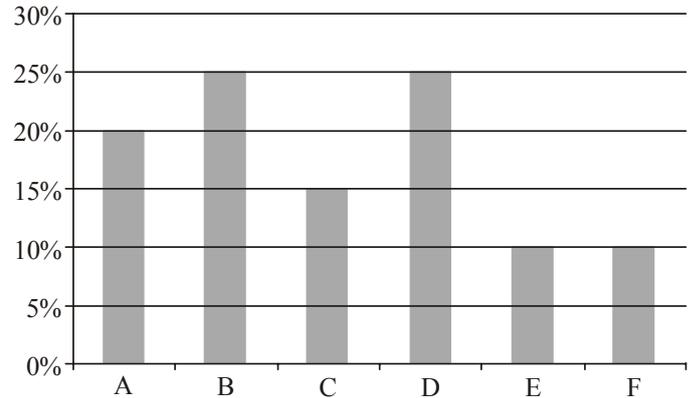
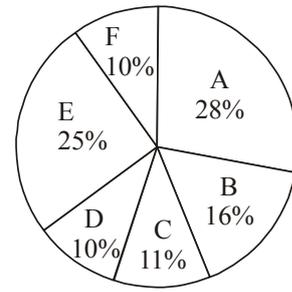
Directions (Qs. 109-113) : Study the graph to answer the following Questions

4000 posts of different cadres have to be filled up by six different banks(A, B, C, D, E, F). Chart - I shows the breakup of vacant posts in these banks. Chart - II shows the percentage breakup of the requirement of personnel in the different cadres in a bank. Assume that these percentages are the same for all the banks.



109. Banks A and C recruited IT officers as per given requirement. After few days some of the newly employed IT officers left A and Joined C. The number of new requirements of IT officers in A and C have now become equal. The approximate percentage of new recruits who left A is
 - (a) 11%
 - (b) 15%
 - (c) 22%
 - (d) 20%
 - (e) None of these
110. By what % is the number of recruitments of law officers more/less in C, E and F taken together than in A, B and D taken together?
 - (a) More by 40%
 - (b) More by 20%
 - (c) less by 40%
 - (d) less by 20%
 - (e) None of these
111. What is the ratio of requirement of Finance Executives in C and E taken together with D and F taken together?
 - (a) 1333:994
 - (b) 633:991
 - (c) 799:998
 - (d) 994:1333
 - (e) None of these
112. Banks D and F hired 15% of Rajbhasa Adhikaris than their own requirement(%). After 1 year the total strength of the staff was brought down to the original strength through retrenchments of some employees. What is the difference between the initial strength and the current strength of employees?
 - (a) 80
 - (b) 60
 - (c) 50
 - (d) 30
 - (e) None of these
113. In Bank E, about how many more technical officers should be employed than the required number so that the ratio of technical officers to that of finance executives becomes 2:3?
 - (a) 63
 - (b) 33
 - (c) 43
 - (d) 53
 - (e) None of these

Directions (Qs. 114-118) : The following Pie chart shows the percentage number of the candidates passed in examination from States A, B, C, D, E, F of a country in 2006. The Bar graph shows the percentage of fresh candidates who passed their graduation in 2006.



114. If in 2006, the total passed candidates from states A, B, C, D, E and F was 650, then percentage of non-fresher candidates from State A who passed the examination in 2006 is
 - (a) 95%
 - (b) 86%
 - (c) 80%
 - (d) 70%
 - (e) None of these
115. If in 2006, the total number of freshers from state D was 160, then how many non-fresher candidates passed the exam from State E?
 - (a) 1430
 - (b) 1240
 - (c) 1420
 - (d) 1440
 - (e) None of these
116. If total passed candidates from state B in 2006 was 112. what is the ratio between the number of freshers from state A and that of non-freshers from state C?
 - (a) 39:65
 - (b) 38:65
 - (c) 43:65
 - (d) 41:65
 - (e) None of these
117. If there is an increase of 10% and 20% candidates from state A and state B in the year 2007 respectively and the number of total passed candidates from state C in 2006 was 77, what would be the approximate total no of passed candidates from state A and State B in 2007?
 - (a) 400
 - (b) 350
 - (c) 450
 - (d) 380
 - (e) None of these
118. If the non-fresher candidates from state B in 2006 were 60, how many candidates passed the exam from all the states?
 - (a) 600
 - (b) 400
 - (c) 500
 - (d) 350
 - (e) None of these

Directions (Qs. 119-123): Study the following table carefully to answer these questions.

Number of students studying different disciplines at graduate level from State 'A' over the years

Discipline/year	Arts	Commerce	Science	Agriculture	Medicine	Engineering
1997	2400	3200	4200	840	2350	3180
1998	2250	3500	4820	760	2120	3340
1999	3050	2850	4550	1120	2640	3650
2000	2800	3640	4680	930	1890	3490
2001	2980	3080	5220	780	2260	3280
2002	2770	3800	3950	810	2450	3500

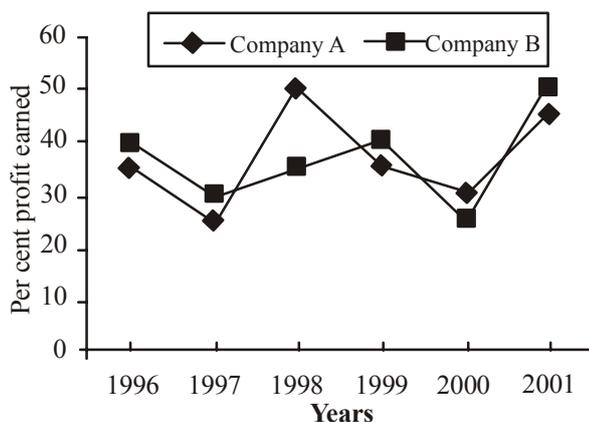
119. Total number of students studying Medicine for all the years together is **approximately** what per cent of those studying Engineering for all the years together?
 - (a) 60
 - (b) 67
 - (c) 72
 - (d) 75
 - (e) 73
120. What is the average number of students studying Arts? (Rounded off to an integer)
 - (a) 2905
 - (b) 2480
 - (c) 2308
 - (d) 2708
 - (e) None of these
121. For which of the following years, percentage increase/decrease in the number of students studying Commerce with respect to the previous year is the maximum?
 - (a) 1998
 - (b) 1999
 - (c) 2000
 - (d) 2001
 - (e) 2002
122. The number of students studying Agriculture in the year 1999 is what per cent of the total number of students studying rest of the disciplines together during that year? (Rounded off to two digits after decimal)
 - (a) 6.69
 - (b) 6.27
 - (c) 6.82
 - (d) 6.39
 - (e) None of these
123. The number of students studying Commerce in 2001 is **approximately** what per cent of the total number of students studying Commerce for all the given years together?
 - (a) 19
 - (b) 11
 - (c) 12
 - (d) 18
 - (e) 15

Directions (Qs. 124-128): Study the following graph to answer these questions.

Per cent profit earned by two Companies A & B over the years

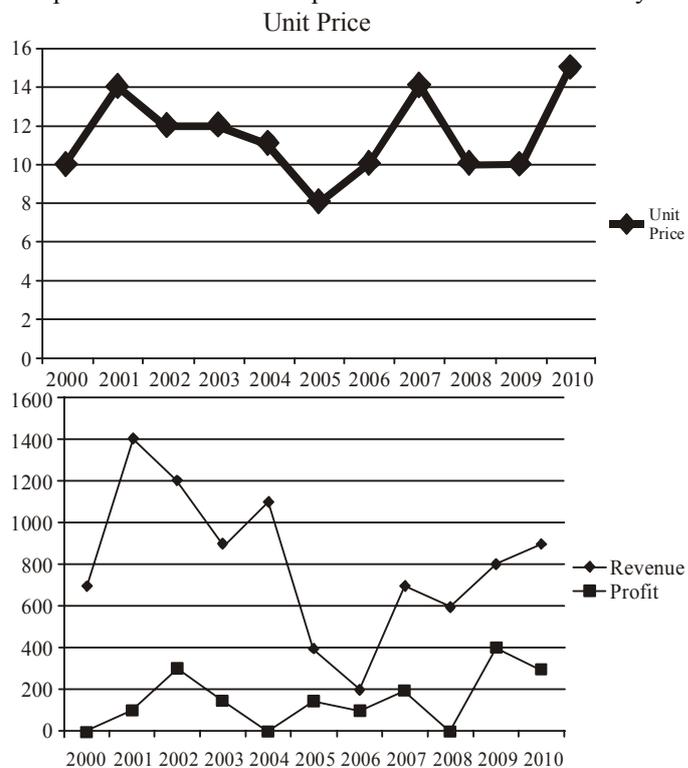
$$\text{Profit} = \text{Income} - \text{Expenditure}$$

$$\% \text{Profit} = \frac{\text{Profit}}{\text{Expenditure}} \times 100$$



124. If the income of Company 'A' in 1998 was ₹ 1,42,500 what was its expenditure in that year?
 - (a) ₹ 1,05,000
 - (b) ₹ 95,500
 - (c) ₹ 99,500
 - (d) ₹ 1,05,555
 - (e) None of these
125. Expenditure of Company 'B' in 1999 was 90% of its expenditure in 1998. Income of Company 'B' in 1999 was what per cent of its income in 1998?
 - (a) 130.5
 - (b) $96\frac{2}{3}$
 - (c) 121.5
 - (d) $93\frac{1}{3}$
 - (e) None of these
126. If the expenditure of Company 'A' in 1997 was ₹ 70 lakhs and income of Company A in 1997 was equal to its expenditure in 1998, what was the total income (in ₹ lakh) of the Company A in 1997 & 1998 together?
 - (a) 175
 - (b) 131.25
 - (c) 218.75
 - (d) Cannot be determined
 - (e) None of these
127. Expenditure of Company 'B' in years 1996 and 1997 were in the ratio of 5 : 7 respectively. What was the respective ratio of their incomes?
 - (a) 10 : 13
 - (b) 8 : 13
 - (c) 13 : 14
 - (d) 11 : 14
 - (e) None of these
128. Total expenditure of Companies A & B together in 2001 was ₹ 13.5 lakhs. What was the total income of the two companies (in ₹ lakh) in that year?
 - (a) 19.575
 - (b) 20.25
 - (c) 19.75
 - (d) Cannot be determined
 - (e) None of these

Directions (Qs. 129-133) : Answer the following questions, based on the following two graphs, assuming that there is no fixed component and all the units produced are sold in the same year.



129. In which year per unit cost is lowest?
 (a) 2002 (b) 2003
 (c) 2006 (d) 2007
 (e) None of these
130. In which year per unit cost is highest?
 (a) 2001 (b) 2005
 (c) 2006 (d) 2007
 (e) None of these
131. What is the approximate average quantity sold during the period 2000-2010?
 (a) 50% (b) 60%
 (c) 81% (d) 70%
 (e) None of these
132. What is the average number of total units sold in the years of 2002, 2003, 2004, 2005 and 2008 together?
 (a) 88 (b) 66
 (c) 77 (d) 44
 (e) None of these
133. If the price per unit decrease by 10% during 2000-2004 and cost per unit increase by 10% during 2005-2010, then the cumulative profit for the entire period 2000-2010 decrease by?
 (a) 700 (b) 500
 (c) 565 (d) 775
 (e) None of these

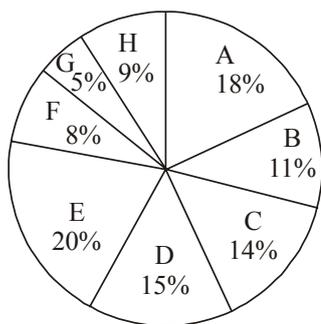
Directions (Qs. 134-138) : Refer to Pie Charts and answer the following questions:

Given Data:

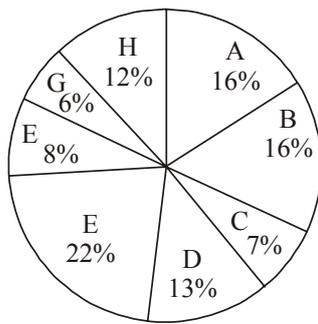
Total number of cars (both MUV & SUV) distributed by 8 dealers in 2004 = 56000

Total number of SUV cars distributed by 8 dealers in 2004 = 32000

Distribution of Cars (MUV & SUV)



Distribution of Cars SUV



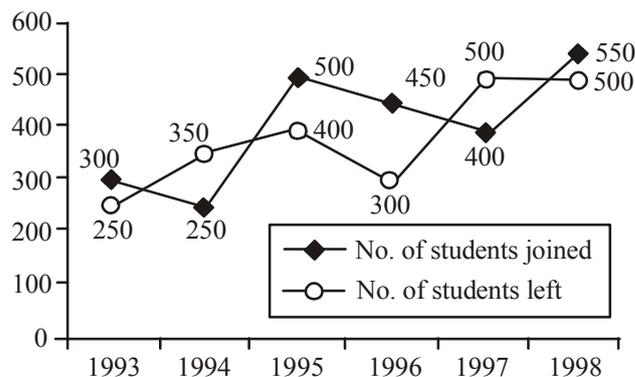
134. Total number of MUV cars sold by dealers C and H together is by what % less than total number of cars (both SUV and MUV) sold by stores F and H together?
 (a) 27.58% (b) 25.58%
 (c) 26.58% (d) 28.57%
 (e) None of these
135. The number of cars (MUV and SUV) sold by store D is by what % more than total number of SUV cars distributed by dealers C, F and G together?
 (a) 50% (b) 25%
 (c) 75% (d) 605
 (e) None of these
136. What is the average number of MUV cars delivered by dealers A, D, E, F and H together?
 (a) 2892 (b) 3354
 (c) 3634 (d) 3296
 (e) None of these

137. What is the respective ratio between total no of SUV cars distributed by dealers A and B together and total number of cars (MUV and SUV) delivered by stores C and F together?
 (a) 64:77 (b) 64:79
 (c) 54:77 (d) 64:73
 (e) None of these
138. If the number of cars distributed by stores A, D and E increased by 10%, 35% and 15% respectively from 2004-2005, what was the total number of MUV cars distributed by these three dealers in 2005?
 (a) 14964 (b) 15964
 (c) 13964 (d) 12964
 (e) None of these

Directions (Qs. 139-143): Answer these questions on the basis of the information given below:

- (i) In a class of 80 students the girls and the boys are in the ratio of 3:5. The students can speak only Hindi or only English or both Hindi and English.
- (ii) The number of boys and the number of girls who can speak only Hindi is equal and each of them is 40% of the total number of girls.
- (iii) 10% of the girls can speak both the languages and 58% of the boys can speak only English.
139. How many girls can speak only English?
 (a) 12 (b) 29
 (c) 18 (d) 15
 (e) None of these
140. In all how many boys can speak Hindi?
 (a) 12 (b) 9
 (c) 24 (d) Data inadequate
 (e) None of these
141. What percentage of all the students (boys and girls together) can speak only Hindi?
 (a) 24 (b) 40
 (c) 50 (d) 30
 (e) None of these
142. In all how many students (boys and girls together) can speak both the languages?
 (a) 15 (b) 12
 (c) 9 (d) 29
 (e) None of these
143. How many boys can speak either only Hindi or only English?
 (a) 25 (b) 38
 (c) 41 (d) 29
 (e) None of these

Directions (Qs. 144-148): Study the following graph carefully and answer the questions given below it. The number of students who joined and left the school in the beginning of year for six years, from 1993 to 1998. Initial strength of the school in 1992 = 1500



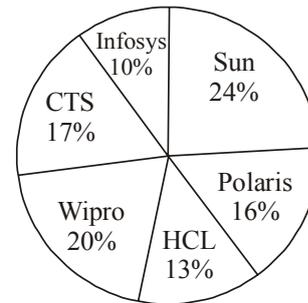
144. What was the increase/decrease in strength of the school from 1994 to 1995?
 (a) Increase by 100 (b) Decrease by 100
 (c) Increase by 200 (d) Decrease by 200
 (e) None of these
145. For which of the following years, the percentage rise/fall in number of students left from the previous year is the **highest**?
 (a) 1994 (b) 1995
 (c) 1996 (d) 1997
 (e) 1998
146. How many students were there in the school during the year, 1996?
 (a) 1495 (b) 1600
 (c) 1550 (d) 1700
 (e) None of these
147. During which of the following pairs of years, the strengths of the school is equal?
 (a) 1994 and 1995 (b) 1995 and 1997
 (c) 1996 and 1998 (d) 1995 and 1998
 (e) 1993 and 1995
148. The number of students in 1996 is **approximately** what per cent of the number of students in 1994?
 (a) 85 (b) 117
 (c) 95 (d) 103
 (e) 108

Directions (Qs. 149-153): Study the following information to answer the questions given below:

- (i) The ratio of the populations of males, females and children 10 years old and above is 11 : 10 : 9 in State 'A'. Out of which 40% males or 8800 are literate, 20% children (10 year old and above) are illiterate while 30% females are literate.
- (ii) The number of children below 10 years of age is 10% of the number of females. 5% of the total population of the State are below poverty line and 80% of them are illiterate.
149. What is the number of illiterate persons below the poverty line?
 (a) 2480 (b) 3100
 (c) 620 (d) Cannot be determined
 (e) None of these
150. What is the total population of the State?
 (a) 60,000 (b) 62,000
 (c) 42,000 (d) 40,000
 (e) None of these
151. What is the number of literate children of age 10 years and above?
 (a) 14400 (b) 14800
 (c) 16200 (d) 12600
 (e) None of these
152. Total number of women is what percentage of the total population of the State? (rounded off to two places of decimal)
 (a) 28.86 (b) 30.25
 (c) 32.86 (d) 32.26
 (e) None of these

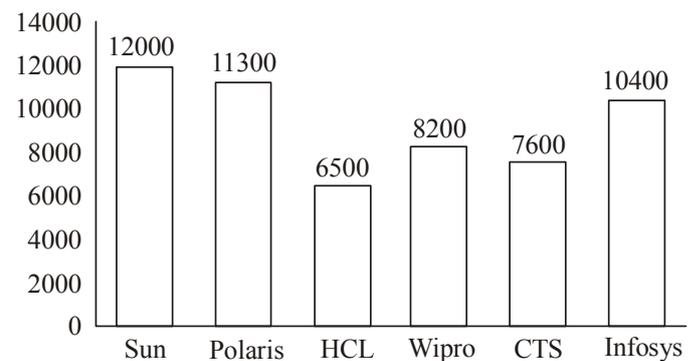
153. How many women are illiterate?
 (a) 20000 (b) 6000
 (c) 14400 (d) 16800
 (e) None of these

Directions (Qs. 154-158) : Study the given pie-Chart and Bar Graph carefully and answer the Questions given below
 Percentagewise distribution of employees in 5 different Organizations in a state



Total No of Employees = 1,32,500

Number of Female employees out of the total employees



154. What is the total number of female employees in Wipro and male employees in Sun and Infosys ?
 (a) 28900 (b) 30850
 (c) 32600 (d) 26980
 (e) None of these
155. What is the difference between the total number of employees in Polaris to the number of male employees in HCL ?
 (a) 10500 (b) 10000
 (c) 10725 (d) 10475
 (e) None of these
156. Which of the following Organizations has more number of female employees than male employees ?
 (a) Wipro (b) Sun
 (c) Infosys (d) CTS
 (d) None of these
157. The number of male employees in CTS is approximately what % of the total number of employees in Sun ?
 (a) 47% (b) 32%
 (c) 51% (d) 28%
 (e) None of these

158. What is the average number of male employees in Wipro, Polaris and CTS ?

- (a) 12560
- (b) 15220
- (c) 13725
- (d) 14375
- (e) None of these

Directions (Qs. 159-163): Study the following table carefully and answer the questions that follow:

The percentage marks obtained by seven students in six different subjects

Subject →	A	B	C	D	E	F
Student ↓	(Out of 75)	(Out of 150)	(Out of 100)	(Out of 50)	(Out of 150)	(Out of 75)
P	85	68	76	92	89	82
Q	78	72	84	80	64	70
R	66	75	79	88	72	66
S	74	62	91	74	70	74
T	90	75	67	68	69	78
V	86	80	69	78	82	80
W	82	68	81	85	76	72

159. What total percentage marks 'R' did secure in all the six subjects together?

- (a) 75.73
- (b) 74.33
- (c) 73.75
- (d) 74.75
- (e) None of these

160. What is the difference between the marks obtained by 'P' in the subjects 'B', 'D' and 'E' together and by 'T' in the same subjects?

- (a) 32.5
- (b) 31.5
- (c) 37
- (d) 34
- (e) None of these

161. What is the average of marks obtained by all the students in subject 'B'? (up to two decimal places)

- (a) 107.14
- (b) 71.4
- (c) 114.07
- (d) 73.14
- (e) None of these

162. What is the average percentage of marks obtained by all the students in the subjects 'C' and 'D' together?

- (a) 78
- (b) 80.71
- (c) 79.43
- (d) 77.53
- (e) None of these

163. What is the total marks obtained by all the students in subject 'F'?

- (a) 422
- (b) 398.5
- (c) 522
- (d) 391.5
- (e) None of these

Directions (Qs. 164-168): Study the following table carefully and answer the questions that follow:

Investment (in ₹ crores) by six units of XYZ Company from 1996 to 2001

Year → Unit ↓	'96	'97	'98	'99	'00	'01	Total
A	85	132	125	116	142	138	738
B	105	140	145	148	142	144	824
C	114	137	138	136	150	152	827
D	98	125	132	145	158	152	810
E	82	128	141	152	149	165	817
F	108	150	145	156	154	162	875
Total	592	812	826	853	895	913	4891

164. In which of the following years the investment of unit 'C' was **minimum** per cent of the investment of all the companies taken together in the same year?

- (a) 1997
- (b) 1998
- (c) 1999
- (d) 2001
- (e) None of these

165. In the year 1997 the investment of which of the following units is the maximum per cent of the investment during the given years?

- (a) A
- (b) F
- (c) C
- (d) B
- (e) None of these

166. What is the increase per cent in the investment of unit 'D' from 1996 to 1999?

- (a) 26.75
- (b) 21.55
- (c) 21.60
- (d) 27.55
- (e) None of these

167. How much more/less is the investment by units A, B and C in the year 1998 than the investment by the same three units in the year 1999?

- (a) ₹ 10 crores less
- (b) ₹ 8 crores more
- (c) ₹ 8 crores less
- (d) ₹ 10 crores more
- (e) None of these

168. What is the ratio between the total investment of unit A, B and C in the year 1998 and the total investment of units D, E and F in the year 1999?

- (a) 36 : 51
- (b) 51 : 36
- (c) 26 : 43
- (d) 43 : 26
- (e) None of these

Directions (Qs. 169-173) : Study the following table carefully and answer the questions given below.

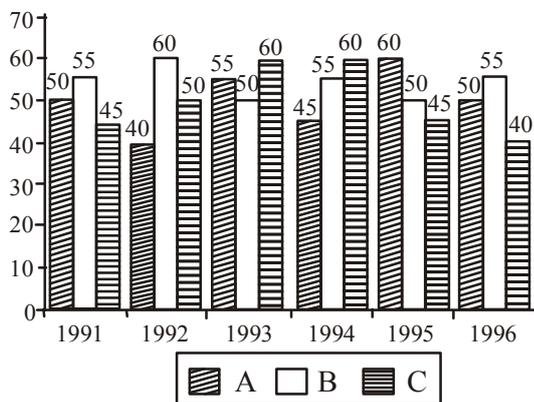
Percentage of malnourished children in Chile over the years

Year	Tested Number (in thousands)	Percentage of the malnourished		
		Low	Moderate	High
1984	998	12.5	2.9	0.7
1985	1015	12.1	2.7	0.7
1986	1048	12.1	3.0	0.8
1987	1071	11.9	2.5	0.5
1989	1048	10.8	1.8	0.3
1990	1023	10.4	1.6	0.2
1991	1048	10.0	1.4	0.1
1992	1063	8.70	1.1	0.1
1993	1161	7.80	0.9	0.1

169. What is the difference between the total numbers of the malnourished children in the years 1991 and 1986?
 (a) 0 (b) 46112
 (c) 22008 (d) 41920
 (e) None of these
170. In which year was the percentage of the malnourished children the highest?
 (a) 1986 (b) 1984
 (c) 1985 (d) 1987
 (e) None of these
171. Which is true of the following?
 (a) Over the years, there was uniform fall in the percentage of high malnourished cases in comparison to the previous year.
 (b) Over the years, there was uniform fall in the percentage of moderate malnourished cases in comparison to the previous year.
 (c) Over the years, there was uniform fall in the percentage of low malnourished cases in comparison to the previous year.
 (d) Over the years, there was no rise in the percentage of high malnourished cases in comparison to the previous year.
 (e) Over the years, there was no rise in the percentage of low malnourished cases in comparison to the previous year.
172. The malnutrition level of how many children was high in the year 1987?
 (a) 600 (b) 12745
 (c) 535 (d) 5355
 (e) None of these
173. How many children were malnourished in 1993?
 (a) 10,02,168 (b) 1,02,168
 (c) 10,216 (d) 1,00,02,168
 (e) None of these

Direction (Qs. 174-178) : Study the following graph carefully to answer the question given below it.

Production of paper (in lakh tonnes) by 3 different companies A, B & C over the years



174. What is the difference between the production of company C in 1991 and the production of Company A in 1996?
 (a) 50,000 tonnes (b) 5,00,00,000 tonnes
 (c) 50,00,000 tonnes (d) 5,00,000 tonnes
 (e) None of these

175. What is the percentage increase in production of Company A from 1992 to 1993?
 (a) 37.5 (b) 38.25
 (c) 35 (d) 36
 (e) None of these
176. For which of the following years the percentage of rise/fall in production from the previous year the **maximum** for Company B?
 (a) 1992 (b) 1993
 (c) 1994 (d) 1995
 (e) 1996
177. The total production of Company C in 1993 and 1994 is what percentage of the total production of Company A in 1991 and 1992?
 (a) 95 (b) 90
 (c) 110 (d) 115
 (e) None of these
178. What is the difference between the average production per year of the company with highest average production and that of the company with lowest average production in lakh tonnes?
 (a) 3.17 (b) 4.33
 (c) 4.17 (d) 3.33
 (e) None of these

Directions (Qs. 179-183) : Study the following table carefully and answer the questions given below it.

Fare in rupees for three different types of vehicles

Vehicle	Fare for distance upto					
	2 km	4 km	7 km	10 km	15 km	20 km
Type A	₹ 5.00	₹ 9.00	₹ 13.50	₹ 17.25	₹ 22.25	₹ 26.00
Type B	₹ 7.50	₹ 14.50	₹ 24.25	₹ 33.25	₹ 45.75	₹ 55.75
Type C	₹ 10.00	₹ 19.00	₹ 31.00	₹ 41.50	₹ 56.50	₹ 69.00

Note : Fare per km for intermittent distance is the same.

179. Shiv Kumar has to travel a distance of 15 kms in all. He decides to travel equal distance by each of the three types of vehicles. How much money is to be spent as fare?
 (a) ₹ 51.75 (b) ₹ 47.50
 (c) ₹ 47.25 (d) ₹ 51.25
 (e) None of these
180. Ajit Singh wants to travel a distance of 15 kms. He starts his journey by Type A vehicle. After travelling 6 kms, he changes the vehicle to Type B for the remaining distance. How much money will he be spending in all?
 (a) ₹ 42.25 (b) ₹ 36.75
 (c) ₹ 40.25 (d) ₹ 42.75
 (e) None of these
181. Mr X wants to travel a distance of 8 kms by Type A vehicle. How much more money will be required to be spent if he decides to travel by Type B vehicle instead of Type A?
 (a) ₹ 16 (b) ₹ 12.50
 (c) ₹ 14 (d) ₹ 13.50
 (e) None of these
182. Rita hired a Type B vehicle for travelling a distance of 18 kms. After travelling 5 kms, she changed the vehicle to Type A. Again after travelling 8 kms by Type A vehicle, she changed the vehicle to Type C and completed her journey. How much money did she spend in all?

- (a) ₹ 50
- (b) ₹ 45.50
- (c) ₹ 55
- (d) ₹ 50.50
- (e) None of these

183. Fare for 14th km by Type C vehicle is equal to the fare for which of the following?

- (a) Type B – 11th km
- (b) Type B – 9th km
- (c) Type A – 4th km
- (d) Type C – 8th km
- (e) None of these

Directions (Qs. 184-188) : Answer these questions on the basis of the information given in the following table.

Production (in lakh tonnes) of six companies over the given years

	1995	1996	1997	1998	1999	2000
A	465	396	524	630	408	650
B	372	482	536	480	512	580
C	694	528	492	575	550	495
D	576	602	387	426	632	518
E	498	551	412	518	647	610
F	507	635	605	600	485	525

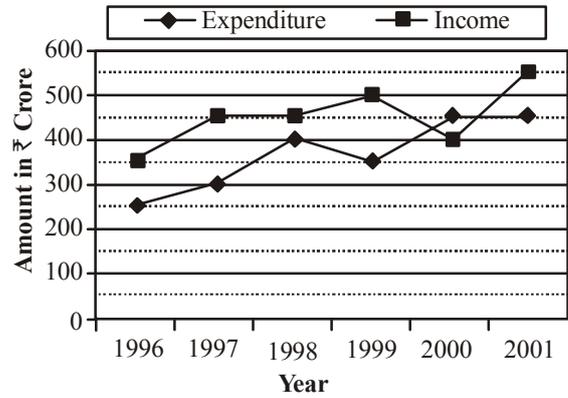
184. What is the difference between total productions of Companies A and C for all the given years together?
- (a) 2, 61,00,000 tonnes
 - (b) 2, 61,900 tonnes
 - (c) 3, 31,00,00 tonnes
 - (d) 3, 39,000 tonnes
 - (e) None of these
185. **Approximately**, what is the percentage rise/fall in total production of all the Companies together from 1996 to 1997?
- (a) 4.5% rise
 - (b) 6% rise
 - (c) 3.5% fall
 - (d) 7% fall
 - (e) 7.5% fall
186. During which year is the percentage rise/fall from the previous year in production of company 'F' the highest?
- (a) 1999
 - (b) 2000
 - (c) 1997
 - (d) 1996
 - (e) None of these
187. Production of companies A and B together in 1997 is **approximately** what percentage of the production of companies E and F together in 1998?
- (a) 90
 - (b) 95
 - (c) 97
 - (d) 86
 - (e) 92
188. What is the difference between average production for the given years of companies B and E (in lakh tonnes rounded off to two digits after decimal)?
- (a) 56.50
 - (b) 45.50
 - (c) 45.67
 - (d) 55.78
 - (e) None of these

Directions (Qs. 189-193) : Study the following graphs carefully and answer the questions that follow:

Income and Expenditure of Company 'X' during the period 1996 to 2001

Profit / Loss = Income – Expenditure

$$\% \text{ Profit / Loss} = \frac{\text{Income} - \text{Expenditure}}{\text{Expenditure}} \times 100$$



189. What is the average profit earned (in crore ₹) in the given years?
- (a) $83\frac{1}{3}$
 - (b) 600
 - (c) $113\frac{2}{3}$
 - (d) 200
 - (e) None of these
190. What **approximately** is the per cent profit earned during the year 1999?
- (a) 48
 - (b) 43
 - (c) 52
 - (d) 49
 - (e) None of these
191. Which of the following years has the maximum per cent increase/decrease in income from the previous year?
- (a) 2000
 - (b) 1999
 - (c) 1997
 - (d) 2001
 - (e) 1997 & 1999
192. What is the percentage increase in expenditure from 1997 to 1998?
- (a) 25
 - (b) $33\frac{1}{3}$
 - (c) $33\frac{2}{3}$
 - (d) 30
 - (e) None of these
193. What is the average income (in crore ₹) for the given years?
- (a) $336\frac{2}{3}$
 - (b) 280
 - (c) 450
 - (d) $366\frac{2}{3}$
 - (e) None of these

Directions (Qs. 194-198): Study the following table carefully to answer these questions.

Distribution of marks obtained by 160 students in each of the three subjects—Hindi, English and Maths— out					
Sub/Marks	0-19	20-39	40-59	60-79	80-100
Hindi	12	31	79	30	8
English	21	30	65	42	2
Maths	31	22	34	45	28
Average of three subjects	24	28	68	35	5

194. If the criteria for passing is minimum 40% marks only in Maths, how many students will pass?
 (a) 53 (b) 107
 (c) 34 (d) 129
 (e) None of these
195. If for passing, the student has to obtain minimum 60% marks on average of three subjects, how many students will pass?
 (a) 40 (b) 108
 (c) 68 (d) 73
 (e) None of these
196. If for passing, a student has to obtain 40% marks in any one of the three subjects, what is the minimum number of students who will definitely pass?
 (a) 107 (b) 109
 (c) 117 (d) 108
 (e) None of these
197. How many students will pass in English if minimum passing marks is 40%?
 (a) 117 (b) 111
 (c) 119 (d) 108
 (e) None of these
198. How many students have obtained 20 or more marks in at least one of the three subjects?
 (a) 148 (b) 139
 (c) 129 (d) Data inadequate
 (e) None of these

Directions (Qs. 199 – 203) : Study the following tables carefully and answer the questions given below :

Number of cars (In thousands) of different Models and Colours sold in two Metro cities in a year

Type	Metro M					Metro H				
	Colour					Colour				
	Black	Red	Blue	White	Silver	Black	Red	Blue	White	Silver
A	40	25	55	75	15	45	32	40	60	20
B	20	35	60	80	20	30	37	39	81	35
C	35	30	50	90	35	40	42	41	6	37
D	45	40	45	85	40	35	39	37	90	42
E	50	35	35	60	30	50	44	43	77	22
F	55	42	40	65	52	47	34	45	87	17

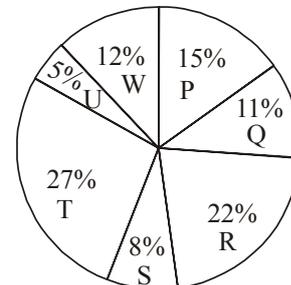
199. The difference between the white-coloured cars sold in the two metros of which of the following models is the **minimum**?
 (a) A (b) C
 (c) D (d) F
 (e) None of these
200. The total number of blue-coloured cars of Model E and D sold in Metro H is exactly equal to the number of white-coloured cars of which model in Metro M?
 (a) B (b) F
 (c) C (d) A
 (e) None of these
201. What is the difference between the number of blue-colour cars of model 'C' sold in Metro M and number of red colour cars of model 'F' sold in Metro H?
 (a) 8,000 (b) 10,000
 (c) 12,000 (d) 15,000
 (e) None of these

202. The total number of silver-coloured cars sold in Metro H is **approximately** what percentage of that in Metro M?
 (a) 130 (b) 140
 (c) 90 (d) 100
 (e) 110
203. In Metro M the number of cars sold was **maximum** for which of the colour-model combinations?
 (a) White - C (b) Blue - B
 (c) Silver - B (d) White - D
 (e) None of these

Directions (Qs. 204-208) : Study the following graph and answer the following: -

Cost of total production (both items together) by seven companies = rupees 25 crore

Percentage of total production by seven companies



Ratio of production between item A and B and the percent profit earned for the two items

Company	Ratio of production		Percent profit earned	
	ITEMA	ITEMB	ITEMA	ITEMB
P	2	3	25%	20%
Q	3	2	32%	35%
R	4	1	20%	22%
S	3	5	15%	25%
T	5	3	28%	30%
U	1	4	35%	25%
W	1	2	30%	24%

204. What is the total cost of production of item A by company P and R together?
 (a) 3.9 (b) 4.9
 (c) 5.9 (d) 6.9
 (e) None of these
205. Cost of production of item A by company U is what percent of the cost of production of item B by company S?
 (a) 10% (b) 15%
 (c) 16.67% (d) 33.33%
 (e) None of these
206. What is the total profit earned by company W for items A and B together?
 (a) 78 lakh (b) 1.62 cr
 (c) 7.8 lakh (d) 68 lakh
 (e) None of these
207. What is the ratio of the cost of production of item A by company P to the cost of production of item A by company S?
 (a) 1:2 (b) 1:3
 (c) 3:1 (d) 2:1
 (e) None of these

208. What is the amount of profit earned by company S on item B? (approx.)
- (a) 21 lakh (b) 28 lakh
(c) 31 lakh (d) 35 lakh
(e) None of these

Directions (Qs. 209 - 213) : Study the following table carefully and answer the questions given below it. Number of candidates from different locations appeared and passed in a competitive examination over the years

Year	Rural		Semi-urban		State capitals		Metropolises	
	App.	Passed	App.	Passed	App.	Passed	App.	Passed
1990	1652	208	7894	2513	5054	1468	9538	3214
1991	1839	317	8562	2933	7164	3248	10158	4018
1992	2153	932	8139	2468	8258	3159	9695	3038
1993	5032	1798	9432	3528	8529	3628	11247	5158
1994	4915	1658	9784	4015	9015	4311	12518	6328
1995	5628	2392	9969	4263	1725	4526	13624	6419

209. For the candidates from which of the following locations was there continuous increase both in appeared and passed?
- (a) Semi-urban (b) State capitals
(c) State capital & Rural (d) Metropolises
(e) None of these
210. In which of the following years was the percentage passed to appeared candidates from Semi-urban area the least?
- (a) 1991 (b) 1993
(c) 1990 (d) 1992
(e) None of these
211. What **approximate** value was the percentage drop in the number of Semi-urban candidates appeared from 1991 to 1992?
- (a) 5 (b) 10
(c) 15 (d) 8
(e) 12
212. In 1993 percentage of candidates passed to appeared was **approximately** 35 from which location?
- (a) Rural (b) Rural and Metropolises
(c) Semi-urban and Metropolises (d) Rural and Semi-urban
(e) None of these
213. The total number of candidates passed from Rural in 1993 and Semi-urban in 1990 was exactly equal to the total number of candidates passed from State capital in which of the following years?
- (a) 1990 (b) 1993
(c) 1994 (d) 1992
(e) None of these

Directions (Qs. 214–218) : Study the following table carefully and answer the questions given below:

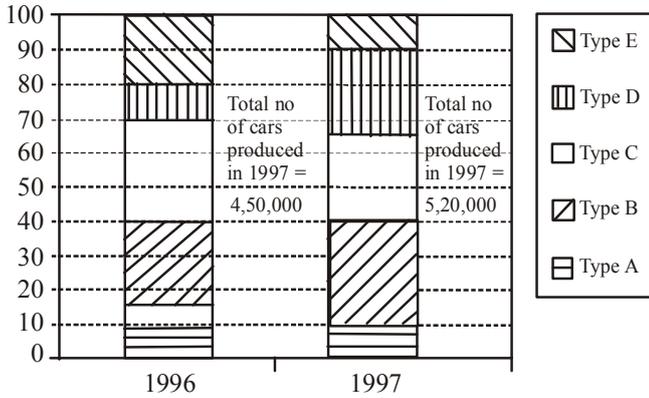
Marks (out of 50) obtained by five students P, Q, R, S and T in five subjects in five periodical examination of each subject

Sub	Students														
	P					Q					R				
	Periodicals														
	I	II	III	IV	V	I	II	III	IV	V	I	II	III	IV	V
Math	40	30	45	20	35	30	20	35	45	40	30	35	40	45	40
Sc.	30	40	25	30	20	25	45	30	37	28	48	46	31	40	80
His	35	25	15	30	40	33	27	40	34	26	35	45	40	30	35
Geo	45	47	32	39	37	42	43	30	40	25	25	35	48	37	25
Eng	24	28	36	39	43	30	28	37	34	31	26	28	31	30	40

Sub	Students									
	S					T				
	Periodicals									
	I	II	III	IV	V	I	II	III	IV	V
Math	25	35	40	45	30	29	31	39	41	40
Sc.	31	34	38	27	30	44	36	40	30	40
His	34	40	36	42	48	37	43	35	45	40
Geo	39	37	44	40	30	38	39	33	40	40
Eng	31	34	35	45	40	30	30	35	45	40

214. What was the average marks of the five subjects of student Q in the 1st periodical?
- (a) 32 (b) 34
(c) 40 (d) 30
(e) None of these
215. What was the total of marks of student T in Science in all the periodicals together?
- (a) 160 (b) 180
(c) 190 (d) 140
(e) None of these
216. The average percentage of marks obtained by student P in Maths in the five periodicals was exactly equal to the average percentage of marks obtained by student R in the five periodicals in which of the following subjects?
- (a) English (b) Geography
(c) Science and Geography (d) Maths
(e) None of these
217. In which of the following subjects was the average percentage of marks obtained by student S the highest?
- (a) Maths (b) Science
(c) History (d) Geography
(e) English
218. In which of the periodicals the student P obtained, highest percentage of marks in Geography?
- (a) I (b) II
(c) III (d) IV
(e) V

Directions (Qs. 219-223) : Study the following graph carefully and then answer the questions based on it. The percentage of five different types of cars produced by the company during two years is given below.



219. What was the difference in the production of C type cars between 1996 and 1997?
 (a) 5,000 (b) 7,500
 (c) 10,000 (d) 2,500
 (e) None of these
220. If 85% of E type cars produced during 1996 and 1997 are being sold by the company, then how many E type cars are left unsold by the company?
 (a) 1,42,800 (b) 21,825
 (c) 29,100 (d) 25,200
 (e) None of these
221. If the number of A type cars manufactured in 1997 was the same as that of 1996, what would have been its **approximate** percentage share in the total production of 1997?
 (a) 11 (b) 13
 (c) 15 (d) 9
 (e) None of these
222. In the case of which of the following types of cars was the percentage increase from 1996 to 1997 the maximum?
 (a) A (b) E
 (c) D (d) B
 (e) C
223. If the percentage production of B type cars in 1997 was the same as that of 1996, what would have been the number of cars produced in 1997?
 (a) 1,12,500 (b) 1,20,000
 (c) 1,30,000 (d) Data inadequate
 (e) None of these

Directions (Qs. 224-228) : Read the following table carefully and answer the questions given below it:

Average marks obtained by 20 boys and 20 girls in five subjects from five different schools

Subject	Max Marks	P		Q		R		S		T	
		B	G	B	G	B	G	B	G	B	G
Eng	200	85	90	80	75	100	110	65	60	105	110
Hist	100	40	55	45	50	50	55	40	45	65	60
Geo	100	50	40	40	45	60	55	50	55	60	65
Math	200	120	110	95	85	135	130	75	80	130	135
Scien	200	105	125	110	120	125	115	85	90	140	135

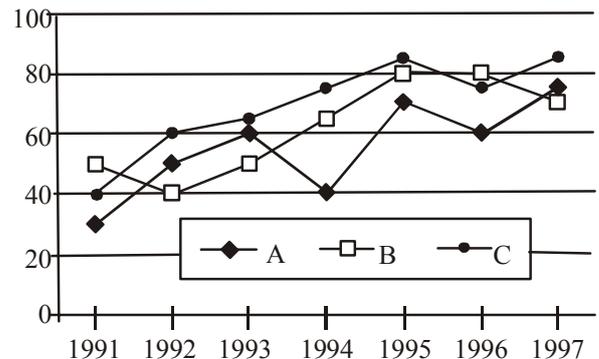
In above table, B = Boys and G = Girls

224. What was the total marks obtained by boys in History from school Q?
 (a) 900 (b) 1000

- (c) 800 (d) 1300
 (e) None of these
225. In which of the following subjects did the girls have highest average percentage of marks from all the schools?
 (a) Science (b) Geography
 (c) English (d) History
 (e) Mathematics
226. The pooled average marks of both boys and girls in all the subjects was minimum from which of the following schools?
 (a) Q (b) P
 (c) T (d) S
 (e) R
227. In the case of which of the following schools was total marks obtained by girls in mathematics 100% more than the total marks obtained by boys in History?
 (a) R (b) S
 (c) P (d) Q
 (e) T
228. What was the difference between the total marks obtained in Mathematics by boys from school R and the girls from school S?
 (a) Nil (b) 1100
 (c) 100 (d) 1200
 (e) None of these

Directions (Qs. 229-233) : Study the following graph carefully and answer the questions given below it:

Imports of 3 companies over the years
 ₹ in crores

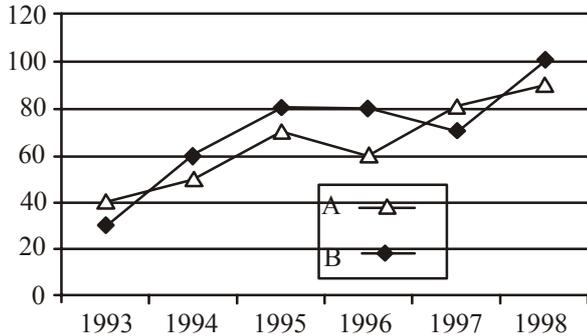


229. In which of the following years, the imports made by Company A was exactly equal to average imports made by it over the given years?
 (a) 1992 (b) 1993
 (c) 1994 (d) 1995
 (e) None of these
230. In which of the following years was the difference between the imports made by Company B and C the maximum?
 (a) 1995 (b) 1994
 (c) 1991 (d) 1992
 (e) None of these
231. In which of the following years was the imports made by Company A exactly half of the total imports made by Company B and C together in that year?
 (a) 1992 only (b) 1993 only
 (c) 1992 and 1993 (d) 1995 only
 (e) None of these

232. What was the percentage increase in imports by Company B from 1992 to 1993?
 (a) 10 (b) 25
 (c) 40 (d) 20
 (e) None of these
233. In which of the following years was the total imports made by all the three companies together the maximum?
 (a) 1996 only (b) 1997 only
 (c) 1995 only (d) 1995 and 1997 only
 (e) None of these

Directions (Qs. 234-238) : Study the graph carefully and answer the questions given below it.

Per cent profit earned by the two companies A & B over the year



234. If income for Company A in the year 1994 was 35 lakhs what was the expenditure for Company B in the same year?
 (a) 123.5 lakhs (b) 128 lakhs
 (c) 132 lakhs (d) Data inadequate
 (e) None of these

235. The income of Company A in 1996 and the income of Company B in 1997 are equal. What will be the ratio of expenditure of Company A in 1996 to the expenditure of Company B in 1997?
 (a) 26 : 7 (b) 37 : 6
 (c) 15 : 170 (d) 116 : 17
 (e) None of these
236. During which of the following years the ratio of percent profit earned by Company A to that of Company B was the maximum?
 (a) 1993 & 1996 both
 (b) 1995 & 1997 both
 (c) 1993 only
 (d) 1998 only
 (e) None of these
237. If the expenditure of Company B increased by 20% from 1995 to 1996, the income in 1996 will be how many times the income in 1995?
 (a) 2.16 times (b) 1.5 times
 (c) 1.8 times (d) equal
 (e) None of these
238. If the income of Company A in 1996 was ₹ 36 lakhs, what was the expenditure of Company A in 1996?
 (a) 22.5 lakhs (b) 28.8 lakhs
 (c) 20 lakhs (d) 21.6 lakhs
 (e) None of these

Directions (Qs. 239-243) : Study the following table carefully and answer the questions given below it:

Statewise and Disciplinary Number of Candidates Appeared (App.) and Qualified (Qual.) at a competitive Examination)

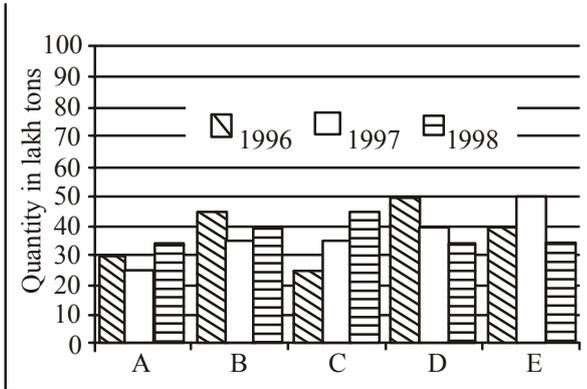
State	A.P.		U.P.		Kerala		Orissa		M.P.		W.B.		Total	
	App.	Qual.	App.	Qual.	App.	Qual.	App.	Qual.	App.	Qual.	App.	Qual.	App.	Qual.
Arts	5420	1840	4980	1690	2450	845	3450	1200	7500	2000	4800	1500	28600	9075
Commerce	8795	2985	6565	2545	3500	2040	4800	2200	8400	2400	7600	2700	39660	14870
Science	6925	2760	8750	3540	4250	2500	4500	1950	6850	3000	8500	3200	39775	16950
Engineering	1080	490	2500	1050	1200	450	1850	850	2500	750	3400	1400	12530	4990
Agriculture	2040	850	1085	455	700	200	450	150	1500	475	1200	500	5775	2130
Total	23060	8425	23880	9280	12100	6035	15050	6350	26750	8625	25500	9300	126340	48015

239. For which of the following disciplines the proportion of qualifying candidates to the appeared candidates from U.P. State is the lowest?
 (a) Arts (b) Commerce
 (c) Science (d) Engineering
 (e) Agriculture
240. For which of the pair of States, the qualifying percentage from Agriculture discipline is exactly the same?
 (a) A.P. & U.P.
 (b) A.P. & West Bengal
 (c) U.P. & West Bengal
 (d) Kerala & Orissa
 (e) None of these
241. For which of the following states the percentage of candidates qualified to appeared is the minimum for commerce discipline?

- (a) AP (b) UP
 (c) Kerala (d) Orissa
 (e) MP
242. **Approximately** what is the ratio between total qualifying percentage of UP and that of MP?
 (a) 15 : 16 (b) 13 : 14
 (c) 14 : 13 (d) 19 : 16
 (e) 17 : 16
243. The qualifying percentage for which of the following states is the lowest for Science discipline?
 (a) AP (b) UP
 (c) Kerala (d) West Bengal
 (e) None of these

Directions (Qs. 244 -248) : Study the following graph carefully to answer these questions.

The production of fertilizer in lakh tons by different companies for three years 1996, 1997 & 1998



244. The total production by five companies in 1998 is what per cent of the total production by companies B & D in 1996?
 (a) 100% (b) 150%
 (c) 95% (d) 200%
 (e) None of these
245. What is the ratio between average production by Company B in three years to the average production by company C in three years?
 (a) 6 : 7 (b) 8 : 7
 (c) 7 : 8 (d) 7 : 6
 (e) None of these
246. For which of the following companies the rise or fall in production of fertiliser from 1996 to 1997 was the maximum?
 (a) A (b) B
 (c) C (d) D
 (e) E
247. What is the per cent drop in production by Company D from 1996 to 1998?
 (a) 30 (b) 43
 (d) 50 (d) 35
 (e) None of these
248. The average production for three years was maximum for which of the following companies?
 (a) B only (b) D only
 (c) E only (d) B & D both
 (e) D & E both

Directions (Qs. 249-253): Study the following table to answer the given questions.

Number of students of different classes of a school playing different games.							
Class → Games ↓	XII	XI	X	IX	VIII	VII	VI
Chess	11	12	5	4	2	2	1
Cricket	38	40	12	17	25	18	20
Basket ball	11	9	7	6	0	0	0
Table Tennis	9	9	21	19	11	9	0
Football	40	27	18	19	12	16	14
Carrom	16	15	8	19	12	16	14
Tennis	8	9	11	5	6	0	0
Badminton	47	39	33	21	19	0	0

249. **Approximately** what per cent of Class VIII students play Cricket out of the total students playing Cricket?
 (a) 13 (b) 4
 (c) 25 (d) 15
 (e) 17
250. What is the ratio of the students playing Football in Class XI to those in Class X?
 (a) 1 : 2 (b) 2 : 5
 (c) 2 : 3 (d) 3 : 2
 (e) None of these
251. Which game is the most popular?
 (a) Badminton (b) Football
 (c) Carrom (d) Table Tennis
 (e) Cricket
252. **Approximately** what per cent of Class X students play the Table Tennis out of the total Class X students playing the different given games?
 (a) 20 (b) 21
 (c) 27 (d) 26
 (e) 18
253. Which game has ascending number of students from class IX to XII?
 (a) Only Basketball (b) Only Badminton
 (c) Chess and Badminton (d) No game
 (e) None of these

Directions (Qs. 254-263) : Study the following charts and answer the following questions:

The students of a school have an option to study either only English, only maths or both. Out of 175 students in the school, boys and girls are in the ratio of 3:4 respectively. 40% percent of the boys opted only for English. 44% of the students opted only for maths. Out of the number of girls 32% opted for both the subjects. The number of boys who opted for only maths and both subjects are in the ratio of 2:1 respectively.

Explanation

Boys = 75 (only English = 30, only maths = 30, both subjects = 15)
 Girls = 100 (only English = 21, only maths = 47, both subjects = 32)

254. What is the ratio of the number of boys who have opted for only English and the number of girls who have opted both subjects?
 (a) 14:17 (b) 15:16
 (c) 12:13 (d) 16:19
 (e) None of these
255. How many boys have opted for both subjects?
 (a) 21 (b) 32
 (c) 30 (d) 15
 (e) None of these
256. How many girls are opted for only maths?
 (a) 32 (b) 20
 (c) 47 (d) 15
 (e) None of these
257. The number of boys who opted for only maths is what percent less than number of girls who opted for maths?
 (a) 32% (b) 33%
 (c) 36% (d) 38%
 (e) None of these

Directions (Qs 258-263) : Study the following charts and answer the following questions:

In a school there are total of 240 staff members and 1600 students. 65 percent of the numbers of staff members are teachers and the remaining staff members are administrative officials. Out of the total number of the students 45 percent are girls. Twenty percent of the number of girls can speak only English. The remaining girls can speak both Hindi and English. Three-fourths of the number of boys can speak only English. The remaining boys can speak both Hindi and English. Two-thirds of the numbers of teachers are males. Five-fourteens of the number of the administrative officials are females.

258. What is the difference between the number of boys (students) who can speak both Hindi and English and the number of girls (students) who can speak both Hindi and English?
 (a) 346 (b) 356
 (c) 376 (d) 400
 (e) None of these
259. The total number of girls students is what percent of the total number of staff members in the school?
 (a) 100% (b) 200%
 (c) 300% (d) 400%
 (e) None of these
260. What is the difference between the number of total number of female administrative officials, female teachers and the number of male administrative officials?
 (a) 14 (b) 22
 (c) 28 (d) 30
 (e) None of these
261. What is the ratio of the total number of teachers to the number of boys (students) who can speak English only?
 (a) 13:53 (b) 13:55
 (c) 13:56 (d) 13:57
 (e) None of these
262. What is the total number of male administrative officials, female teachers and girls (students) who can speak English only?
 (a) 125 (b) 225
 (c) 250 (d) 300
 (e) None of these
263. What is the ratio of the number of male administrative staff to the number of girls students who speak only English?
 (a) 5:8 (b) 3:11
 (c) 3:7 (d) 3:8
 (e) None of these

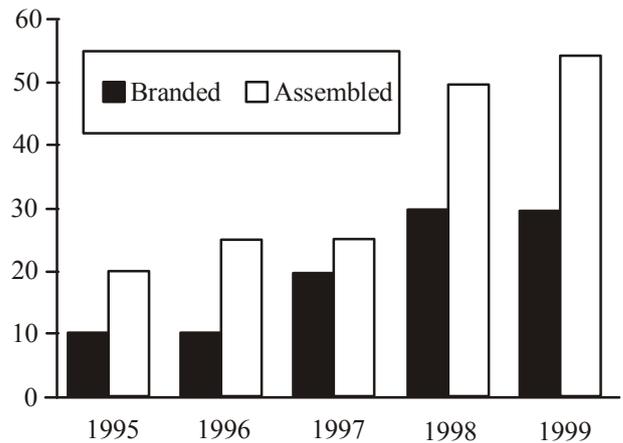
Directions (Qs. 264-268) : Study the following table carefully and answer the questions given below :

Production of main crops in India (in million tonnes)						
Crops	91 - 92	92 - 93	93 - 94	94 - 95	95 - 96	96 - 97
Pulses	20.5	22.4	24.6	23.5	27.8	28.2
Oilseeds	32.4	34.6	40.8	42.4	46.8	52.4
Rice	80.5	86.4	88.2	92.6	94.2	90.8
Sugarcane	140.8	150.2	152.2	160.3	156.4	172.5
Wheat	130.2	138.4	146.8	141.6	152.2	158.4
Coarse grain	45.6	52.8	60.4	62.4	58.2	62.8
Sum	450	484.8	513.2	522.8	535.6	565.1

264. Production of sugarcane in 1993 - 94 was **approximately** what percentage of the production of rice in 1992 - 93?
 (a) 50 (b) 75
 (c) 150 (d) 125
 (e) 175
265. Production of what type of crop was going to increase in each year in the given years?
 (a) Rice (b) Pulse
 (c) Sugarcane (d) Oilseeds
 (e) None of these
266. What was the average production of pulse in the given years?
 (a) 26.8 million tonnes (b) 20.5 million tonnes
 (c) 24.5 million tonnes (d) 22.5 million tonnes
 (e) None of these
267. Production of oilseeds was what percentage of the total crops produced in the year 1991 - 92?
 (a) 7.2 (b) 8.4
 (c) 2.7 (d) 6.4
 (e) None of these
268. In which of the following years the total production of oilseeds in the years 1994 - 95, 1995 - 96 and 1996 - 97 was equal to the production of wheat?
 (a) 1993 - 94 (b) 1994 - 95
 (c) 1996 - 97 (d) 1992 - 93
 (e) None of these

Directions (Qs. 269-273): Study the following graph carefully and answer the questions given below:

The following graph shows the percentage growth of Branded and Assembled PCs



269. What is the average percentage growth of sales of Assembled PCs for the given years?
 (a) 30 (b) 20
 (c) 40 (d) 35
 (e) None of these
270. If the Branded PCs sold in 1996 were 100000, how many Branded PCs were sold in 1999?
 (a) 202800 (b) 156000
 (c) 234000 (d) Cannot be determined.
 (e) None of these
271. What is the difference between total Branded and total Assembled PCs sold for the given years?

- (a) 75000 (b) 750000
 (c) 175000 (d) Cannot be determined
 (e) None of these
272. In which year is the difference in the growth between Branded and Assembled PCs lowest?
 (a) 1995 (b) 1998
 (c) 1999 (d) 1996
 (e) None of these
273. For Assembled PCs sale, which year is the per cent growth the highest compared to previous year?
 (a) 1999 (b) 1996
 (c) 1998 (d) Cannot be determined
 (e) None of these

Directions (Qs. 274-278): Study the following table to answer the given questions.

Average production of six machines for the given years in thousands						
Year	Machine I	Machine II	Machine III	Machine IV	Machine V	Machine VI
1999	620	400	1020	2050	680	980
1998	680	400	1040	2070	670	1000
1997	640	403	1043	2130	680	1020
1996	700	399	1060	1908	690	1060
1995	706	397	1080	1603	685	1200

274. For which machine has there been continuous increase in production from its previous years?
 (a) No machine (b) III
 (c) IV (d) II
 (e) None of these
275. For which year and the machine has the production been highest for the given data?
 (a) 1999, IV (b) 1998, IV
 (c) 1997, III (d) 1996, IV
 (e) None of these
276. Which of the following can be concluded?
 (a) As the machine becomes older, the production goes down.
 (b) The production goes down in the initial two or three years then it starts improving.
 (c) All the fluctuations from one year to the other are in the range of 100.
 (d) Each even-numbered machine produces more than the odd-numbered.
 (e) None of these
277. Which machine has shown the least fluctuation in production?
 (a) I (b) II
 (c) V (d) VI
 (e) None of these
278. How many machines have production lower than 700 for all the given years?
 (a) Nil (b) One
 (c) Two (d) Three
 (e) None of these

Directions (Q. 279-286): Read the following table carefully and answer the questions given below.

Highest marks and average marks obtained by students in subjects over the years

The maximum marks in each subject is 100.

	Subjects									
	English		Hindi		Maths		Science		History	
	High	Avg	High	Avg	High	Avg	High	Avg	High	Avg
1992	85	62	75	52	98	65	88	72	72	46
1993	80	70	80	53	94	60	89	70	65	55
1994	82	65	77	54	85	62	95	64	66	58
1995	71	56	84	64	92	68	97	68	68	49
1996	75	52	82	66	91	64	92	75	70	58
1997	82	66	81	57	89	66	98	72	74	62

279. What was the grand average marks of the five subjects in 1996?
 (a) 63 (b) 64
 (c) 65 (d) 68
 (e) None of these
280. The difference in the average marks in History between 1994 and 1995 was exactly equal to the difference in the highest marks in Hindi between which of the following pairs of years?
 (a) 1992 and 1995 (b) 1993 and 1995
 (c) 1992 and 1996 (d) 1993 and 1997
 (e) None of these
281. What was the **approximate** percentage increase in average marks in History from 1992 to 1993?
 (a) 20 (b) 25
 (c) 24 (d) 16
 (e) 18
282. The average highest marks in English in 1992, 1993 and 1996 was exactly equal to the highest marks in Hindi in which of the following years?
 (a) 1996 (b) 1997
 (c) 1994 (d) 1996
 (e) 1993
283. The difference between the highest marks and the average marks in Hindi was maximum in which of the following years?
 (a) 1994 (b) 1997
 (c) 1995 (d) 1996
 (e) 1993
284. The highest marks in Hindi in 1993 was what per cent of the average marks in Mathematics in 1996?
 (a) 135 (b) 130
 (c) 125 (d) 140
 (e) None of these
285. If there were 50 students in 1993, what was the total marks obtained by them in Mathematics?
 (a) 2400 (b) 3000
 (c) 2500 (d) 3200
 (e) None of these

ANSWER KEY

1	(c)	26	(b)	51	(a)	76	(a)	101	(c)	126	(c)	151	(a)	176	(b)	201	(e)	226	(d)	251	(e)	276	(e)
2	(a)	27	(c)	52	(c)	77	(b)	102	(e)	127	(a)	152	(d)	177	(e)	202	(c)	227	(b)	252	(e)	277	(b)
3	(b)	28	(e)	53	(b)	78	(b)	103	(c)	128	(d)	153	(e)	178	(c)	203	(a)	228	(b)	253	(e)	278	(c)
4	(c)	29	(c)	54	(d)	79	(a)	104	(a)	129	(c)	154	(b)	179	(d)	204	(c)	229	(e)	254	(b)	279	(a)
5	(a)	30	(b)	55	(a)	80	(b)	105	(c)	130	(a)	155	(d)	180	(a)	205	(e)	230	(d)	255	(d)	280	(a)
6	(e)	31	(c)	56	(e)	81	(c)	106	(e)	131	(d)	156	(c)	181	(b)	206	(a)	231	(a)	256	(c)	281	(a)
7	(c)	32	(d)	57	(d)	82	(d)	107	(d)	132	(c)	157	(a)	182	(e)	207	(d)	232	(b)	257	(c)	282	(e)
8	(a)	33	(c)	58	(c)	83	(e)	108	(b)	133	(d)	158	(d)	183	(b)	208	(c)	233	(c)	258	(b)	283	(c)
9	(d)	34	(a)	59	(b)	84	(a)	109	(a)	134	(d)	159	(c)	184	(a)	209	(e)	234	(d)	259	(c)	284	(c)
10	(b)	35	(b)	60	(c)	85	(b)	110	(c)	135	(b)	160	(b)	185	(e)	210	(d)	235	(e)	260	(c)	285	(b)
11	(d)	36	(c)	61	(d)	86	(c)	111	(d)	136	(d)	161	(a)	186	(d)	211	(a)	236	(c)	261	(b)	286	(e)
12	(e)	37	(c)	62	(b)	87	(d)	112	(a)	137	(a)	162	(c)	187	(b)	212	(a)	237	(e)	262	(c)	287	(b)
13	(a)	38	(b)	63	(d)	88	(e)	113	(c)	138	(b)	163	(d)	188	(c)	213	(c)	238	(a)	263	(d)	288	(c)
14	(b)	39	(a)	64	(e)	89	(a)	114	(c)	139	(d)	164	(c)	189	(a)	214	(a)	239	(a)	264	(e)	289	(a)
15	(c)	40	(d)	65	(c)	90	(b)	115	(d)	140	(a)	165	(a)	190	(b)	215	(c)	240	(b)	265	(d)	290	(c)
16	(c)	41	(e)	66	(b)	91	(c)	116	(a)	141	(d)	166	(e)	191	(d)	216	(b)	241	(e)	266	(c)	291	(c)
17	(a)	42	(c)	67	(a)	92	(d)	117	(b)	142	(b)	167	(b)	192	(b)	217	(c)	242	(d)	267	(a)	292	(c)
18	(d)	43	(d)	68	(e)	93	(e)	118	(c)	143	(c)	168	(e)	193	(c)	218	(b)	243	(d)	268	(b)	293	(b)
19	(b)	44	(e)	69	(c)	94	(a)	119	(b)	144	(a)	169	(b)	194	(b)	219	(a)	244	(d)	269	(d)	294	(a)
20	(e)	45	(c)	70	(e)	95	(b)	120	(d)	145	(d)	170	(b)	195	(a)	220	(e)	245	(b)	270	(e)	295	(e)
21	(b)	46	(a)	71	(c)	96	(b)	121	(c)	146	(d)	171	(e)	196	(a)	221	(b)	246	(c)	271	(d)	296	(d)
22	(e)	47	(b)	72	(e)	97	(d)	122	(a)	147	(e)	172	(d)	197	(e)	222	(c)	247	(a)	272	(e)		
23	(b)	48	(b)	73	(a)	98	(e)	123	(e)	148	(b)	173	(b)	198	(d)	223	(c)	248	(e)	273	(c)		
24	(a)	49	(e)	74	(c)	99	(e)	124	(e)	149	(a)	174	(d)	199	(e)	224	(a)	249	(d)	274	(a)		
25	(d)	50	(c)	75	(b)	100	(a)	125	(d)	150	(b)	175	(a)	200	(a)	225	(a)	250	(d)	275	(e)		

Hints & Explanations

- (c) Total marks obtained by Meera
 $= 100 + 80 + 50 + 90 + 90 + 60 = 470$
- (a) Average marks obtained by seven students in History

$$= \frac{80 + 70 + 70 + 60 + 90 + 60 + 80}{7} = 72.86$$
- (b) Only Kunal and Soni got 60% or more marks in all the subjects.
- (c) Average percentage of Kunal

$$= \frac{90 + 70 + 60 + 90 + 70 + 70}{6} = 75\%$$

6-10:

Department	No. of employees	No. of males	No. of employees got promoted
Production	1260	1020	396
IT	540	408	312
HR	432	204	132
Marketing	648	306	264
Accounts	720	102	96

- (e) Number of males Promoted from the IT department

$$= \frac{1}{2} \times 312 = 156$$

$$\text{Required \%} = \frac{156}{408} \times 100 \approx 38\%$$

7. (c) Total number of females working in production and marketing departments together
 $= (1260 - 1020) + (648 - 306)$
 $= 240 + 342 = 582$
8. (a) Females working in Accounts department $= (720 - 102) = 618$
9. (d) Required % $= \frac{1200}{3600} \times 100 \approx 33\%$
10. (b) Required % $= \frac{132}{432} \times 100 \approx 30.56\%$

(11-15) :

Total number of boys $= \frac{1560 \times 7}{12} = 910$

Total number of girls $= 1560 - 910 = 650$

Hobby	Boys	Girls
Painting	385	130
Singing	91	182
Dancing	182	65
Dancing and Singing	78	156
Dancing and Painting	104	52
Dancing, Painting and Singing	70	65

11. (d) Total number of boys enrolled in dancing class.
 $= 182 + 70 + 104 + 78 = 434$
12. (e) Number of girls enrolled in singing class
 $= 156 + 182 + 65 = 403$
 \therefore Required percentage
 $= \frac{403}{1560} \times 100 = 26$
13. (a) Required number of students
 $= 70 + 65 = 135$
14. (b) Required percentage
 $= \frac{65}{182} \times 100 = 35.71$
15. (c) Required ratio
 $= 130 : 385 = 26 : 77$
16. (c) The difference was minimum in the year 2007.
 In the year 2007
 Difference $= 32438 - 29129 = 3309$
17. (a) Number of candidates passed from Chennai
 Year 2005 $\Rightarrow \frac{55492 \times 13}{100} = 7214$
 Year 2007 $\Rightarrow \frac{58492 \times 14}{100} = 8189$
18. (d) Number of candidates passed from Delhi in 2002 and 2006
 $= \frac{58248 \times 28}{100} + \frac{59216 \times 20}{100} = 16309 + 11843$
 $= 28152 \approx 28150$

19. (b) Required number of passed candidates.
 $= \frac{71253 \times 19}{100} = 13540$
20. (e) Required difference
 $= \frac{50248 \times 21}{100} - \frac{51124 \times 17}{100}$
 $10551 - 8691 = 1860$

(21 - 25) :

Department	Males	Females
HR	180	330
Marketing	330	191
IT	185	100
Production	630	63
Accounts	175	216

21. (b) Required percentage $= \frac{185}{1500} \times 100 = 12$
22. (e) Number of males in Accounts department $= 175$
23. (b) Required percentage
 $= \frac{(175 + 216)}{2400} \times 100 = 16.29$
24. (a) Required percentage $= \frac{63}{900} \times 100 = 7$
25. (d) Number of females is HR and Marketing department
 $= 330 + 191 = 521$
26. (b) Production of company AVC in 2000 $= 360$ crore units
 Average production of AVC over the given years
 $= \frac{300 + 300 + 300 + 360 + 370 + 340}{6}$
 $= \frac{1970}{6}$
 Hence, required per cent $= \frac{360 \times 6}{1970} \times 100$
 $= 109.64\% \approx 110\%$
27. (c) Approximate per cent increase or decrease in production from the previous year for SIO are as follows:
 $1998 = \frac{2}{85} \times 100 = 2.35\%$
 $1999 = \frac{2 \times 100}{87} = 2.29\%$
 $2000 = \frac{2 \times 100}{89} = 2.24\%$
 $2001 = \frac{1 \times 100}{91} = 1.09\%$
 $2002 = \frac{4 \times 100}{92} = 4.35\%$

You can solve it with simple rough work. See the difference of produced units between two consecutive years. The difference is maximum for 2001 to 2002, and production during all these years is almost same. Hence, in the year 2002 SIO registered maximum increase in production over the previous year.

28. (e) Sum of the productions of the companies in first three years and the last three years in ₹ crore is as follows:

Company	First three years	Last three years
TP	358	349
ZIR	238	267
AVC	900	1070
CTU	836	852
PEN	90	127
SIO	261	279

29. (c) Total production of the six companies in first two given years = $863 + 927 = 1790$
Again, total production of the six companies in last two given years = $989 + 991 = 1980$
Therefore, required per cent

$$= \frac{1790 \times 100}{1980} = 90.40\%$$

30. (b) The required difference
= $(91 - 90)$ crore units
= 1×10000000
= 10000000 units
31. (c) Those companies are:
ZIR PEN and SIO

32. (d)

School	Number of Girls	Number of Boys
P	1000	1500
Q	1350	1650
R	550	1450
S	675	1575
T	500	750
U	175	825

Number of boys in schools R and U together
= $(1450 + 825) = 2275$

$$\therefore \text{Required percentage} = \frac{2275}{3000} \times 100 = 75.83$$

33. (c) Number of boys in school T = 750
34. (a) Required percentage = $\frac{2000}{2250} \times 100 = 89$
35. (b) Required average = $\frac{1}{2}(1500 + 1650) = 1575$
36. (c) Required ratio = $20 : 27$
- (37 - 41):
37. (c) Required ratio

City	Number of Candidates passed	Number of candidates failed
A	87500	37500
B	196250	117750
C	48000	60000
D	56750	170250
E	111000	74000
F	159250	113750

$$170250 : 37500 = 227 : 50$$

38. (b) Required percentage = $\frac{1.08}{3.14} \times 100 = 34$
39. (a) Total number of candidates appearing from all the cities together = $(1.25 + 3.14 + 1.08 + 2.27 + 1.85 + 2.73)$ lakh = 12.32 lakh
 \therefore Required percentage
= $\frac{159250}{1232000} \times 100 = 12.93$
41. (e) Number of passed students from city E = 111000
42. (c) Expenditure of Company C in 2000
= $35 \times \frac{100}{140} = ₹ 25$ lakhs
43. (d) Here, the percentage profits of Companies B and C in 2001 were not the same. Therefore, can't be determined is the correct choice.
44. (e) Income of Company C in 2000
= $32 \times \frac{140}{100} = ₹ 44.80$ lakhs
45. (c) Req'd ratio = $145 : 155 = 29 : 31$
46. (a) Expenditure of Company D in 2000
= $31 \times \frac{100}{155} = ₹ 20$ lakhs
Profit = Income - Expenditure
= $31 - 20 = ₹ 11$ lakhs
47. (b) Required ratio
= $\frac{25780 \times 12}{100} : \frac{7390 \times 11}{100} = 3094 : 813$
48. (b) Required percentage = $\frac{24}{16} \times 100 = 150$
49. (e) Required difference
= $(11 - 7)\%$ of 7390 = $\frac{4 \times 7390}{100} = 296$
50. (c) It is obvious from the Pie chart.
Science $\Rightarrow \frac{25780 \times 28}{100} - \frac{7390 \times 32}{100}$
 $\approx 7218 - 2365 \approx 4853$
Engineering $\Rightarrow \frac{25780 \times 16}{100} - \frac{7390 \times 11}{100}$

- $\approx 4124 - 813 \approx 3311$
- Commerce $\Rightarrow \frac{25780 \times 18}{100} - \frac{7390 \times 16}{100}$
- $\approx 4640 - 1182 \approx 3458$
51. (a) Required number of candidates
- $= 23\% \text{ of } 7390 = \frac{23 \times 7390}{100} \approx 1700$
52. (c) Req'd % decrease $= \frac{4-3}{4} \times 100 = 25\%$
53. (b) Req'd % $= \frac{11}{7} \times 100 \approx 157\%$
54. (d) From the graph's slope, it is obvious that the maximum % increase is in the year 1996, i.e., 166.67%.
55. (a) Req'd difference $= 58 - 31 = 2700000$
56. (e) Average production for Company B $= \frac{31}{8} = 3.9$
57. (d) Req'd. % $= \frac{1200}{14900} \times 100 \approx 8\%$
58. (c) Total no. of Officers $= 2000 + 15000 + 17000 + 3500 + 14900 + 11360 + 9000 = 72760$
- Total no. of Clerks $= 5000 + 17000 + 19500 + 20000 + 17650 + 15300 + 11000 = 105450$
- Req'd difference $= 105450 - 72760 = 32690$
59. (b) Req'd more %
- $= \frac{11000 - 9000}{9000} \times 100 \approx 22\%$
60. (c) 300% more means four times the number of Clerks in Bangalore, which is in Hyderabad.
61. (d) No. of candidates in different centres: Bangalore $= 9850$; Mumbai $= 44470$; Delhi $= 43910$; Hyderabad $= 33950$, Kolkata $= 35120$; Lucknow $= 28840$; Chennai $= 22245$
62. (b) Let the investment of company B in 1996 be ₹ x lakhs.
- \therefore Investment of company B in 1997 $= ₹ \frac{7}{5} x$
- Income of company B in 1997 $= \frac{9}{5} \times \frac{7}{5} x = \frac{63}{25} x$
- \therefore Req'd. % $= \frac{63}{25} \times 100 = 252\%$
63. (d) Investment for each year is not given.
64. (e) Investment of company A in 1995 $= 21.7 \times \frac{100}{155}$
- $= ₹ 14$ lakhs
65. (c) Let ${}^{195}_{(A)} = {}^{96}_{(B)} = ₹ x$ lakhs
- \therefore Regd. ratio $= \frac{x \times \frac{100}{155}}{x} = 20 : 31$

66. (b) Income of company B in 1993
- $= 1540000 \times \frac{145}{100} = ₹ 22.33$ lakhs
67. (a) Strength of B in 1998 $= 132 + 9 - 2 + 0 + 3 = 142$
68. (e) Strength of workers in 1999

A	B	C	D	E
192	146	149	135	125

69. (c) Strength of C in 1996 $= 98 + 24 + 11 = 133$
- Strength of E in 1997 $= 125 + 2 + 4 - 3 = 128$
- \therefore Req'd. % $= \frac{133}{128} \times 100 \approx 104\%$
70. (e) Total strength of workers in all the five units in 1996 $= 160 + 139 + 133 + 107 + 131 = 670$.
71. (c) Increase in the strength of workers in D in 1998 $= 20 + 11 + 7 + 11 = 49$
- \therefore % increase $= 49/76 \times 100 \approx 64.47\%$
72. (e) Marks obtained by B $= 69\% \text{ of } 150 + 72\% \text{ of } 75 + 71\% \text{ of } 200 + 78\% \text{ of } 100 + 69\% \text{ of } 50 + 66\% \text{ of } 75 = 103.50 + 54 + 142 + 78 + 34.5 + 49.50 = 461.5$
73. (a) Average marks $= \frac{420}{6} \times \frac{75}{100} = 52.5$
74. (c) Difference $= 181.50 - 138.75 = 42.75$
75. (b) % marks obtains by A $= \frac{233 \times 100}{300} = 77.67\%$

(76-78): No. of boys $= \frac{3}{7} \times 175 = 75$

No. of girls $= 175 - 75 = 100$

No. of boys who opt only Hindi

$= 40\% \text{ of } 75 = 30$

Remaining boys $= 75 - 30 = 45$

No. of boys who opt only Sanskrit

$= \frac{2}{3} \times 45 = 30$

No. of boys who opt composite subjects

$= 45 - 30 = 15$

Total no. of students who opt only Sanskrit

$= 44\% \text{ of } 175 = 77$

No. of girls who opt only Sanskrit

$= 77 - 30 = 47$

No. of girls who opt composite subjects $= 32$

No. of girls who opt Hindi only

$= 100 - (32 + 47) = 21$

76. (a) Req'd ratio $= 30 : 32 = 15 : 16$

79. (a) Number of candidates who applied for Science

$= 88000 \times \frac{22}{100} = 19360$

Number of candidates selected for Science

- $= 14400 \times \frac{24}{100} = 3456$
 Required difference = $19360 - 3456 = 15904$
80. (b) Number of candidates who applied for Arts
 $= 88000 \times \frac{17}{100} = 14960$
 Number of selected candidates in Maths and English
 $= 14400 \times \frac{38}{100} = 5472$
 Required sum = $14960 + 5472 = 20432$
81. (c) Required ratio = $(14 + 20) : (28 + 24) = 34 : 52 = 17 : 26$
82. (d) Number of applicants for English = $88000 \times \frac{24}{100} = 21120$
 Number of selected candidates = $\frac{14400 \times 28}{100} = 4032$
 Required percentage = $\frac{4032}{21120} \times 100 \approx 19$
83. (e) Required average = $\frac{1}{3} \times \frac{14400 \times 63}{100} = 3024$
84. (a) Required average = $\frac{1}{3} \left(960 \times \frac{5}{8} + 1840 \times \frac{7}{16} + 1600 \times \frac{8}{25} \right)$
 $= \frac{1}{3} (600 + 805 + 512) = \frac{1}{3} \times 1917 = 639$
85. (b) Required number of shirts = $1120 \times \frac{3}{8} = 420$
86. (c) Required number of trousers = $1720 \times \frac{19}{43} + 1120 \times \frac{5}{8}$
 $= 760 + 700 = 1460$
87. (d) Number of shirts manufactured by Company Q
 $= 1600 \times \frac{8}{25} = 512$
 Required percentage = $\frac{512}{1600} \times 100 = 32\%$
 Alternatively
 Required percentage = $\frac{8}{8+17} \times 100 = \frac{8}{25} \times 100 = 32\%$
88. (e) Required ratio = $960 \times \frac{5}{8} : \frac{1120 \times 5}{8}$
 $= 96 : 112 = 6 : 7$
89. (a) Required difference
 $= [(12 + 7 + 6) - (5 + 7 + 5)]$ thousand
 $= (25 - 17)$ thousand = 8 thousand
90. (b) Required difference = $10 + 7 - 7 = 10$ thousand
91. (c) Percentage decrease = $\frac{10-6}{10} \times 100 = 40\%$
92. (d) Required average
 $= \left(\frac{12+15+10+11+13+8}{6} \right)$ thousand
 $= \frac{69}{6} \times 1000 = 11500$
93. (e) Required answer = 17000
94. (a) Percentage processing of wool in the month of March by different companies.
 Polar = 23.33%. Shepherd = 19.51%,
 Kiwi = 20.41%, Warmwear = 20.18%
 Comfy = 21.84%
95. (b) Reqd % = $\frac{1100}{1000} \times 100 = 110\%$
96. (b) If we see the table, we find that only Shepherd shows less value in February in comparison to the month of April So, it gives the maximum ratio.
97. (d) Shepherd shows the lowest processing in the month of February and March.
98. (e) Reqd % = $\frac{4900}{4100} \times 100 \approx 120\%$
99. (e) Sale of Pep-up was the maximum in the year 1989.
100. (a) Avg annual sale of Dew-drop
 $= \frac{10+15+25+15+30+25}{6} = 20$ lakhs
 Avg. annual sale of Cool-sip
 $= \frac{25+7+20+20+25+30}{6} = 21.16$ lakhs
 Avg. annual sale of Pep-up
 $= \frac{30+35+30+25+20+20}{6} = 26.66$ lakhs
101. (c) Reqd % = $\frac{25-20}{20} \times 100 = 25\%$
102. (e) Reqd no. = $(30 - 20)$ lakhs = 1000000
103. (c) Reqd % drop = $\frac{35-30}{35} \times 100 \approx 14\%$
104. (a) Total no. of students studying in all schools in 1992
 $= (1025 + 230 + 190 + 950 + 350 + 225 + 1100 + 320 + 300 + 1500 + 340 + 300 + 1450 + 250 + 280) - (120 + 110 + 150 + 115 + 130 + 150 + 150 + 160 + 125 + 130)$
 $= 8810 - 1340 = 7470$
 \therefore Average = $\frac{7470}{5} = 1494$
105. (c) Number of students studying in school B in 1994
 $= 950 + (350 - 150) + (225 - 115) + (185 - 110) + (200 - 90)$
 $= 950 + 200 + 110 + 75 + 110 = 1445$
106. (e) Number of students leaving school 'C' from 1990 to 1995 = $130 + 150 + 125 + 140 + 180 = 725$

Number of students admitted during the period
 $= 1100 + 320 + 300 + 260 + 240 + 310 = 2530$

$$\therefore \text{Required percentage} = \frac{725}{2530} \times 100 \approx 29\%$$

107. (d) Required difference $= (340 + 300 + 295 + 320 + 360) - (350 + 225 + 185 + 200 + 240) = 1615 - 1200 = 415$

108. (b) Increase in no. of students in school A
 $= (230 - 120) + (190 - 110) + (245 - 100) + (280 - 150) + (250 - 130) = 585$

\therefore % increase from 1990 (1025) to 1995

$$= \frac{585}{1025} \times 100 = 57.07\%$$

Similarly, we can calculate for other schools.

Percentage increases in all schools are given in the following

A	B	C	D	E
57.07%	64.73%	64.09%	61.33%	62.41%

109. (a) Total no of IT officers recruitment in Bank A = 11% of 728 = 80 (approx)

Total no of IT officers recruitment in Bank C = 11% of 567 = 62 (approx)

Difference between A & C = 18

Some of the newly employed IT officers left A and Joined C. The number of new requirements of IT officers in A and C have now become equal.

i.e 9 IT officers left from Bank A and joined Bank C

The approximate percentage of new recruits who left A $= (9/80) + 100 = 11\%$ (approx)

110. (c) Total law officers in C, E, F = 10% of $(567 + 427 + 508) = 150$ (approx)

Total law officers in A, B, D = 10% of $(728 + 945 + 825) = 250$ (approx)

Law officers in C, E, F are less than A, B, D = $[250 - 150 / 250] + 100 = 40\%$

111. (d) Ratio = $[27\% \text{ of } (567 + 427) / 27\% \text{ of } (825 + 508)] = 994 : 1333$

112. (a) Initial

Requirement of Rajbhasha Adhikaris in D = 15% of 825 = 124 (approx)

Requirement of Rajbhasha Adhikaris in F = 15% of 508 = 76 (approx)

Total strength = 200

After 1 year (current strength)

Requirement of Rajbhasha Adhikaris in D = 9% of 825 = 74 (approx)

Requirement of Rajbhasha Adhikaris in F = 9% of 508 = 46 (approx)

Total strength = 120

Difference = 80

113. (c) Total technical officers = 8% of 427 = 34 (approx)

Total Financial executives = 27% of 427 = 115 (approx)

Additional technical officers - x

$$34 + x / 115 = 2/3 \Rightarrow x = 43 \text{ (approx)}$$

114. (c) Percentage of non-fresher candidates from State A who passed the examination in 2006 = $100\% - \text{Non fresher} = 100 - 20 = 80\%$

115. (d) X-Total students appeared from D

Total no of freshers from D = 25% of $x = 160 \Rightarrow x = 640$
 y - Total students appeared from all states

10% of $y = 640 \Rightarrow y = 6400$

Non-fresher candidates (%) passed the exam from State E = $100 - 10 = 90$

Total no of non-fresher candidates = $90 * 1600 / 100 = 1440$

116. (a) Total no of candidates = 16% of $x = 112 \Rightarrow x = 700$

Students passed from state A = 28% of 700 = 196

Freshers from state A = 20% of 196 = 39

Students passed from C state = 11% of 700 = 77

Non-freshers from state C = 85% of 77 = 65 $\Rightarrow 39 : 65$

117. (b) Total no of candidates in 2006 = 700

No of candidates from state A in 2006 = 28% of 700 = 196

No of candidates from state B in 2006 = 16% of 700 = 112

No of candidates from state A in 2007 = 110% of 196 = 216

No of candidates from state B in 2007 = 120% of 112 = 134

Total no of passed candidates from state A and State B in 2007 = 350

118. (c) Total no of candidates passed from state B in 2006 = 75% of $x = 60 \Rightarrow x = 80$

Total no of candidates passed from all states = 16% of $y = 80 \Rightarrow y = 500$

119. (b) Total no. of Medicine students = 13710

Total no. of Engineering students = 20440

Required percentage

$$= \left(\frac{13710}{20440} \times 100 \right) \approx \frac{13700}{20400} \times 100 = 67\%$$

120. (d) Total no. of Arts students over the year = 16250

Total no. of years = 6

\therefore average no. of students studying Arts

$$= \left(\frac{16250}{6} \right) \approx 2708$$

121. (c) In this type of questions we do not need to calculate the values for all the years.

By simple comparison we can find out the solution; e.g., For the first three years (1997, 1998, 1999), year 1999 has maximum percentage decrease from the previous year. Now, consider one more year, i.e., year 2000. The difference between the no. of Commerce students for 1998 & 1999 is less than the difference between that for the years 1999 & 2000. Hence, till now year 2000 has maximum percentage increase. Similarly, we can proceed year by year.

[Note: For the same difference, or nearly same differences between two pairs of year, the percentage increment/decrement will be more for lesser base value.]

122. (a) Required per cent

$$\frac{1120}{(3050 + 2850 + 4550 + 2640 + 3650)16740} \times 100$$

$$= 6.69\%$$

123. (e) Required per cent

$$\frac{3080 \times 100}{(3200 + 3500 + 2850 + 3640 + 3080 + 3800)20070}$$

$$15.34 \approx 15$$

(124-128): As the formula is given in the question, we should follow it to find the solution.

124. (e) The percentage profit of company 'A' in 1998 = 50%
Income, = 142500 (given)

$$\text{Expenditure} = 142500 \left(\frac{100}{100 + 50} \right) = 95000$$

125. (d) $E_{B99} = \frac{90}{100} E_{B98}$ (given)

$$I_{B99} = \frac{90}{100} \times \frac{140}{100} \times \frac{100}{135} (I_{B98})$$

$$I_{B99} = \frac{280}{300} I_{B98}$$

$$= \frac{280}{3} \% \text{ of } I_{B98} = 93\frac{1}{3} \% \text{ of } I_{B98}$$

126. (c) $E_{A97} = ₹ 70$ lakh

$$\Rightarrow I_{A97} = 70 \left(\frac{125}{100} \right) = ₹ 87.5 \text{ lakh}$$

$$I_{A97} = E_{A98} = ₹ 87.5 \text{ lakh}$$

$$\therefore I_{A98} = 87.5 \left(\frac{150}{100} \right) = ₹ 131.25 \text{ lakh}$$

$$\therefore \text{reqd value} = I_{A97} + I_{A98}$$

$$= 87.5 + 131.25 = ₹ 218.75 \text{ lakh}$$

127. (a) We have to find $I_{B96} : I_{B97}$
Given $E_{B96} = 5x$ and $F_{B97} = 7x$

$$I_{B96} = 5x \left(\frac{140}{100} \right) \text{ and } I_{B97} = 7x \left(\frac{130}{100} \right)$$

$$\therefore I_{B96} : I_{B97} = \frac{5x}{7x} \left(\frac{140}{130} \right) = 10 : 13$$

129. (c) In the years 2002, 2003, 2006, 2007

Unit(x) = Total Revenue/Price	Profit	Cost Price=Revenue-Profit	Cost Per Unit = Cost Price/ Unit
$x = 1200/12 \Rightarrow x = 100$	300	$1200 - 300 = 900$	$900/100 = 9$
$x = 900/12 \Rightarrow x = 75$	150	$900 - 150 = 750$	$750/75 = 10$
$x = 200/10 \Rightarrow x = 20$	100	$200 - 100 = 100$	$100/20 = 5$
$x = 700/14 \Rightarrow x = 50$	200	$700 - 200 = 500$	$500/50 = 10$

130. (a) In the years 2001, 2005, 2006, 2007

Unit(x) = Total Revenue/Price	Profit	Cost Price=Revenue-Profit	Cost Per Unit = Cost Price/ Unit
$x = 1400/14 \Rightarrow x = 100$	100	$1400 - 100 = 1300$	$1300/100 = 13$
$x = 900/12 \Rightarrow x = 75$	150	$900 - 150 = 750$	$750/75 = 10$
$x = 200/10 \Rightarrow x = 20$	100	$200 - 100 = 100$	$100/20 = 5$
$x = 700/14 \Rightarrow x = 50$	200	$700 - 200 = 500$	$500/50 = 10$

131. (d)

Years	Unit Price	Revenue	Total Units = Revenue/ Unit Price
2000	10	700	70
2001	14	1400	100
2002	12	1200	100
2003	12	900	75
2004	11	1100	100
2005	8	400	50
2006	10	200	20
2007	14	700	50
2008	10	600	60
2009	10	800	80
2010	15	900	60
Total = 765 \rightarrow Avg = $756/11 = 70$ (approx)			

132. (c) Average of total units sold in the years of 2002, 2003, 2004, 2005 and 2008 = $100 + 75 + 100 + 50 + 60/5 = 77$

133. (d) Total decrease in revenue = 10% of $(700 + 1400 + 1200 + 900 + 1100) = 530$
Total decrease in cost = 10% of $(250 + 100 + 500 + 600 + 400 + 600) = 245$

The cumulative profit for the entire period 2000-2010 decrease by = Total decrease in revenue + Total increase in cost = $530 + 245 = 775$

134. (d) Total no of MUV cars (C & H) = Total no of cars in MUV & SUV (C & H) - Total no of cars in SUV (C & H) = $(14\% + 9\%)$ of 56000 - $(7\% + 12\%)$ of 32000 = 6800
Total number of cars (both SUV and MUV) sold by stores F and H together = $(8\% + 9\%)$ of 56000 = 9520
 $\% = [(9520 - 6800)/9520] \times 100 = 28.57\%$

135. (b) Number of cars in MUV & SUV for D = 15% of 56000 = 8400
Total no of SUV cars (C, F, G) = 21% of 32000 = 6720
 $\% = [(8400 - 6720)/6720] \times 100 = 25\%$

136. (d) Total no of MUV cars (A, D, E, F, H) = Total no of cars in MUV & SUV (A, D, E, F, H) - Total no of cars in SUV (A, D, E, F, H)
Total no of MUV cars (A, D, E, F, H) = 70% of 56000 - 71% of 32000 = 16480 \Rightarrow Average = $16480/5 = 3296$

137. (a) Total no of SUV cars (A & B) : Total no of cars (MUV & SUV) for C & F

32% of 32000 : 22% of 56000

10240 : 12320 = 64:77

- 138 (b) In 2005, number of cars (MUV & SUV) for A, D, E = [110% of 18% of 56000 + 135% of 15% of 56000 + 115% of 20% of 56000] = 35308

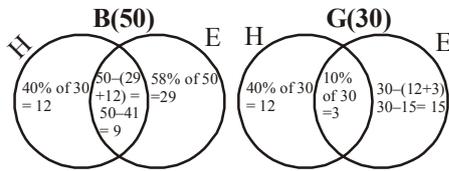
In 2005, number of cars SUV for A, D, E = [110% of 16% of 32000 + 135% of 13% of 32000 + 115% of 22% of 30000] = 19344

Total number of MUV cars distributed by these three dealers in 2005 = 35308 – 19344 = 15964

154–158

- (139-143): No of boys in the class = $\frac{5}{8} \times 80 = 50$

∴ No of girls in the class = 80 – 50 = 30



139. (d) 140. (a) 141. (d) 142. (b) 143. (c)
 145. (d) From the graph's inclination, it is clear that the percentage rise/fall is maximum in the year 1997 w.r.t previous year.
 146. (d) No. of students in 1996 = 1550 + (450 – 300) = 1700
 147. (e) Strengths of the school is equal in 1993 and 1995

1993	1994	1995	1996	1997	1998
1550	1450	1550	1700	1600	1650

148. (b) Reqd. % = $\frac{1700}{1450} \times 100 \approx 117\%$

(149-153):

40% of males = 8800

∴ **No. of total males**

$$= \frac{8800}{40} \times 100 = 22,000$$

Ratio of males, females and children 10 years old and above

= 11 : 10 : 9

Hence, **no. of total females**

$$= \frac{22,000}{11} \times 10 = 20,000$$

No. of total children (10 yrs old and above)

$$= \frac{22,000}{11} \times 9 = 18,000$$

No. of literate males = 8800

No. of illiterate males

$$= 22,000 - 8800 = 13,200$$

No. of literate females

$$= \frac{20,000 \times 30}{100} = 6,000$$

No. of illiterate females
 = 20,000 – 6,000 = 14,000

The number of children below 10 years of age = 10% of the number of females

$$= \frac{20,000 \times 10}{100} = 2000$$

No. of total children

$$= 18000 + 2000 = 20,000$$

No. of illiterate children 10 years old and above

$$= \frac{18000 \times 20}{100} = 3600$$

No. of literate children 10 years old and above

$$= 18000 - 3600 = 14400$$

No. of persons below poverty line

$$= 5\% \text{ of } (22,000 + 20,000 + 20,000)$$

$$= \frac{5 \times 62000}{100} = 3100$$

Illiterate persons among these 3100 persons

$$= 80\% \text{ of } 3100 = \frac{80 \times 3100}{100} = 2480$$

149. (a) 150. (b) 151. (a)
 152. (d) Required % = $\frac{20,000}{62,000} \times 100 = 32.26$
 153. (e) 14000
 154. (b) Wipro = $20 \times 132500 / 100 = 26500$
 Sun = $24 \times 132500 / 100 = 31800$
 Infosys = $10 \times 132500 / 100 = 13250$
 Total = 8200 + (31800 – 12000) + (13250 – 10400)
 = 8200 + 19800 + 2850 = 30850
 155. (d) Polaris = $132500 \times 16 / 100 = 21200$
 HCL = $132500 \times 13 / 100 = 17225$
 HCL male = 17225 – 6500 = 10725
 Difference = 21200 – 10725 = 10475
 156. (c)

Org	F	M
Sun	12000	19800
Polaris	11300	9900
HCL	6500	10725
Wipro	8200	18300
CTS	7600	14925
Infosys	10400	2850

 157. (a) CTS M = 14925
 Sun Total = 31800
 % = $14925 \times 100 / 31800 = 46.9 = 47\%$
 158. (d) Avg = $9900 + 18300 + 14925 / 3 = 14375$
 159. (c) Marks obtained by R in different subjects

A	B	C	D	E	F
49.50	112.5	79	44	108	49.50

Total marks obtained by R out of 600 marks

$$= 49.50 + 112.50 + 79 + 44 + 108 + 49.50 = 442.5$$

∴ Required % marks

$$= \frac{442.5 \times 100}{600} = 73.75\%$$

160. (b) Marks of P and T in the subjects 'B, 'D' and 'E'

Sub → Students ↓	B	D	E	Total
P	102	46	133.5	281.5
T	112.5	34	103.5	250

Hence required difference
 $= 281.5 - 250 = 31.5$

161. (a) Total marks obtained by all the students in subject B
 $= \frac{150 \times (68 + 72 + 75 + 62 + 75 + 80 + 68)}{100}$

$$\therefore \text{Required average} = \frac{750}{7} = 107.14$$

162. (c) $\frac{\text{Total in C} + \text{Total in D}}{1400} \times 100$
 $= \frac{547 + 565}{14} = 79.43\%$

163. (d) Required total marks
 $= \frac{75 \times (82 + 70 + 66 + 74 + 78 + 80 + 72)}{100}$
 $= \frac{75 \times 522}{100} = 391.5$

164. (c) Investment per cent of unit C as a fraction of the total investment of all the units in

1996	1997	1998	1999	2000	2001
19.26%	16.87%	16.71%	15.94%	16.76%	16.65%

165. (a) Investment percent in 1997 as a fraction of the total investment in all the given years together of each unit is as follows:

	A	B	C	D	E	F
Investment	132	140	137	125	128	150
Out of	738	824	827	810	817	875
In per cent	17.89%	16.99%	16.57%	15.43%	15.67%	17.14%

166. (e) Required % increase

$$= \frac{(145 - 98)}{98} \times 100 = 47.96\%$$

167. (b) Investment by units A, B and C in 1998
 $= 125 + 145 + 138 = 408$ crores
 Investment by units A, B and C in 1999
 $= 116 + 148 + 136 = 400$ crores
 Thus, required difference
 $= 408 - 400 = 8$ crores (more)

168. (e) Total investment of units A, B and C in the year 1998
 $= 125 + 145 + 138 = 408$ crores
 Investment by the units D, E and F in the years 1999
 $= 145 + 152 + 156 = 453$ crores

$$\text{Hence required ratio} = \frac{408}{453} = 136:151$$

169. (b) Total number of the malnourished children in year
 (i) 1991 = $(10.0 + 1.4 + 0.1)\%$ of 1048000
 $= 11.5\%$ of 1048000
 (ii) 1986 = $(12.1 + 3.0 + 0.8)\%$ of 1048000
 $= 15.9\%$ of 1048000
 Hence, the required difference
 $= (15.9 - 11.5)\%$ of 1048000
 $= 46112$

170. (b)

Year	Percentage of the malnourished
1984	16.1
1985	15.5
1986	15.9
1987	12.9
1989	12.9
1990	12.2
1991	11.5
1992	9.9
1993	8.8

171. (e) Reject (a) and (d) because we see that the percentage of high malnourished cases increases to 0.8 from 0.7 in the year 1986.
 Reject (b) because we see that the percentage of moderate malnourished cases increased from 2.7 to 3.0 in the year 1986.
 Reject (c) because no such fall is witnessed during the year 1985 to 1986.

Hence, select (e) by elimination.

172. (d) Number of required children
 $= 0.5\% \text{ of } 1071000$
 $= \frac{5 \times 1071000}{1000} = 5355$

173. (b) The required malnourished children in 1993
 $= (7.8 + 0.9 + 0.1)\%$ of 1161000
 $= 8.8\%$ of 1161000
 $= 102168$

174. (d) Difference of production of C in 1991 and A in 1996 = 5,00,000 tonnes.

175. (a) Percentage increase of A from 1992 to 1993

$$\frac{55 - 40}{40} \times 100 = 37.5\%$$

176. (b) Percentage rise/fall in production for B

1992	1993	1994	1995	1996
9%	-16.6%	10%	-9%	10%

Here, the maximum difference is from 1992 to 1993, which is 10. And the second nearest to it is fall or rise of 5. So, undoubtedly the answer is 1993.

177. (e) Percentage production = $\frac{120}{90} \times 100 = 133.3\%$

178. (c) Average production of A = 50
Average production of B = 54.17
Average production of C = 50
Difference of production = $54.17 - 50 = 4.17$

179. (d) Distance to be travelled by each type of vehicle

$$= \frac{15}{3} = 5 \text{ km}$$

Since, to travel 5 km by vehicle A, he will pay ₹ 9 for 4 km and for the next 1 km he will have to pay

$$\text{₹} = \frac{13.5 - 9.00}{(7 - 4)} \times 1.$$

Similarly, for other cases.

$$\text{Fare by A} = \text{₹ } 9 + \frac{13.50 - 9}{7 - 4} = 9 + 1.50 = \text{₹ } 10.50$$

$$\begin{aligned} \text{Fare by B} &= 14.50 + \frac{24.25 - 14.50}{7 - 4} \\ &= 14.50 + 3.25 = 17.75 \end{aligned}$$

$$\text{Fare by C} = 19 + \frac{31 - 19}{3} = 19 + 4 = 23$$

$$\text{Total fare} = 10.50 + 17.75 + 23 = \text{₹ } 51.25$$

180. (a) Fare by A = $9 + \frac{4.50}{3} \times 2 = \text{₹ } 12$

$$\text{Fare by B} = 24.25 + \frac{33.25 - 24.25}{3} \times 2 = \text{₹ } 30.25$$

$$\text{Total fare} = 30.25 + 12 = \text{₹ } 42.25$$

181. (b) Fare for 8 km by A = $13.50 + \frac{17.25 - 13.50}{10 - 7}$

$$= 13.50 + \frac{3.75}{3} = \text{₹ } 14.75$$

$$\text{Fare by B} = 24.25 + \frac{33.25 - 24.25}{3} = \text{₹ } 27.25$$

$$\text{Difference} = 27.25 - 14.75 = \text{₹ } 12.50$$

182. (e) Fare by B for 5 km = $14.50 + 3.25 = \text{₹ } 17.75$

$$\begin{aligned} \text{Fare by A for 8 km} &= 13.50 + \frac{17.25 - 13.50}{3} \\ &= \text{₹ } 14.75 \end{aligned}$$

$$\text{Fare by C for 5 km} = 19 + \frac{31 - 19}{3} = \text{₹ } 23$$

$$\text{Total fare} = 17.75 + 14.75 + 23 = 55.50$$

183. (b) Fare for 14th km by C = $\frac{56.50 - 41.50}{15 - 10} = \text{₹ } 3$

$$\text{Fare for 9th km by B} = \frac{33.25 - 24.25}{10 - 7} = \text{₹ } 3$$

184. (a) Total production of

$$A = 465 + 396 + 524 + 630 + 408 + 650 = 3073 \text{ lakh tonnes}$$

$$C = 694 + 528 + 492 + 575 + 550 + 495 = 3334 \text{ lakh tonnes}$$

$$\text{Hence, required difference} = 3334 - 3073 = 261 \text{ lakh tonnes}$$

185. (e) Total production of all companies in

$$1996 = 396 + 482 + 528 + 602 + 551 + 635 = 3194 \text{ lakh tonnes}$$

$$1997 = 524 + 536 + 492 + 387 + 412 + 605 = 2956 \text{ lakh tonnes}$$

Hence, required % decrease

$$= \frac{3194 - 2956}{3194} \times 100 = 7.451\% = 7.5\%$$

186. (d) Percentage rise/fall from the previous year in production of company F are as follows :

1996	1997	1998	1999	2000
25.24%	-4.72%	-0.82%	-19.16%	8.24%

You can give the answer without doing any detailed work. A cursory look will help you detect that the required year is either 1996 or 1999. Again, a step further you get that the rise in production in the year 1996 is more than 20% while the production in 1999 is less than 20%.

187. (b) Production of companies A and B together in

$$1997 = 524 + 536$$

$$= 1060 \text{ lakh tonnes}$$

Production of companies E and F together in

$$1998 = 518 + 600 = 1118 \text{ lakh tonnes}$$

$$\text{Hence, required \%} = \frac{1060}{1118} \times 100 = 94.81\% \approx 95\%$$

188. (c) Average production of B in the given years (in lakh tonnes)

$$= \frac{372 + 482 + 536 + 480 + 512 + 580}{6} = \frac{2962}{6} = 493.66$$

Similarly, average production of E in the given years

$$= \frac{498 + 551 + 412 + 518 + 647 + 610}{6}$$

$$= \frac{3236}{6} = 539.33$$

Hence, required difference = $539.33 - 493.66 = 45.67$ lakh tons

189. (a) We have given profit/loss = Income – Expenditure
Therefore, profit in each of the given years is as follows:

Year	96	97	98	99	00	01
Income	350	450	450	500	400	550
Exp.	250	300	400	350	450	450
Profit	100	150	50	150	- 50	100
in crore ₹						

∴ Average profit

$$= \frac{100 + 150 + 50 + 150 - 50 + 100}{6}$$

= ₹ 83.33 crore.

190. (b) Profit earned during the year 1999 = ₹ 150 cr
Expenditure during the year 1999 = ₹ 350 cr
Hence, % profit earned in the year 1999

$$= \frac{150 \times 100}{350} = 42.85\% \approx 43\%$$

191. (d) Per cent increase/decrease in income from the previous year:

1997	1998	1999	2000	2001
28.57%	0%	11.11%	-20%	37.5%

Note : - ve sign indicates fall in income.

you can solve this question merely with the help of the graph.

192. (b) Required % increase

$$= \frac{(400 - 300)}{300} \times 100 = 33\frac{1}{3}\%$$

193. (c) Average income

$$= \frac{350 + 450 + 450 + 500 + 400 + 550}{6} = \frac{2700}{6}$$

= ₹ 450 crore

194. (b) No. of students who got 0-19 marks in maths = 31
No. of students who got 20-39 marks in Maths = 22;
therefore,
no. of students who got less than 40% marks in Maths = 31 + 22 = 53
Hence, no. of students who passed in Maths = 160 - 53 = 107.

195. (a)

Marks	60-79	80-100
Average of three subjects	35	5

Hence, required no. of students = 35 + 5 = 40

196. (a)

	Marks			
Subject ↓	40-59	60-79	80-100	40-100
Hindi	79	30	08	117
English	65	42	02	109
Maths	34	45	28	107

107 is the lowest among 117, 109 and 107. Hence, required no. of students = 107.

197. (e) 65 + 42 + 02 = 109

198. (d)

Subject ↓	Marks	
	0-19	No. of those students who obtained 20 or more marks (20-100)
Hindi	12	148
English	21	139
Maths	31	129

Mere this information is not sufficient to obtain the exact number of students who got 20 or more marks in at least one paper.

199. (e) The difference between the white-coloured cars sold is the minimum in B type model.

200. (a) Blue (E + D) = 37 + 43 = 80 = White (B)

201. (e) Reqd. difference = (50 - 34) × 1000 = 16,000

202. (c) Reqd. percentage = $\frac{173}{192} \times 100 \approx 90\%$

203. (a) Colour-model combinations of car in Metro M

Silver-F	White-C	Blue-B	Red-F	Black-F
52	90	60	42	55

204. (c) $25 \times 15 / 100 \times 2 / 5 = 1.5$ (for company P) and $25 \times 22 / 100 \times 4 / 5 = 4.4$ (for company R)

So total = 5.9 cr

205. (e) For company U = $25 \times 5 / 100 \times 1 / 5$ and for company S = $25 \times 8 / 100 \times 5 / 8$

% percent = $[25 \times 5 / 100 \times 1 / 5] / [25 \times 8 / 100 \times 5 / 8] = 1 / 5 \times 100 = 20\%$

206. (a) For item A cost of production = $25 \times 12 / 100 \times 1 / 3 = 1$ crore and for item B it is 2 crore.

Now profit earned on A = $1 \times 130 / 100 - 1 = 0.3$ crore and profit earned on B = $2 \times 124 / 100 - 2 = 0.48$ crore. Total profit = 0.3 + 0.48 = 0.78 crore or 78 lakh

207. (d) Ratio = $25 \times 15 / 100 \times 2 / 5 : 25 \times 8 / 100 \times 3 / 8 = 2:1$

208. (c) $(8/100) \times 25 \times (5/8) = 1.25$ crore
 $1.25 \times (125/100) = 1.56$ crore, profit = $1.56 - 1.25 = 31$ lakh

210. (d) Our intelligent observation says that the required year can't be 1993, 1994, 1995. Why? Because see the following conclusions:

$$\% \text{ passed to appear} = \frac{\text{Passed}}{\text{Appeared}} \times 100$$

$\%$ of passed to appear is least when $\frac{\text{Passed}}{\text{Appeared}}$ is the

least

or, $\frac{\text{Passed}}{\text{Appeared}}$ is the most. Now, we do the further

calculations mentally. See the following conclusions:

For 1990: $\frac{7894}{2513} \Rightarrow$ Quotient = 3 & Remainder ≈ 300

For 1991: $\frac{8562}{2933} \Rightarrow Q = 3 \text{ \& } R \approx 400$

For 1992: $\frac{8139}{2468} \Rightarrow Q = 3 \text{ \& } R \approx 800$

Similarly, for 1993, 1994, 1995, Q is 2.

So, 1992 gives the highest value.

Note: When R is close for close or three years you should go for further calculations and find the exact possible values. But larger difference in R for almost equal divisors gives the option to stop our further calculations, as happened in this case.

211. (a) $\frac{8562 - 8139}{8562} \times 100 = \frac{423}{8562} \times 100 \approx \frac{42}{84} \times 10 = 5$

212. (a) We don't need to calculate the values for each year. Follow as:

For rural area: 35% of $5032 \approx 35 \times 50 \approx 1750 \approx 1798$

For Semi-urban area: 35% of $9500 \approx 35 \times 95 \approx 3300$

Which can't be approximated to 3500.

For State capitals: $35 \times 85 \approx 3000$

For Metropolises: $35 \times 110 \approx 3850$

213. (c) $1798 + 2513 = 4311$

214. (a) Average marks of Q in 1st periodical

$$= \frac{30 + 25 + 33 + 42 + 30}{5} = \frac{160}{5} = 32$$

215. (c) Total marks of T in Science
 $= 44 + 36 + 40 + 30 + 40 = 190$

216. (b) Average percentage of marks obtained by P in Marks

$$= \frac{80 + 60 + 90 + 40 + 70}{5} = 68\%$$

= percentage of marks obtained by student R in Geography.

217. (c) Our observation finds two options which are close to each other. These are History & Geography. When we

find the actual value, we find that our answer is History.
Note: You can decide the answer with totalling only. You don't need to calculate the percentage value.

219. (a) Production of C type cars in 1996
 $= (70 - 40)\%$ of $4,50,000 = 30\%$ of $4,50,000 = 1,35,000$
 Production of C type cars in 1997
 $= (65 - 40)\%$ of $5,20,000$
 $= 25\%$ of $5,20,000 = 1,30,000$
 \therefore Required difference = $5,000$

220. (e) Production of E type cars in 1996
 $= (100 - 80)\%$ of $4,50,000$
 $= 20\%$ of $4,50,000 = 90,000$
 And in 1997 = 10% of $5,20,000 = 52,000$
 \therefore Total production = $90,000 + 52,000 = 1,42,000$
 \therefore Required no. of cars = 15% of $1,42,000 = 21,300$

221. (b) Production of A type cars in 1997 = production of A type cars in 1996 (given) = $(100 - 85) = 15\%$ of $4,50,000 = 67,500$

$$\therefore \text{Reqd percentage} = \frac{67,500}{5,20,000} \times 100 \approx 13$$

222. (c) Clearly, by visual inspection D is the desired option.

223. (c) Percentage production of B type cars in 1997 = that in 1996 (given)

$$= (40 - 15) = 25\% \text{ of } 5,20,000 = 1,30,000$$

224. (a) Average marks obtained by 20 boys in History from school $Q = 45$

$$\therefore \text{Total marks} = 20 \times 45 = 900$$

225. (a) From visual inspection it is clear that Science is the desired subject.

Note: Our visual observation says that it is either Math or Science in which maximum marks has been obtained. So, compare the total of Maths and Science only.

226. (d) Total marks obtained by boys and girls in all the subjects:

$$\text{For school } P = (85 + 40 + 50 + 120 + 105) + (90 + 55 + 40 + 110 + 125) = 820$$

Similarly, for $Q = 745$, for $R = 935$, for $S = 645$ and for $T = 1005$.

645 is the minimum, so S is the desired school.

Note: From careful observation we find that our answer is school S . The other school nearest to it is either P or Q . But if you compare the marks, P and Q also take lead of at least 100 marks. So, only visual observation gives the result.

227. (b) As the no. of boys and girls in the different schools are the same, so for the desired purpose we have to select a certain school in which the average marks of girls in Mathematics be exactly double the average marks of boys in History. By visual inspection (as $80 = 2 \times 40$), we get that S is the desired school.

228. (b) In Mathematics total marks obtained by boys from school $R = 135 \times 20$

By girls from school $S = 80 \times 20$

\therefore Req'd difference = $(135 - 80) \times 20 = 1100$.

229. (e) Average imports made by company A

$$\frac{30 + 50 + 60 + 40 + 70 + 60 + 75}{7} = \frac{385}{7} = 55$$

In none of the given years the imports is exactly equal to 55 (crores). Hence, the answer is (e).

230. (d) By visual inspection it is clear that 1992 is the desired year (as the distance between two points is the maximum in 1992.)

231. (a) By mental observation $\left(\text{as } 50 = \frac{40 + 60}{2} \right)$, 1992 only

is the desired year. You don't need any calculation. See the year where the point of A lies exactly in the middle of points of B and C.

232. (b) Req'd percentage increase = $\frac{50 - 40}{40} \times 100 = 25\%$

233. (c) The total imports (in crores) made by all the three companies together: From the heights of the points we observe that the total heights of three points is the maximum either in 1995 or 1997. If you observe carefully, our clear answer is 1995, but to be sure we find actual values for the two years.

In 1995 = $70 + 80 + 85 = 235$.

In 1997 = $75 + 70 + 85 = 230$.

Clearly, 1995 is the desired year.

234. (d) Incomes-Expenditures of Company A and B cannot be correlated.

235. (e) Expenditure of Company A in 1996

$$= E_{96(A)} = I_{96(A)} \left[\frac{100}{100 + 60} \right] = \frac{5}{8} I_{96(A)}$$

Expenditure of Company B in 1997

$$= E_{97(B)} = I_{97(B)} \left[\frac{100}{100 + 70} \right] = \frac{10}{17} I_{97(B)}$$

$$\text{Now, } \frac{E_{96(A)}}{E_{97(B)}} = \frac{5}{8} \div \frac{10}{17} \quad (\text{Since, } I_{96(A)} = I_{97(B)})$$

$$= \frac{5}{8} \times \frac{17}{10} = \frac{17}{16} = 17 : 16$$

236. (c) Ratio A : B is greater than 1 in only 1993 and 1997. It is 1.33 in 1993 and 1.1 in 1997.

237. (e) Suppose $E_{95(B)} = x$

Then $E_{96(B)} = 1.2x$ (Since, $x + 20\%$ of $x = 1.2x$)

$$\text{Now, } I_{95(B)} = E_{95(B)} \left[\frac{100 + 80}{100} \right] = 1.8x$$

$$I_{95(B)} = E_{95(B)} \left[\frac{100 + 80}{100} \right] = 1.2x (1.8)$$

$$\therefore \frac{I_{96(B)}}{I_{95(B)}} = \frac{1.2 \times 1.8x}{1.8x} = 1.2 \text{ times}$$

Alternative method : % profits are the same for two years. So if expenditure increases by 20% the income should also increase by 20%. Hence the required ratio

$$= \frac{100 + 20}{100} = 1.2$$

$$238. (a) E_{96(A)} = I_{96(A)} \left[\frac{100}{100 + 60} \right]$$

$$= \frac{36 \text{ lakh} \times 100}{160} = ₹ 22.5 \text{ lakh}$$

239. (a) UP (Qua/App)

Arts	Commerce	Science	Engg.	Agr.
0.34	0.39	0.4	0.42	0.42

Alternative Approach: $\frac{\text{Qual.}}{\text{App.}}$ should be the least.

$\Rightarrow \frac{\text{App.}}{\text{Qual.}}$ should be the maximum.

Now, for Arts, if we divide $(4980 \approx) 5000$ by $(1690 \approx) 1700$ we find the value of quotient near about 3. But in other cases the quotient is just more than 2. So, our answer is Arts.

241. (e) Percentage of students qualified in commerce

A.P.	U.P.	Kerala	Orissa	M.P.
33.9	38.7	58.2	45.8	28.5

242. (d) Qualifying percentage of UP = $\frac{9280}{23880} \times 100 = 38.86$

$$\text{Qualifying percentage of MP} = \frac{8625}{26750} \times 100 = 32.24$$

Ratio = $38 : 32 = 19 : 16$

243. (d) Qualifying percentage for Science

A.P.	U.P.	W.B.	Kerala	Orissa	M.P.
39.9	40.5	37.7	58.8	43.3	43.8

244. (d) Required percentage

$$= \frac{35 + 40 + 45 + 35 + 35}{45 + 50} \times 100 = \frac{190}{95} \times 100 = 200$$

245. (b) Average production by B = $\frac{45 + 35 + 40}{3} = 40$

$$\text{Average production by C} = \frac{25 + 35 + 45}{3} = 35$$

Ratio = $(40 : 35) 8 : 7$

246. (c) Maximum difference is 5 lakh tonnes for three companies C, D & E. So, our answer should be the company for which the production is least in 1996. Because to calculate the % increase or decrease our denominator is the production in 1996.

247. (a) Percentage drop = $\frac{50-35}{50} \times 100 = 30\%$

248. (e) You should not calculate the values to get answer. You can decide by mere visual observation.

249. (d) Total no. of students who play cricket
= $38 + 40 + 12 + 17 + 25 + 18 + 20 = 170$

Reqd % = $\frac{25}{170} \times 100 \approx 15\%$

250. (d) Reqd ratio = $27 : 18 = 3 : 2$

252. (e) Total Class X students who play different games = 115

Reqd % = $\frac{21}{115} \times 100 \approx 18\%$

253. (e) Basketball and Badminton are the two games which satisfy the conditions.

254. (b) $30:32 = 15:16$

255. (d)

256. (c)

257. (c) $[(47-30)/47] \times 100 = 36.17 = 36$

(258-263) :

Staff members = 240 [Teachers = 156 (male = 104, Females = 52) and Administrative staff = 84 (Male = 54, female = 30)] Students = 1600 [Boys = 880 (only English = 660, both Hindi and English = 220)], Girls = 720 (only English = 144, both Hindi and English = 576)

258. (b) $576 - 220 = 356$

259. (c) $(720/240) \times 100 = 300\%$

260. (c) $30 + 52 - 54 = 28$

261. (b) $156:660 = 13:55$

262. (c) $54 + 52 + 144 = 250$

263. (d) $54:144 = 3:8$

264. (e) Required percent = $\frac{152.2}{86.4} \times 100 \approx 175\%$

266. (c) Average production of pulse

$$\frac{20.5 + 22.4 + 24.6 + 23.5 + 27.8 + 28.2}{6} = \frac{147.0}{6}$$

= 24.5 million tonnes

267. (a) Required percentage = $\frac{32.4}{450} \times 100 = 7.2\%$

268. (b) Total production of oilseeds in the given years
= $42.4 + 46.8 + 52.4 = 141.6$.

Which is equal to the production of wheat in 1994 - 95.

269. (d) Average percentage growth of Assemble PCs

$$= \frac{20 + 25 + 25 + 50 + 55}{5} = \frac{175}{5} = 35\%$$

270. (e) Growth of branded PCs from 1996 to 1999 = 20%

Branded PC's sold in 1999 = $100000 \times \frac{120}{100} = 1,20,000$

272. (e) Difference between Assembled and Branded PCs

1995	1996	1997	1998	1999
10%	15%	5%	20%	25%

273. (c) Per cent growth of Assembled PCs is

1996	1997	1998	1999
5%	No change	25%	5%

275. (e) The answer is 1997, Machine IV

279. (a) Average = $\frac{52 + 66 + 64 + 75 + 58}{5} = \frac{315}{5} = 63$.

280. (a) The difference is 9.

281. (a) Percentage increase = $\frac{55 - 46}{46} \times 100 \approx 20\%$

282. (e) Average highest marks = $\frac{85 + 80 + 75}{3} = \frac{240}{3} = 80$.

284. (c) Required percentage = $\frac{80}{64} \times 100 = 125\%$

285. (b) Marks obtained by students = $50 \times 60 = 3000$

286. (e) The maximum difference is in the years 1992 & 1997. Since the least value is in 1992 and the highest value is in 1997.

287. (b) Rajasthan = $(10/100) \times 50 \times (73 - 27)/100 = 2.3$

288. (c) Ratio $\Rightarrow (9/100) \times 50 \times (34/100) : (20/100) \times 50 \times (78/100) = 51/260$

289. (a) Rajasthan = $(10/100) \times 50 \times (73/100) = 3.65$ similarly, HP = 3.9 Jharkhand = 2.88 J&K = 7.8 Haryana = 7.7 Maharashtra = 0.8 TN = 2.97

Total = 29.7, so average = $29.7/7 = 4.24$

290. (c) Production of Haryana by machine method = 7.7 and production of Maharashtra by manual method = 3.2, So % greater = $[(7.7 - 3.2)/3.2] \times 100 = 140\%$

291. (c) Production in HP by manual method = 2.6 and production in Jharkhand by machine method = 2.88
 $x = 2.6/2.88 = 0.9$



Data Sufficiency

INTRODUCTION

Data sufficiency is not a new kind of problem. It is just a way to check your known reasoning ability in new format. In fact, in such problems 2 statements are given from different part of reasoning like coding, decoding. Problem solving, blood relation, etc, and the examinee is required to find out if each statement alone/combinely sufficient to answer the question. Let us the format of the problem given below:-

PROBLEM FORMAT

Directions: The problem(s) below consist of a question/questions followed by two statements labelled I and II. You have to decide if these statements are sufficient to answer the question.

Mark Answer:

- If statement I alone is sufficient to answer the question but statement II alone is not sufficient to answer the question.
- If only statement II is sufficient to answer the question but statement I is not sufficient to answer the question.
- If both statements I and II are together sufficient to answer the question although neither statement sufficies by itself.
- If both the statements are sufficient to answer the question independently and separately.
- It both the statements are not sufficient but still more data is needed to answer the questions.

EXAMPLE 1. What is the age of x ?

Statements: I The age of y is 50 years.
II x is older than y .

After seeing the sample problem, you must have got the idea of what is the problem all about. But before solving the sample problem, we must solve some other problems related to this segment. Only the solution of some problems will give you the clear concept about this chapter. Let us see some examples of solutions given below:-

EXAMPLE 2. What is the value of m ?

Statements:
I. $m + n = 50$
II. $5x - n = 1$

Sol. As we know that when the question involves two unknowns then two distinct equations required for it. Here is the same situation. We have 2 equations and two unknowns (m and n). Then, we can easily conclude that both the statements are needed to answer the given question.

EXAMPLE 3. What is the date of birth of Rama?

Statements:

- Veena remembers that Rama's date of birth is between 17th June and 21st June.

- Surbhi says that Rama's date of birth is after 19th June but before 23rd June.

Sol. From I, we conclude that the possible answers are 18th June, 19th June, and 20th June. From II we come to the conclusion that 18th June and 19th June are ruled out. Hence, 20th June must be the answer clearly, both the statements are needed to answer the question but none of the two statements alone is sufficient to got the answer.

EXAMPLE 4. Who is the heaviest among L, M, N and O?

Statements:

- M is heavier than L, but lighter than O.
- N is lighter than M.

Sol. Write statement I as

$O > M > L$ ('>' means heavier than) Write II as $M > N$

Now the two inequalities can be combined as

$O > M > N > L$ or $O > M > L > N$

But in either case O is the heaviest. Hence, I and II are together needed to answer the question but neither of the two statement alone can give the answer.

EXAMPLE 5. Find the value of x .

Statements:

- $x - 4 = 15$
- $x + 2x + x = 3x$

From I.

$$x - 4 = 15$$

$$\therefore x = 15 + 4 = 19$$

\therefore I alone is sufficient to answer the question.

From II.

$$x + 2x + x = 3x$$

$$\Rightarrow 4x = 3x$$

$$\therefore x = 0$$

\therefore II alone is sufficient to answer the question.

Now, from above solved example you must have got the clear concept about data sufficiency and in a position to solve the sample problem also.

Solution to sample problem (Problem Format)

Answer choice 5 will be our correct answer as the given information is not sufficient. x can be of any age greater than 50 years.

Thus, it is clear to you that while solving problems related to data sufficiency, the following methodis used :-

Step I — Check statement I

Step II — Check statement II

Step III — Check both statement I and II if required.

EXERCISE

Directions (Qs. 1-173) : Each of the questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question.

Read both the statements and Give answer

- (a) if the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.
- (b) if the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.
- (c) if the data either in statement I alone or in statement II alone are sufficient to answer the question.
- (d) if the data in both the statements I and II together are not sufficient to answer the question.
- (e) if the data in both the statements I and II together are necessary to answer the question.
- What was the ratio between the ages of P and Q four years ago?
 - The ratio between the present ages of P and Q is 3:4.
 - The ratio between the present ages of Q and R is 4:5.
 - What was the cost price of the suitcase purchased by Samir?
 - Samir got 25 per cent concession on the labelled price.
 - Samir sold the suitcase for ₹ 2000 with 25 per cent profit on the labelled price :
 - What is the height of a triangle?
 - The area of the triangle is 20 times its base.
 - The perimeter of the triangle is equal to the perimeter of a square of 10 cm side.
 - What percentage rate of simple interest per annum did Ashok pay to Sudhir?
 - Ashok borrowed ₹ 8000 from Sudhir for four years.
 - Ashok returned ₹ 8800 to Sudhir at the end of two years and settled the loan.
 - What is the speed of a running train?
 - The train crosses a signal post in 6 seconds.
 - The train crosses another train running in the opposite direction in 15 seconds.
 - What does 'pit' mean in a certain code language?
 - 'ja na pit sod' means 'beautiful bunch of flowers' in that code language.
 - 'na sod pa tok' means 'huge-bunch of twigs' in that code language.
 - Towards which direction is P from R?
 - S is towards west of M and north-east of R.
 - P is towards south of S.
 - How is M related to R?
 - P and R are children of K, who is wife of M.
 - N's sister M is married to R's father.
 - Among Q, R, S, T and V who is third from the top when they are arranged in ascending order of their heights?
 - T is taller than Q and V but shorter than R.
 - R and S are taller than T and Q is shorter than T but taller than V.
 - When was the election of the president of the society held?
 - Suresh submitted his nomination for the election on 13th and left on 17th for Delhi the day after he won the election.
 - The nominations were scrutinised on 14th and the ballot papers were prepared on the following day.
 - What is the original number?
 - Sum of two digits of a number is 10. The ratio between the two digits is 1 : 4.
 - Product of two digits of a number is 16. Quotient of the two digits is 4.
 - What is the rate of the compound interest?
 - A certain amount invested at the compound interest rate amounts to ₹ 1331.
 - The amount was invested for a period of three years.
 - What is the present age of the mother?
 - Father's age is eight years more than the mother's age. Father got married at the age of 28 years.
 - Present age of the father is 30 years. Four years back the ratio of mother's age to father's age was 12 : 13.
 - How many children are there in the group?
 - Average age of this group of children is 16, years. The total of ages of all the children in the group is 240 years.
 - The total of ages of all the children in the group and the teacher is 262 years. The teacher's age is six years more than the average age of the children.
 - What is the percentage profit earned?
 - A shopkeeper invested ₹ 14000 and purchased a certain number of articles.
 - All the articles were sold at ₹ 15000.
 - By selling a product at 20% profit, how much profit was earned?
 - The difference between cost and selling price is ₹ 40.
 - The selling price is 120 per cent of the cost price.
 - A train crosses another train running in the opposite direction in x seconds. What is the speed of the train?
 - Both the trains have the same length and are running at the same speed.
 - One train crosses a pole in 5 seconds.
 - What is a two-digit number?
 - The difference between the two digits is 9.
 - The sum of the digits is equal to the difference between the two digits.
 - A spherical ball of radius x cm is melted and made into a right circular cylinder. What is the height of the cylinder?
 - The volume of the cylinder is equal to the volume of the ball.
 - The area of the base of the cylinder is given.

20. The area of a square is equal to that of a circle. What is the circumference of the circle?
I. The diagonal of the square is x inches.
II. The side of the square is y inches.
21. A , B and C are positive integers. Is their product an even number?
I. A is an even number.
II. The product of A and B is an even number and that of A and C is also an even number.
22. What is the meaning of "nic" in a certain code language?
I. In that code language "pat nic no ran" means "what is your name"?
II. In that code language "nic sa ran ja" means "my name is Shambhu".
23. How many daughters does K have?
I. L and N are sisters of M .
II. N 's mother is K who has only one son.
24. How is S related to R ?
I. R 's sister is the mother of N , who is daughter of S .
II. P is the sister of S .
25. Is D brother of J ?
I. J is the sister of M and K .
II. K is the brother of D .
26. Which direction is John facing?
I. Alok is to the right of John.
II. Aman is sitting opposite of Alok facing north.
27. Who is the tallest among A , B , C , D and E ?
I. C is taller than B and E .
II. E is taller than D and A and D is taller than B and C .
28. A box contains oranges, bananas and apples. How many apples are there in the box?
I. Of the hundred fruits in the box, fifty per cent constitute oranges and bananas together.
II. Fifty per cent of the fruits in the box are apples.
29. The area of a playground is 1600 square metres. What is its perimeter?
I. It is a perfect square playground.
II. It costs ₹ 3200 to put a fence around the playground at the rate of ₹ 20 per metre.
30. A , B , C and D made their project presentation, one on each day, on four consecutive days but not necessarily in that order. On which day did 'C' make his presentation?
I. The first presentations was made on 23rd, Tuesday and was followed by 'D's presentation.
II. 'A' did not make his presentation on 25th and one of them made his presentation, between A's and B's.
31. What is the shortest distance between Devipur and Durgapur?
I. Durgapur is 20 km away from Rampur.
II. Devipur is 15 km away from Rampur.
32. In a certain code "*al ed nop*" means "We play chess". Which code word means "chess"?
I. "*id nim nop*" means "We are honest".
II. "*gob ots al*" means "They play cricket".
33. "You must submit your application within 10 days from the date of release of this advertisement." What is exact date before which the application must be submitted?
I. The advertisement was released on 18th February.
II. It was a leap year.
34. Kiran is older than Manoj and Dilip is older than Neelam. Who among them is the youngest?
I. Kiran is older than Neelam.
II. Manoj is younger than Dilip.
35. 'B' is the sister of 'A'. How is 'A' related to 'B'?
I. 'A' is the brother of 'C'.
II. 'A' is the uncle of 'D'.
36. Brinda's merit rank is 17th in her class. What is her rank from the last?
I. There are 70 students in her class.
II. Nisha who ranks 20th in Brinda's class is 51st from the last.
37. Mandar is taller than Sunil and Raghu is shorter than Abhishek. Who among them is the shortest?
I. Raghu is shorter than Mandar.
II. Abhishek is shorter than Sunil.
38. How is 'go' written in a certain language?
I. 'you may come' is written as '*pic na ta*' in that code language.
II. 'he may go' is written as '*ja ho pic*' in that code language.
39. Among P, Q, R, S, T and V, who is the heaviest?
I. P and S are heavier than Q, T and V but none of them is the heaviest.
II. P is heavier than S but lighter than R.
40. A, B, C, D and F are seated around a circular table facing at the center. Who is on the immediate right of B?
I. D is between A and F.
II. C is between B and F.
41. What is the relation between M and F?
I. M has two sons, one of whom is B.
II. The mother of F has two sons D and B.
42. H is in which direction with respect to V?
I. S is to the south of K, who is to the west of V.
II. M is to the north of H, who is to the east of V.
43. By selling a product for ₹ 100 how much profit was earned?
I. 20% profit would have been earned if it had been sold for ₹ 90.
II. The profit was one-third of the purchase price.
44. A train crosses another train running in the opposite direction in x seconds. What is the speed of the train?
I. Both the trains are running at the same speed.
II. The first train is y cm long.
45. The difference between the two digits of a number is 6. What is the number?
I. The digit at the units place is bigger than the other digit.
II. The sum of the two digits is 12.
46. X , Y and Z are integers. Is X an odd number?
I. An odd number is obtained when X is divided by 5.
II. $(X + Y)$ is an odd number.
47. What is the capacity of a cylindrical tank?
I. Radius of the base is half of its height, which is 28 metres.
II. Area of the base is 616 sq metres and height is 28 metres.

48. What is the per cent rate of interest per annum on an investment of ₹ 12500?
I. The compound interest for 2 years is more than the simple interest for the same period by ₹ 500.
II. The income from simple interest is ₹ 5000.
49. What is the length of the train which crosses a signal pole in 20 seconds?
I. The speed of the train is 54 kmph.
II. The train crosses a 150-metre-long platform in 30 seconds.
50. What is the depth of a cylindrical pipe?
I. The area of the base is 616 cm^2 .
II. The perimeter of the base is 88 cm.
51. 48 children of a class were asked to sit in rows and columns. How many children are seated in each row?
I. The number of columns is more than the number of rows.
II. The number of rows is $\frac{3}{4}$ of the number of columns.
52. What is the height of the triangle ABC ?
I. AB is the base and the sum of the sides is 25 cm.
II. The ratio of the sides AB , BC and CA is $2 : 2 : 1$.
53. Who among M , T , R , K and Q is the tallest?
I. T is taller than R , M and Q but shorter than K .
II. R , T and M are shorter than K but taller than Q .
54. In which month of the year was Mohan born?
I. Mohan was born in winter.
II. Mohan was born exactly fourteen months after his elder sister, who was born in October.
55. D is in which direction of P ?
I. S is to the south of P , which is to the west of D .
II. P and R are in a straight line and R is to the south of D .
56. How is P related to M ?
I. P is brother of K and T .
II. T is daughter of Q and sister of M 's daughter.
57. In a certain code language what does 'come' mean?
I. 'pit na ja' means 'come and go' in the code language.
II. 'na dik sa' means 'you may go' in the code language.
58. What is Meena's rank from top in a class of twenty students?
I. Rama is fifth from the top and two ranks above Meena.
II. Ashok is tenth from the bottom and three ranks below Meena.
59. Who among P , Q , S , T , V and W is the shortest?
I. S is taller than T , P and W and is not the tallest.
II. T is shorter than Q but is not the shortest.
60. Which of the following means 'very' in a certain code language?
I. 'pit jo ha' means 'very good boy' in that code language.
II. 'jo na pa' means 'she is good' in that code language.
61. On which day of the week was Pramod born?
I. Pramod's sister was born on Wednesday.
II. Pramod's birthday was after his brother's birthday but before his sister's birthday.
62. How many sisters does P have?
I. M and T are sister of K .
II. D is husband of B , who is mother of K and P .
63. Who scored highest among A , B , C , D , and E ?
I. B scored more than D , but not as much as C .
II. E scored more than C but not more than A .
64. How many boys are there in the class?
I. Mita's rank among girls is 5th from the top and her rank in the class is 9th from the bottom.
II. No. of boys in the class is twice the number of girls.
65. Who is to the immediate right of P among five persons P , Q , R , S and T facing North?
I. R is third to the left of Q ; P is second to the right of R .
II. Q is to the immediate left of T , who is second to the right of P .
66. Z is in which direction with respect of X ?
I. Y is to the South of X and Z is to the East of P , which is to the North of Y .
II. P is to the South of X .
67. How is P related to N ?
I. N is sister of M , who is son of Q , whose wife is P .
II. M is brother of N and son of Q , whose wife is P .
68. What is the speed of a boat?
I. The boat covers a distance of 48 km in 6 hours while running upstream.
II. It covers the same distance in 4 hours while running downstream.
69. What was the population of State 'A' in 1999?
I. Population of State 'A' increases every year by 20%.
II. Population of State 'A' in 1999 was 172.8% of its population in 1996.
70. What is a two-digit number?
I. Sum of the digits is equal to the difference between the digits.
II. Difference between the digits is 9.
71. What is Sudha's present age?
I. Sudha's present age is five times her son's present age.
II. Five years ago her age was twenty-five times her son's age that time.
72. What is the average age of the children in a class?
I. The age of the teacher is as many years as the number of children.
II. The average age increases by 1 year if teachers' age is also included.
73. What is Sunil's position in a row of forty students?
I. There are sixteen students towards the left of Sunil.
II. There are twenty-three students towards the right of Sunil.
74. On which date in April was Varun born?
I. Varun's mother remembers that Varun was born before nineteenth but after fifteenth.
II. Varun's sister remembers that Varun was born before seventeenth but after twelfth.
75. How is 'go' written in a code language?
I. 'you may go' is written as 'pit. ja ho' in that code language.
II. 'he may come' is written as, 'ja da na' in that language.
76. How is D related to M ?
I. M has two sisters K and R .
II. D 's mother is sister of K 's father.
77. Who among M , T , R , J and K is the lightest?
I. R is heavier than T and K but lighter than J .
II. J is not the heaviest.

78. What is the distance (in km) between Achalpur and Durgapur by the shortest route?
- Durgapur is 8 km to the north of Meerapur which is 162 km away from Achalpur.
 - Achalpur is 69 km away from Bijnaur which is 28 km away from Durgapur.
79. Is Mr 'Y' entitled to get promotion in the month of September 2002?
- As per his office rules, the only condition for promotion is completion of 12 years of service in a particular grade on 31st December of every year.
 - Mr 'Y' has been working in this office for the last 12 years.
80. What is the area of a square ABCD?
- The perimeter of the square is 16 cm.
 - The difference between the length of side CD and the sum of the lengths of side AB and CD is 4 cms.
81. How is 'M' related to 'N'?
- 'P' is the daughter of 'M' and mother of 'S'?
 - 'T' is the son of 'P' and husband of 'N'.
82. On which date of a particular year was Aryabhata commissioned into the Earth's orbit?
- China's secret services claim that it was between 7th and 10th of May.
 - The Japan's space research scientists claim that it was between 5th and 10th of May.
83. How is 'A' related to 'D'?
- 'C' is the daughter of A and sister of B.
 - 'D' is the son of F who is C's grandfather.
84. How many employees of bank 'X' opted for VRS?
- 18% of the 950 officer cadre employees and 6% of the 1100 of all other cadre employees opted for VRS.
 - 28% of the employees in the age group of 51 to 56 and 17% of the employees in all other age groups opted for VRS.
85. In a row of five buildings A, B, C, D and E, which building is in the middle?
- Buildings D and B are at the two extreme ends of the row.
 - Building E is to the right of building C.
86. Which codeword stands for 'good' in the coded sentence 'sin co bye' which means 'He is good'?
- In the same code language 'co mot det' means 'They are good'.
 - In the same code language 'sin mic bye' means 'He is honest'.
87. Among five colleagues, A, B, C, D and E who is the highest salary earner?
- B's salary is less than the sum of the salaries of A and C, but more than the sum of salaries of E and D.
 - A's salary is more than that of both E and D but less than that of C who ranks second in the descending order of their salaries.
88. How many students are there in the school?
- The number of boys is 90 more than that of girls.
 - The percentage of boys to the percentage of girls is 145.
89. What is a two-digit number?
- The sum and difference of digits are 9.
 - The unit's digit is less than the ten's digit.
90. What is the rate of compound interest?
- The principal was invested for 4 years.
 - The interest earned was ₹ 1491.
91. What is the measure of the third angle of a triangle?
- The sum of the other two angles is 130° .
 - The sum of second and third angles is 110° .
92. What is the distance between the points X and Y?
- A boat takes 4 hours in covering a distance from X to Y downstream and from Y to X in upstream.
 - The speed of the boat in still water is 5 kmph.
93. What is the volume of a 32-metre-high cylindrical tank?
- The area of its base is 154 m^2 .
 - The diameter of base is 14 m.
94. Aparna is twice as old as Savita. What is the difference between their ages?
- Five years hence, the ratio of their ages would be 9 : 5.
 - Ten years back, the ratio of their ages was 3 : 1.
95. A train crosses a pole in 10 seconds. What is the length of the train?
- The train crosses another train running in opposite direction at a speed of 80 km/hr in 22 seconds.
 - The speed of the train is 108 km/hr.
96. What is the area of a rectangle?
- The difference between the sides is 5 cm.
 - The measure of its diagonal is 10 cm.
97. Is X an odd integer?
- When multiplied by an even number, it gives an even number.
 - When multiplied by an odd number, it gives an odd number.
98. How is 'flower' written in a code language?
- 'it is a beautiful flower' is written as 'ho na ta ja pa' in that code language.
 - 'this is a beautiful place' is written as 'ko ja ta po na' in that code language.
99. K is in which direction of T?
- P is towards South of T and towards East of N.
 - M is towards North of T and towards West of K.
100. How many children are there between M and P in a row of children?
- M is fifteenth from the left in the row.
 - P is exactly in the middle and there are ten children towards his right.
101. P, Q, R, S and T are sitting in a circle, facing towards the centre of the circle. Who is second to the right of P?
- R is on the immediate left of T and second to the right of S.
 - Q is on the immediate right of S and third to the left of P.
102. Among M, K, B, D and W, who is the youngest?
- B is younger than D.
 - W is younger than K but older than M.
103. What does 'Ne' stands for in the code language?
- 'Na Ni Nok Ne' means 'I will tell you' and 'Ni Nok Ne Nam' means 'he will tell you' in that code language.
 - 'Ni Ne Mo Nam' means 'will he call you' and 'Ne Mok Sac Ni' means 'how will you go' in that code language.

104. Who amongst P, Q, R, S, T and U is the tallest?
- P is taller than R and T but not as tall as U, who is taller than Q and S.
 - R is the third in height in the ascending order and not as tall as U, P and Q, Q being taller than P but not the tallest.
105. Who among A, B, C, D, E & F read the book last?
- F, who gave the book to B after reading, was third to read the same.
 - C, who read the book after A, was the third person to read the book before it reached E.
106. Who is paternal uncle of P?
- P is brother of L, who is daughter of Q, who is sister of N, who is brother of S.
 - M is brother of K, who is husband of L, who is mother of G, who is sister of P.
107. What is Sudin's rank in the class of 44 students?
- Ramesh, whose rank is 17th in the class, is ahead of Shyam by 6 ranks, Shyam being 7 ranks ahead of Sudin.
 - Suketu is 26 ranks ahead of Sudin and Shyamala is 6 ranks behind Sudin while Savita stands exactly in the middle of Shyamala and Suketu in ranks, her rank being 17.
108. What will be the compounded amount?
- ₹ 200 were borrowed for 192 months at 6% compounded monthly.
 - ₹ 200 were borrowed for 16 years at 6%.
109. What would have been the selling price per kg of rice?
- 50 kg of rice was purchased for ₹ 3,350 and ₹ 150 was spent on transport.
 - Profit earned was 5%.
110. What will be ratio of men to women and children in the town?
- Population of the town is 93,280 of which 56,100 are men.
 - The ratio of men to children is 5 : 2 and women are double in number than the children.
111. What will be the average weight of the remaining class?
- Average weight of 30 children out of total 46 in the class is 22.5 kg and that of the remaining children is 29.125 kg. A child having weight more than 40 kg is excluded.
 - Average weight of a class of 46 children is 23.5 kg. A child weighing 46 kg is dropped out.
112. What will be the number?
- One-fifth of a number is equal to 20% of that number.
 - Thirty-five percent of a number is $\frac{7}{20}$ of that number.
113. How many children are there in the class?
- Numbers of boys and girls are in the respective ratio of 3 : 4.
 - Number of girls is more than the number of boys by 18.
114. What was the population of State 'A' in 1999?
- Population of the State increases every year by 20% and its population in 1997 was 1,20,000.
 - Population of State A in 1997 was twice that of State B in the same year.
115. What is the cost of laying carpet in a rectangular hall?
- Cost of the carpet is ₹ 450 per square metre.
 - Perimeter of the hall is 50 metres.
116. What is the rate of interest p.c.p.a.?
- Difference between compound interest and simple interest on an amount of ₹ 10,000 for two years is ₹ 225.
 - The amount doubles itself on simple interest in $6\frac{2}{3}$ years.
117. What is a two-digit number?
- The number obtained by interchanging the digits is smaller than the original number by 63.
 - Sum of the digits is 11.
118. What will be the cost of the second necklace?
- The cost of the first necklace is more than $\frac{1}{5}$ of the second and the cost of the third necklace is more than $\frac{2}{5}$ of the second. The total cost of all the three necklaces is Rs. 120000.
 - The cost of the first necklace is $\frac{2}{5}$ more than the second. The cost of the third necklace is the least and total cost of all the three necklaces is Rs. 1,20,000.
119. How many items did the distributor purchase?
- The distributor purchased all the items for Rs. 4500.
 - If the distributor had given Rs. 5 more for each item, he would have purchased 10 items less.
120. How long will it take to fill a tank?
- One pipe can fill the tank completely in 3 hours.
 - Second pipe can empty that tank in 2 hours.
121. What will be the area of a plot in sq. metres?
- The length of that plot is $1\frac{2}{3}$ times the breadth of that plot.
 - The diagonal of that plot is 30 metres.
122. How much minimum marks will be required to pass an examination?
- Student A secured 32% marks in that examination and he failed by 1 mark. Student B secured 36% marks in the same examination and his marks was 1 more than the minimum pass marks.
 - Student A secured 30% of full marks in the examination and he failed by 2 marks. If he had secured 5 more marks his percentage of marks would have been 40%.
123. What is the height of a circular cone?
- The area of that cone is equal to the area of a rectangle whose length is 33 cm.
 - The area of the base of that cone is 154 sq cm.
124. What is the price of a table'?
- The total price of 3 chairs and 5 tables is ₹ 18,800.
 - The total price of 6 chairs and 4 tables is ₹ 20,800.

125. What was the speed of a running train A?
I. The relative speed of train A and another train B running in opposite direction is 160 kmph.
II. The train B crosses a signal post in 9 seconds.
126. What is the difference between the two digits in a two-digit number?
I. The sum of the two digits is 8.
II. $\frac{1}{5}$ of that number is 15 less than $\frac{1}{2}$ of 44.
127. What is the monthly income of Q?
I. Q earns ₹ 6000 more than R, who earns ₹ 3000 less than P.
II. The total monthly income of P and Q is ₹ 27,000.
128. What will be the share of P in the profit earned by P, Q & R together?
A. P, Q & R invested total amount of ₹ 25,000 for a period of two years.
B. The profit earned at the end of two years is 30%.
C. The amount invested by Q is equal to the amount invested by P & R together.
(a) A only **(b)** B only
(c) C Only
(d) All A, B & C are required to answer the question
(e) Question cannot be answered even with the information given in all three statements.
129. What is the rate of simple interest per annum?
I. The sum triples in 20 years at simple interest.
II. The difference between the sum and the simple interest earned after 10 years is ₹1000.
130. What is the sum which earned interest?
I. The total simple interest was ₹7000 after 7 years.
II. The total of sum and simple interest was double of the sum after 5 years.
131. A train crosses a signal post in X seconds. What is the length of the train?
I. The train crosses a platform of 100 metres in Y seconds.
II. The train is running at the speed of 80 km/hr.
132. What is the area of a circle?
I. The circumference of the circle is 308 metres.
II. The radius of the circle is 28 metres.
133. A, B and C are integers. Is B an even number?
I. $(A + B)$ is an odd number.
II. $(C + B)$ is an odd number.
134. P, Q, R, S and T are sitting around a circular table facing the centre. Who is on the immediate right of R?
I. P and T are on the either sides of S.
II. Q is on the immediate left of T.
135. How is M related to D?
I. D says I have only one brother.
II. M says I have only one sister.
136. How is 'over' written in a code language?
I. 'go over there' is written as 'na ho ja' in that code language.
II. 'over and again' is written as 'pit tak na' in that code language
137. B is F's brother. K is mother of F. How is F related to B?
I. K has only one son and one daughter.
II. B is the only son of M, who has two children.
138. Among M, T, R, D, B, each one of them having different weight, who is the third from top when they are arranged in descending order of their weights?
I. R is heavier than M and T but lighter than B.
II. M is lighter than R but heavier than T.
139. What will be the cost of painting of the inner wall of a room if the rate of painting is ₹ 20 per square metre?
I. Perimeter of the floor is 44 feet.
II. Height of the wall of the room is 12 feet.
140. What is the ratio of the number of boys and girls in a school?
I. Number of boys is 40 more than the girls.
II. Number of girls is 80 per cent of the number of boys.
141. What is the difference between two numbers?
I. First number is 60 per cent of the other number.
II. 50 per cent of the sum of first and second numbers is 24.
142. What was the speed of the running train?
I. Length of the train was 120 metre.
II. The train crossed the other train whose length was 180 m in 4 seconds.
143. What will be the compound interest after 3 years?
I. Rate of interest is 5 per cent.
II. The difference between the total simple interest and the total compound interest after two years is ₹ 20.
144. Which village is to the North-East of village A?
I. Village 'B' is to the North of village A', and village 'C' and 'D' are to the East and West of village 'B', respectively.
II. Village 'P' is to the South of village 'A', and village 'E' is to the East of village 'P', village 'K' is to the North of village 'P'.
145. Can Rohan retire from office 'X' in January 2000 with full pension benefits?
I. Rohan will complete 30 years of service in office 'X' in April 2000 and desires to retire.
II. As per office 'X' rules, an employee has to complete minimum 30 years of service and attain age of 60. Rohan has 3 years to complete age of 60.
146. Among five friends P, Q, R, S and T, who ranks third in terms of salary obtained by them?
I. T's salary is more than P and Q but not more than S.
II. R's salary is lowest among them.
147. How is P related to Q?
I. J has two daughters, one of them 'R' is married to 'P'
II. Q is the mother of 'S', the younger sister of 'R'
148. Which word in the code language means 'flower'?
I. 'dem fu la pane' means 'rose flower is beautiful' and 'la quiz' means 'beautiful tree'.
II. 'dem fu chin' means 'red rose flower' and 'pa chin' means 'red tea'.
149. How many marks did Prakash obtain in Mathematics?
I. Prakash secured on an average 55 per cent marks in Mathematics, Physics and Chemistry together.
II. Prakash secured 10 per cent more than the average in Mathematics.
150. What is the rate of compound interest on a sum of money?
I. The total compound interest at the end of two years is ₹ 820.
II. The total simple interest at the same rate on ₹ 5,000 at the end of three years is ₹ 750.

151. Which is the smaller of the two numbers?
I The difference between these two numbers is one-third of the largest number.
II The sum of these two numbers is 30.
152. What is the height of a right-angled triangle?
I The area of the right-angled triangle is equal to the area of a rectangle whose breadth is 12 cm.
II The length of the rectangle is 18 cm.
153. What is the speed of a running train which takes 9 seconds to cross a signal post?
I The length of the train is 90 metres.
II The train takes 27 seconds to cross a platform of 180 metres.
154. In an examination 'X' four tests P, 'Q, R and S are given. Which is the easiest one?
I Most of the examinees attempted test, 'Q' first. While 'P' was left incomplete by many.
II Test 'R' is found easier than test 'S' by all the examinees.
155. In a row of five A, B, C, D and E, who is standing in the middle?
I D is to the immediate right of E and B is to the immediate left of E.
II B is at the extreme left of the row.
156. What is the distance between villages 'X' and 'Y' by the shortest route?
I Village 'X' is to the North of village 'Z' at a distance of 35 km.
II Village 'Y' is to the west of village 'Z' at a distance of 20 km.
157. How is Sushma related to Nandini?
I Sushma's husband is the only son of Nandini's mother.
II Sushma's brother and Nandini's husband are cousins.
158. How many candidates were interviewed everyday by the panel 'A' out of the three panels A, B and C?
I The three panels on an average can interview 15 candidates every day.
II Out of a total of 45 candidates interviewed everyday by the three panels, the no. of candidates interviewed by panel 'A' is less by 2 than the candidates interviewed by panel 'C' and is less by 1 than the candidates interviewed by panel 'B'.
159. Which direction is Shashidhar facing?
Statements :
I In the early morning Shashidhar was standing in front of a puppet and the shadow of the puppet was falling to the right of Shashidhar.
II In the early morning Shashidhar was standing on the ground. His shadow was falling behind him when he turned to his left.
160. Who among A, B, C, D and E teaches History?
Statements :
I Each one of them teaches only one subject. B teaches Mathematics, while E teaches Science. A or C does not teach Geography. A or D does not teach English.
II C and E are teachers of English and Science respectively and A is the teacher of Mathematics.
161. In a row of boys facing South who is immediate left to Ramakant?
Statements :
I Suresh is immediate right to Chandrakant, who is fourth to the right of Ramakant.
II Suresh is third to the right of Ramakant and Naresh is second to the right of Suresh.
162. Who has secured the maximum marks among six friends A, B, C, D, E and F?
Statements :
I B secured less marks than A and F but not less than C, D and E.
II F secured more marks than B but not as much as A.
163. What will be the position of hour hand of a clock at 7.30 PM?
Statements :
I There are English alphabets on the dial of the clock instead of digits.
II The hour hand is at P at 7 O'clock.
164. Mahesh's flat is on which floor of the five-floor apartment?
I His flat is exactly above Ganesh's flat whose flat is exactly above Nitin's first-floor flat.
II Jeevan's flat, which is adjacent to Mahesh's flat, is exactly below Ahmed's flat, who is on fourth floor.
165. At present, how many villagers are voters in village 'X'?
I There were 860 voters in village 'X' in the list prepared for the last election.
II The present list of village 'X' has 15% more voters than the list for the last election.
166. How many stations are there while going from station 'X' to station 'Y'?
I Station 'G' precedes station 'Y' and station 'K' is next station after station 'X'.
II Station 'M' is third from 'K' and there are 4 stations between M and Y.
167. How many books did Dinesh purchase in 'X' bookshop?
I Dinesh wanted to purchase 65 books, but only 45 books were available in shop 'X'.
II Dinesh selected 37 books but had money to purchase 27 books and asked for some credit to which the shop-keeper of 'X' bookstall did not agree.
168. If the first day of a month is Thursday, how many days were there in that month?
I The fourth Sunday happened to be on 25th.
II The last day of the month was the fifth Saturday of that month.
169. How many girls are taller than Samir in his class?
I When students of Samir's class are ranked in descending order of their height, Samir's rank is 17th from the top among all the students and 12th among boys.
II Samir's rank from the bottom on the basis of height among boys is 18th and among all students is 29th.
170. Among Nitin, Amit, Sudesh, Rekha and Sujata, who came last for the programme?
I Nitin came after Amit but not after Sujata.
II Rekha came after Sujata but not after Sudesh.

171. (b) Out of the four teams A, B, C and D which team is not likely to win as per the opinion poll?
- As per the opinion poll, chances of team C's winning are more than that of team A but not as much as that of team B, whose chances of winning are more than that of team A.
 - As per the opinion poll team C's chances of winning are less than that of team B but not less than that of team D, whose chances of winning are more than that of team A.
172. How is Pratibha related to Suresh?
- Suresh's mother is Pratibha's mother-in-law.
 - Suresh is the only son of Sushila, who is Pratibha's mother-in-law.
173. Five friends P, Q, R, S and T are standing in a row facing East. Who is standing at the extreme right end?
- Only P is between S and T ; R is to the immediate right of T.
 - R is between T and Q.
- Directions (Qs. 174 - 188):** In each of the following questions, a question is followed by information given in three statements. You have to study the question along with the statements and decide the information given in which of the statement(s) is necessary to answer the question.
174. What is the cost of flooring a rectangular hall?
- The length and the breadth of the hall are in the ratio of 3 : 2.
 - The length of the hall is 48 metres and the cost of flooring is ₹ 850 per square metre.
 - The perimeter of the hall is 160 metres and the cost of flooring is ₹ 850 per square metre.
- Only I and II
 - Only I and III
 - Only III
 - Only I and either II or III
 - Any two of the three
175. What is the rate of interest pcpa?
- The amount doubles itself in 5 years on simple interest.
 - Difference between the compound interest and the simple interest earned on this amount in two years is ₹400.
 - Simple interest earned per annum is ₹ 2000.
- Only I
 - Only II and III
 - Any two of the three
 - All I, II and III
 - Only I or only II and III
176. What is a two-digit number?
- The difference between the two-digit number and the number formed by interchanging the digits is 27.
 - The difference between the two digits is 3.
 - The digit at unit's place is less than that at ten's place by 3.
- Only I and II
 - Only I and either II or III
 - Only I and III
 - All I, II and III
 - Even with all the three statements the answer cannot be given.
177. What is the present age of Subir?
- The present age of Subir is half that of his father.
 - After 5 years the ratio of Subir's age to his father's will be 6 : 11.
 - Subir is 5 years younger than his brother.
- Only I and II
 - Only I and III
 - Only II and III
 - All I, II and III
 - Even with all the three statements answer cannot be given.
178. In how many days can 10 women finish a work?
- 10 men can complete the work in 6 days.
 - 10 men and 10 women together can complete the work in $3\frac{3}{7}$ days.
 - If 10 men work for 3 days and thereafter 10 women replace them, the remaining work is completed in 4 days.
- Only I and II
 - Any two of the three
 - Only I and III
 - Only II and III
 - None of these
179. What is Sudha's present salary?
- The salary increases every year by 15%.
 - Her salary at the time of joining was ₹ 10000.
 - She had joined exactly 5 years ago.
- II and III only
 - I and II only
 - All I, II and III
 - I and III only
 - None of these
180. What was the amount of profit earned?
- 10% discount was offered on the labelled price.
 - Had there been no discount, profit would have been 30%
 - Selling price was more than the cost price by 20%
- I and either II or III
 - Any two of the three
 - All I, II and III
 - Either I or II and III
 - Question cannot be answered even with the information in all three statements
181. How many students are there in all in the institute of Arts, Commerce and Science?
- 20% of the student study Science.
 - The numbers of students studying Arts and Commerce are in the ratio 3:5
 - The number of students studying Commerce is more than that studying Science by 375.
- II and III only
 - III and either I or II only
 - Any two of the three
 - All I, II and III
 - Question cannot be answered even with the information in all three statements
182. What is the cost of flooring a rectangular hall?
- Perimeter of the hall is 76 m.
 - Area of the hall is 336 m^2 .
 - Cost of flooring per square metre is ₹ 550.
- I and III only
 - II and III only
 - Any two of the three
 - All I, II and III
 - None of these

183. In how many days can a work be completed by A and B together?
- I. A alone can complete the work in 8 days.
 - II. If A alone works for 5 days and B alone works for 6 days, the work gets completed.
 - III. B alone can complete the work in 16 days.
- (a) Any two of the three (b) II and either I or III
(c) I and II only (d) II and III only
(e) None of these
184. What is the capacity of a cylindrical tank?
- I. The radius of the base is half of its height.
 - II. The area of the base is 616 sq. metres.
 - III. The height of the cylinder is 28 metres.
- (a) Only I and II (b) Only II and III
(c) Only I and III (d) All I, II and III
(e) Any two of the three
185. What is the speed of a train?
- I. The train crosses a signal pole in 18 secs.
 - II. The train crosses a platform of equal length in 36 secs.
 - III. Length of the train is 330 metres.
- (a) I and III only (b) II and III only
(c) I and II only (d) III and either I or II only
(e) Any two of the three
186. What is the staff strength of Company 'X'?
- I. Male and female employees are in the ratio of 2 : 3 respectively.
 - II. Of the officer employees 80% are males.
 - III. Total number of officers is 132.
- (a) I and III only
(b) II and either III or I only
(c) All I, II and III
(d) Any two of the three
(e) Question cannot be answered even with the information in all the three statements.
187. What is this two-digit number?
- I. The number obtained by interchanging the digits is more than the original number by 9.
 - II. Sum of the digits is 7.
 - III. Difference between the digits is 1.
- (a) I and III only (b) I and II only
(c) II and III only (d) All I, II and III
(e) Question cannot be answered even with the information in all the three statements.
188. How many articles were sold?
- I. Total profit earned was ₹ 1,596.
 - II. Cost price per article was ₹ 632.
 - III. Selling price per article was ₹ 765.
- (a) II and III only (b) I and II only
(c) All I, II and III (d) Any two of the three
(e) Question cannot be answered even with the information in all the three statements.
- Directions (Qs. 189 - 193) :** Each of the questions below consists of a question and three statements denoted A, B and C are given below it. You have to study the questions and all the three statements and decide whether the question can be answered with any one or two of the statements or all the statements are required to answer the question.
189. What is R's share of profit in a joint venture?
- A. Q started a business investing ₹. 80,000/-.
 - B. R joined him after 3 months.
 - C. P joined after 4 months with a capital of ₹. 1,20,000 and got ₹. 6,000 as his share of profit.
- (a) Only A and C are required
(b) Only B and C are required
(c) All A, B and C together are required
(d) Even with all A, B and C the answer cannot be arrived at
(e) None of these
190. What is the area of a right-angled triangle?
- A. The perimeter of the triangle is 30 cm.
 - B. The ratio between the base and the height of the triangle is 5 : 12.
 - C. The area of the triangle is equal to the area of a rectangle of length 10 cm.
- (a) Only B and C together are required
(b) Only A and B together are required
(c) Only either A or B and C together are required
(d) Only A and C together are required
(e) None of these
191. What is the sum of two numbers?
- A. The bigger of these two number is 6 more than the smaller number.
 - B. 40% of the smaller number is equal to 30% of the bigger number.
 - C. The ratio between half of the bigger number and one-third of the smaller number is 2:1.
- (a) Only B and C together are required
(b) Only A and B together are required
(c) Any two of A, B and C together are required
(d) All A, B and C together are required
(e) None of these
192. How many marks did Arun get in English?
- A. Arun secured an average of 60 marks in four subjects including English.
 - B. He secured a total of 170 in English and Mathematics together.
 - C. He secured a total of 180 in Mathematics and Science together.
- (a) All A, B and C together are required
(b) Only A and B together are required
(c) Only B and C together are required
(d) Only A and C together are required
(e) None of these
193. What was the profit earned on the cost price by Mahesh by selling an article?
- A. He got 15% concession on labelled price in buying that article.
 - B. He sold it for ₹. 3,060/-.
 - C. He earned a profit of 2%, on the labelled price.
- (a) Only A and B together are required
(b) Only B and C together are required
(c) Only either A or C and B together are required
(d) Even with all A, B and C the answer cannot be arrived at
(e) All A, B and C together are required

Directions (Qs. 194-198): In each of the following questions, a question is asked followed by three statements. While answering the question, you may or may not require the data provided in the statements. You have to read the question and the three statements and then decide whether the question can be answered with any one or two of the statements or all the three statements are required to answer the question. The answer number bearing the combination of statements or single statement which is necessary to answer the question is your answer.

194. What is the perimeter of a rectangular garden?
 A. The area of the garden is 2400 sq. metres.
 B. The diagonal of the garden is 50 metres.
 C. The ratio between the length and the breadth of the garden is 3 : 2.
 (a) All A, B and C together are required
 (b) Any two of A, B and C are sufficient
 (c) Only A and B are required
 (d) Only B and C are required
 (e) None of these
195. What was the rate of compound interest on an amount of money?
 A. The amount fetches a total of ₹ 945.75 as compound interest at the end of three years.
 B. The difference between the total simple interest and the total compound interest at the end of two years with the same rate of interest was ₹ 15.
 C. The ratio between the principal amount and the total simple interest at the end of three years is 20 : 3.
 (a) Only A and B are required
 (b) Only B and C are required
 (c) All A, B and C together are required
 (d) Even with all A, B and C together the answer cannot be determined
 (e) None of these

196. What is the difference between two numbers X and Y?
 A. X is 20 per cent more than another number Z.
 B. Y is 20 per cent less than Z.
 C. The sum of Y and Z is 72.
 (a) Only A and B are required
 (b) Only A and C are required
 (c) All A, B and C together are required
 (d) Any two of A, B and C are required
 (e) Even with all A, B and C together the answer cannot be arrived at
197. What is the monthly salary of Pravin?
 A. Pravin earns ₹ 1,200 more than Amal.
 B. The ratio between Amal and Vimal's monthly salary is 5 : 3.
 C. Vimal earns ₹ 1,000 less than Amal.
 (a) Any two of A, B and C are required
 (b) Only A and B are required
 (c) Only B and C are required
 (d) All A, B and C together are required
 (e) None of these
198. How much marks was obtained by Mukesh in Geography?
 A. The average marks obtained by Mukesh in English, History and Geography was 65.
 B. The difference between the marks obtained by Mukesh in English and History was 15.
 C. The total marks obtained by Mukesh in Geography and Mathematics was 140.
 (a) All A, B and C together are required
 (b) Only A and C are required
 (c) Only B and C are required
 (d) Even with all A, B and C together the answer cannot be determined
 (e) Any two of A, B and C are sufficient

ANSWER KEY

1	(d)	21	(c)	41	(d)	61	(d)	81	(d)	101	(b)	121	(e)	141	(e)	161	(d)	181	(d)
2	(e)	22	(d)	42	(b)	62	(d)	82	(d)	102	(d)	122	(c)	142	(e)	162	(e)	182	(b)
3	(d)	23	(e)	43	(c)	63	(e)	83	(d)	103	(d)	123	(d)	143	(e)	163	(d)	183	(a)
4	(e)	24	(d)	44	(d)	64	(d)	84	(a)	104	(c)	124	(e)	144	(a)	164	(c)	184	(e)
5	(d)	25	(d)	45	(e)	65	(c)	85	(d)	105	(d)	125	(d)	145	(d)	165	(e)	185	(d)
6	(d)	26	(d)	46	(a)	66	(e)	86	(c)	106	(b)	126	(b)	146	(d)	166	(e)	186	(e)
7	(d)	27	(b)	47	(c)	67	(c)	87	(b)	107	(c)	127	(e)	147	(e)	167	(b)	187	(b)
8	(c)	28	(a)	48	(c)	68	(e)	88	(e)	108	(c)	128	(e)	148	(d)	168	(b)	188	(c)
9	(b)	29	(c)	49	(c)	69	(d)	89	(a)	109	(e)	129	(a)	149	(d)	169	(a)	189	(d)
10	(e)	30	(e)	50	(d)	70	(b)	90	(d)	110	(b)	130	(e)	150	(b)	170	(e)	190	(b)
11	(d)	31	(d)	51	(b)	71	(e)	91	(a)	111	(b)	131	(c)	151	(e)	171	(b)	191	(e)
12	(d)	32	(e)	52	(e)	72	(d)	92	(d)	112	(d)	132	(c)	152	(d)	172	(b)	192	(e)
13	(b)	33	(a)	53	(c)	73	(c)	93	(c)	113	(e)	133	(d)	153	(c)	173	(e)	193	(e)
14	(a)	34	(d)	54	(b)	74	(e)	94	(c)	114	(a)	134	(e)	154	(c)	174	(e)	194	(b)
15	(e)	35	(c)	55	(a)	75	(d)	95	(b)	115	(d)	135	(d)	155	(e)	175	(e)	195	(e)
16	(a)	36	(c)	56	(e)	76	(e)	96	(e)	116	(c)	136	(e)	156	(e)	176	(e)	196	(c)
17	(d)	37	(b)	57	(d)	77	(d)	97	(b)	117	(e)	137	(c)	157	(c)	177	(a)	197	(d)
18	(a)	38	(d)	58	(c)	78	(d)	98	(d)	118	(a)	138	(d)	158	(b)	178	(b)	198	(d)
19	(b)	39	(a)	59	(d)	79	(d)	99	(b)	119	(e)	139	(d)	159	(c)	179	(c)		
20	(c)	40	(d)	60	(d)	80	(c)	100	(e)	120	(d)	140	(b)	160	(a)	180	(e)		

- c. Difference of the selling price and the cost price
From I: We get that the required profit is ₹ 40.
 $[\because \text{Profit} = \text{Selling price} - \text{Cost price}]$
From II: It is restatement. Because when profit earned is 20% then obviously selling price will be 120% of the cost price.
 Thus, only statement I alone is sufficient.
17. (d) We know sum of the speeds of the trains.

$$= \frac{\text{Sum of the length of the trains}}{\text{Time taken to cross each other when the trains are running in opposite direction}}$$

From I: $S_1 = S_2$ and $L_1 = L_2$
 where S_1 and S_2 are speeds of the trains and L_1 and L_2 are the lengths of the trains.
 These informations do not lead us to answer.
 Hence, not sufficient.
 Again, **From II:** We get,

$$\frac{L_1}{S_1} = 5$$

 Hence, II alone is also not sufficient.
From I and II: We still lack information regarding the length and the speed of the train.
 Hence, statement I and II even together are not sufficient.
18. (a) **From I:** Digit at ten's place – digit at unit's place = 9.
 This can be possible only in the case of 90. Hence, statement I alone is sufficient.
From II: The sum of two digits is equal to the difference between the two digits. This implies that unit's place digit is 0. And digits at ten's place may be any of the remaining nine digits. Hence, statement II alone is not sufficient.
19. (b) **From II:** Radius of the sphere in question part will give us the volume of the sphere as well as that of the right circular cylinder. We know height of right circular cylinder

$$= \frac{\text{Volume of the cylinder}}{\text{Area of the base of the cylinder}}$$
20. (c) **From I:** We will get the answer in following way:
 Diagonal of the square → Side of the square
 → Area of the square → Area of the circle
 → Radius of the circle → Circumference of the circle.
 Hence, statement I alone is sufficient. Similarly, we will get the answer also with the help of statement II alone.
22. (d) pat nic no ran = what is your name nic sa ran ja = my name is Shambhu 'nic' and 'ran' is common in both sentences. Hence 'nic' means 'is' or 'name'.
23. (e) **From I:**
 $L(-) - (-)N - M$
From II:
 $K(-)$
 $|$
 $N(-)$
 Now, combining I and II, we get $K(-)$
 $L(-) - N(-) - M(+)$
 K has two daughters.
24. (d) From I, S is either R 's sister or brother-in-law. II is no help either.
25. (d) **From I:**
 $J(-) - M - K$
- From II:**
 $K(+)-D$
 Combining all, we get, $J(-) - M - K(+)-D$ Hence, 'D' may be either brother or sister of J .
27. (b) **From I:**
 $C > B, E.$
From II:
 $E > D, A \dots (i) D > B, C \dots (ii)$
 From (i) and (ii), E is the tallest.
28. (a) **From I:** Total fruits = 100
 50% of = 50
 Hence, number of oranges and bananas is 50.
 Therefore, number of apples = $100 - 50 = 50$. Hence only statement I alone is sufficient. Statement II does not give any absolute figure of fruits or apples.
29. (c) **From I:** We get the ratio of sides. Since, we have been given the total area of the playground in the question, we will get the answer through the following steps:
 Area → Side → Perimeter
From II: Rate of fencing and total cost of fencing is sufficient to answer, because $\text{Perimeter} \times \text{rate of fencing} (\text{₹/m}) = \text{Total cost (in rupees)}$
 Hence, either statement I or statement II alone is sufficient.
30. (e) **From I:** We get
 First presentation : 23rd (Tuesday)
 Second presentation : 24th (Wednesday) : D
 Third presentation : 25th (Thursday)
 Fourth presentation : 26th (Friday)
From II: A did not make his presentation on 25th and one of them made his presentation between A and B.
From I and II: 'A' did not make his presentation on 26th also, because 'D' made presentation on 24th. Hence, 'A' made presentation on 23rd, 'B' on 25th and 'C' on 26th.
31. (d) We have no idea about the location of Durgapur, Devipur and Rampur. Mere distances between Durgapur and Rampur and Devipur and Rampur are not enough to locate the places.
32. (e) **From I:** code for 'We' is 'nop'.
From II: code for 'play' is 'al'.
 Hence, from I and II together code for 'chess' is 'ed'.
33. (a) Within ten days means before 28th Feb because advertisement was released on 18th February.
34. (d) We have been given
 $\text{Kiran} > \text{Manoj} \dots (i)$
 $\text{Dilip} > \text{Neelam} \dots (ii)$
 Now, who is the youngest? We need information by which the above equations can be combined into a single equation.
From I: If $\text{Kiran} > \text{Neelam}$ then either Manoj or Neelam will be the youngest.
From II: If $\text{Dilip} > \text{Manoj}$ then either Manoj or Neelam be the youngest.
 Hence, neither I nor II is sufficient.
35. (c) We have been given 'B' is the sister of 'A'. To answer 'How is 'A' related to 'B'' we need information regarding the sex of 'A'.
From I: If 'A' is the brother of 'C', obviously 'A' is a male.
From II: if 'A' is the uncle of 'D', obviously 'A' is a male.
 Hence, either I or II is sufficient.

36. (c) **From I:** Required rank = $70 - 17 + 1 = 54$
From II: Total students in Bindra's class = $51 + 20 - 1 = 70$
 Now, required rank = $70 - 17 + 1 = 54$

37. (b) We have been given
 Mandar > Sunil(i)
 Abhishek > Raghu(ii)
From I: We get either Raghu or Sunil is the shortest.
From II: Mandar > Sunil > Abhishek > Raghu.
 Hence, Raghu is the shortest.

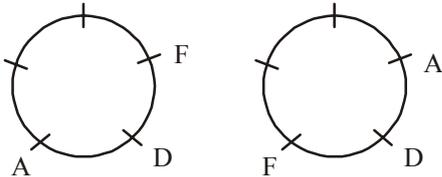
38. (d) I alone is not sufficient because the word 'go' is absent in statement I. Statement II alone is not sufficient because there is no such indication by which we can find out code for 'go'. Note that you can't assume that the codes used for words of the statement are in the same order as the words are.

Now, when we use the data given in both statement, we can get code for 'may' only, i.e., 'pic'.

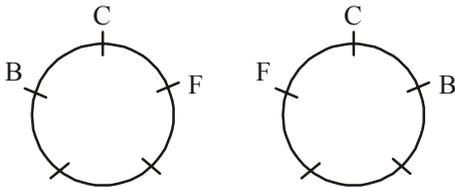
39. (a) **From I:** P, S > Q, T, V
 Since none of them is the heaviest. Hence, R is the heaviest among them.

From II: R > P > S

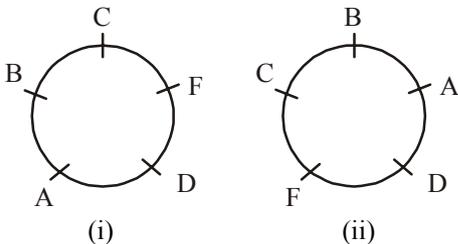
40. (d) **From I:**



From II:

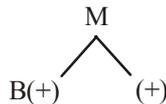


From I and II:

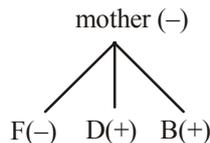


The person who is immediate right of B is either A or C

41. (d) **From I:**



From II:



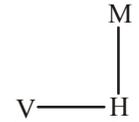
Both the statements I and II are not independently sufficient because statement I does not say about F and statement II does not say about M. From statement I and II together, F is the daughter of M. But we don't know the sex of M.

42. (b) **From I:**



[Information regarding H is absent. Hence, I alone is not sufficient]

From II:



Hence, H is to the east of V

43. (c) **I** $CP = 90 \times \frac{100}{120} = ₹ 75$
 Profit = $90 - 75 = ₹ 15$
 Profit on S.P. = 100
 Profit on S.P. will be = $100 - 75 = ₹ 25$

II. $SP = CP + \text{Profit}$

or, $x + \frac{x}{3} = 100$

or, $x = \frac{100 \times 3}{4} = 75$

$\therefore \text{Profit} = \frac{75}{3} = ₹ 25$

Therefore, either statement I or II alone is sufficient to answer the question.

44. (d) The length of the other train is not given in any of the statements.

45. (e) Let the digits be x and y . We have given $x - y = 6$ (Assume $x > y$)

From statement I: x occupies units place.

From statement II: $x + y = 12$

With the help of information in the question part and in statement II, we can find the value of x and y easily because there are two equations to know about two unknowns. But to determine the number we need the help of statement I.

46. (a) Statement I alone is sufficient to answer the question. We know that whenever any odd number is divided by any odd number, it gives an odd number.

47. (c) We know the capacity of a cylindrical tank can be found out by using the following formula:

Area of the base of cylinder \times height of cylinder
 or $\pi r^2 \times h$ where r = radius of cylinder
 h = height of cylinder

Now,

Statement I gives the value of r and h . Hence, statement I alone is sufficient. Again, statement II gives information about area of the base and height. Hence, statement II alone is also sufficient.

48. (c) (I) $250R + 500 = 12500 \left[\left(1 + \frac{R}{100} \right)^2 - 1 \right]$

$\Rightarrow R = 20\%$

(II) $5000 = \frac{12500 \times R \times 2}{100} \Rightarrow R = 20\%$

Hence either I or II is sufficient.

49. (c) **From statement (I),**
 Length of the train = $54 \times \frac{5}{18} \times 20 = 300$ m
From statement (II),
 Let the length of train be d m.
 $\frac{d}{20} = \frac{d+150}{30}$
 $\Rightarrow d = 300$ m
 Hence, either (I) or (II) is sufficient.
50. (d) From both the statements, we get the value of radius only. Hence, even after combining together, depth can't be determined.
51. (b) **From statement (II) alone,** let the number of columns be C .
 \therefore No. of rows = $\frac{3}{4}C$
 \therefore No. of children = $\frac{3}{4}C^2$
 $\therefore \frac{3}{4}C^2 = 48$
 $\Rightarrow C = 8$
 The number of children seated in each row is equal to the number of columns = 8
 Hence, statement (II) alone is sufficient.
52. (e) **Combining statements (I) and (II),**
 $2x + 2x + x = 25 \Rightarrow x = 5$
 \therefore Area of the triangle = $\frac{\sqrt{12.5 \times 2.5 \times 2.5 \times 7.5}}{2} = 24.20 \text{ cm}^2$
 Height of the triangle = $\frac{2 \times 24.20}{10} = 4.84 \text{ cm}$
53. (c) **From I:**
 $K > T > R, M, Q$
 Hence, 'K' is tallest among them.
From II:
 $K > R, T, M > Q$
 Hence, 'K' is tallest among them.
54. (b) **From II:**
 (October + 12 + 2) = December.
 Hence, Mohan was born in December.
55. (a) **From I:**

P	D
S	

From II:

D	D	D
RP	PR	R
		P

 D is east of P .
 Many arrangements are possible.
 Hence, we can't determine
56. (e) **From I:**
 $P(+)-K-T$
From II:
 $Q(-) \leftrightarrow M(+)$
 $T(-)$ Using I and II together, we set
 $Q(-) \leftrightarrow M(+)$
 $T(-)-K-P(+)$
 Hence, 'P' is son of 'M'.

58. (c) **From I:** Meena's rank is $(5 + 2 =) 7$ th from the top.
From II: Meena's rank is $(11 - 3 =) 8$ th from the top.
59. (d) **From I:** $S > T, P$ and W . And at least one person is taller than S .
From II: $Q > T$ And at least one person is shorter than T .
 From I and II even together, we get no clue regarding the shortest person.
60. (d) **From I:** 'pit jo ha' \Rightarrow very good boy ... (i)
From II: 'jo na pa' \Rightarrow she is good ... (ii)
 From I and II, we get 'jo' means 'good'. But still we do not know whether 'pit' or 'ha' means 'very'.
61. (d) The information given in both the statements I and II together gives no clue about which day of the week Pramod was born on.
62. (d) Both the statements I and II even together can't specify the sex of K .
63. (e) **From I:** $C > B > D$ **From II:** $A > E > C$
 Combining both, we get, $A > E > C > B > D$
 Hence, both statements together are necessary.
64. (d) From I, it can't be determined how many girls are there behind Mita, and hence, total no. of girls can't be found out. Hence, II has no use.
65. (c) **From I:** $R - PQ$ (Hence, Q is immediate right of P .)
From II: PQT (Hence, Q is immediate right of P .)
66. (e) **From I:**

X	$P - Z$
Y	Y

 (i) (ii)
 Combining (i) & (ii),

X	$P - Z$
$P - Z$	or X
Y	Y

 (South-East) (A) (North-East) (B)
From II:

X
P

 Now, using I & II together, 'A' will be valid.
67. (c) **From I:**
 $P \leftrightarrow Q(+)$
 $(\blacklozenge)N - M(+)$ (P is mother of N)
From II: $Q \leftrightarrow P(-)$
 $M(+)-N$ (P is mother of N)
68. (e) Here two data values are important; the speed of the boat (V_B) and that of waterflow (V_w). So, we must need two equations to find the value of any of them.
 So,
From I: $V_B - V_w = \frac{48}{6} = 8$ (i)
From II: $V_B + V_w = \frac{48}{4} = 12$ (ii)
 Solving (i) and (ii), V_B can be determined.

69. (d) The population of state A for a given year (1996) is not given in any of the statements.
70. (b) **From I:** This is possible only when one digit is zero. So, there are so many possible answers, e.g., 10,20,30, **From II:** This is possible only when one digit is 9 and another is zero (0). As the required no is a two-digit no., 90 is the only solution.
71. (e) $I \Rightarrow M = 5S \dots (1)$
 $II \Rightarrow M - 5 = 25(S - 5) \dots (2)$
 Solving the two equations, we get value of M . Thus, both statements are required.
72. (d) **From I:** Let there be n children in the class. Then the age of the teacher = n years. Also assume average age of children = x years.
From II: Using I, we get

$$\frac{nx + n}{n + 1} = x + 1$$

 Hence, no answer can be determined.
73. (c) **From I:** If there are sixteen students towards left of Sunil then Sunil is at $(16 + 1 =)$ 17th position from the left end and $(40 - 17 + 1 =)$ 24th position from the right end.
From II: If there are twenty-three students towards right of Sunil then Sunil is at $(23 + 1 =)$ 24th position from the right end and $(40 - 24 + 1 =)$ 17th position from the left end.
74. (e) **From I:** Varun's birthday may be 16th, 17th or 18th April.
From II: Varun's birthday may be 13th, 14th, 15th or 16th April. Now,
From I and II: Varun's birthday is on 16th April.
75. (d) We do not know whether the codes of the given words are in the same order as the order of the words. Therefore, statement I alone is not sufficient. Again, statement II does not consist of the word 'go'. Hence, statement II alone is not sufficient. Even statements I and II together give the code for 'may' only.
76. (e) **From I:** K and R are sisters of M .
From II: * (Father of K) - # (Mother of D)
-
- From I and II:**
- Thus, D is the cousin of M .
77. (d) **From I:** $J > R > T$ or K
From II: Atleast one person is heavier than J .
From I and II: We get
 $M > J > R > T$ or K
 Hence, both the statements I and II together are insufficient to answer who among T or K is the lightest.
78. (d) Both the information lack the requisite information, viz direction of Achalpur with respect to Durgapur.
79. (d) When were 12 years completed? If Y completed 12 years sometime in 2002, he will be entitled to promotion only after Dec 31, 2002.
80. (c) Both the statements are independently sufficient. Statement I gives the side of the square, since side of a square = perimeter \div 4. Again, statement II gives information about the length of the side AB. If we have information about the length of the side of a square, we can easily find the area of the square by squaring the side.
81. (d) Neither statements talk about the sex of M .

82. (d) **From statement I:**
 Probable dates are: 8th or 9th May
From statement II:
 Probable dates are: 6th, 7th, 8th or 9th May.
From I and II together:
 Probable dates are: 8th or 9th May.
83. (d) Neither statements talk about the sex of A .
84. (a) Statement II gives information in terms of percentage. Hence, II is not sufficient. But I is certainly sufficient.
85. (d)
86. (c) Given: 'sin co bye' means 'He is good'
 From I: 'co mot det' means 'They are good'
 From II: 'sin mic bye' means 'He is Honest'
 After a comparison between the given information and statement I we get 'co' is the code for 'good'. Similarly, after a comparison between the given information and statement II we get 'sin' and 'bye' as the codes for 'He' and 'is'. Thus 'co' is the code for 'good'.
87. (b) **From I:** $(A + C) > B > (E + D)$ We can't answer the question on the basis of statement I. We need some more information.
From II: $C > A > (E + D)$ And 'C' has the second position in descending order of their salaries. Hence B is the highest salary earner.
88. (e) I alone is not sufficient because we do not know about the number of girls. Similarly, II alone is not sufficient because the given information merely gives the ratio of boys and girls (145 : 100). Now combining I and II, we get 90 = 45% of total girls.
 Obviously, total strength = 245% of total girls

$$= \frac{90}{45} \times 245 = 490$$

 Thus, both the statements are necessary.
89. (a) Suppose the digit at unit's place be x and the digit at unit's place by y .
 Then the number = $10y + x$
 From I: We get
 $x + y = 9$ (i)
 and $x - y = 9$ (ii)
 Obviously, the value of either x or y must be zero. But if we consider zero at ten's place then the value will be considered as a single-digit number. Hence, the number is 90.
 Statement II merely says $x > y$. With the help of this information we can't get the number.
90. (d) We know

$$P + I = P \left(1 + \frac{r}{100} \right)^t$$

 where P = Principal
 I = Interest
 t = Time for which amount is invested
 r = Rate of compound interest (annual)
From I: $t = 4$ years
From II: $I = ₹ 1491$
 Still we need the principal. Hence, both I and II even together are not sufficient.
91. (a) We know the sum of the three angles of a triangle is 180° .
From I: We get sum of the other two angles is 130° . Obviously, the third angle is $(180^\circ - 130^\circ =)$ 50° .
From II: We can't say about the proportion of the third angle if we have been given the sum of the second and the third angles.

92. (d) Suppose the distance through the boat route be D km. And the speed of the boat in still water be a km/h and the speed of the current be b km/h. Then

From I :

$$\frac{D}{a+b} + \frac{D}{a-b} = 4$$

From II :

$$a = 5 \text{ km/h}$$

Still we need 'b' Hence, both the statements even together are not sufficient.

93. (c) We know volume of a cylindrical tank $= \pi r^2 h$ where r = radius of the base of the cylinder, and h = height of the cylinder In the question part we have been given $h = 32m$

From I : Area of the base $(\pi r^2) = 154m^2$

From II : Diameter of the base $(2r) = 14m$. Obviously, both the informations independently can fulfil our need.

94. (c) In the question part we have been given: Age of Aparna = 2 × age of Savita, ie the present ratio of Aparna and Savita = 2 : 1

From I :	Aparna	Savita
	2	1
	:	:
	+5 ₁	+5 ₂
	9	5

Difference of Aparna's and Savita's ages

$$= \frac{5_1 \times (9 - 5_2)}{5_2 \times 2 - 9 \times 1} \times (2 - 1)$$

$$= \frac{5 \times 4 \times 1}{1} = 20 \text{ years}$$

From II:	Aparna	Savita
	2	1 ₁
	:	:
	-10	-1 ₂
	3	2

Difference of Aparna's and Savita's ages

$$= \frac{10 \times (3 - 1_2)}{3 \times 1_1 - 2 \times 1_2} \times (2 - 1_1)$$

$$= \frac{10 \times 2 \times 1}{3 - 2} = 20 \text{ years}$$

95. (b) We know the length of a train = speed in m/sec × time (in seconds) taken by train to cross a pole.

Suppose the speed of the train be x m/sec and the length L_1 .

Therefore, $L_1 = 10x$

From I :
$$\frac{L_1 + L_2}{x + 80 \times \frac{5}{18}} = 22$$

$$\therefore \frac{10x + L_2}{x + 80 \times \frac{5}{18}} = 22$$

Still we need the value of L_2 to find the value of 'x'. Hence, I alone is not sufficient.

From II :
$$x = \frac{108 \times 5}{18} = 30 \text{ m/sec}$$

Obviously, $L_1 = 10 \times 30 = 300 \text{ m}$
Hence, only II alone is sufficient.

96. (e) We know
Area of a rectangle = Length × Breadth

Suppose the length and the breadth of the rectangle be x and y respectively.

From I : $x - y = 5$.

Hence, I alone is not sufficient.

From II : Diagonal of the rectangle $(\sqrt{x^2 + y^2}) = 10$

ie $x^2 + y^2 = 100$

Hence, II alone is not sufficient.

Now we know two unknowns can be obtained through two different equations.

Hence, both I and II together are sufficient.

97. (b) Any number, whether it is an odd or even integer, gives an even number when multiplied by an even number. Hence, I alone is not sufficient. But, II alone is sufficient because

(i) odd integer × odd number = odd number

(ii) even integer × odd number = even number

With the help of only statement II we can say 'yes' as our answer.

98. (d) **From I and II :** We get code for 'flower' is either *ho* or *pa*. Still, we need some more information to answer the question.

99. (b) Statement I alone is not sufficient because the statement mentions nothing about K. Now, from II we get.

M - K

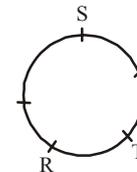
|

T

Thus, K is towards north-east of T.

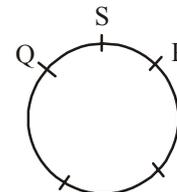
100. (e) Statement I alone is not sufficient because it mentions only M's position in the row. Whereas statement II hints only the position of P in the row, ie $(10 + 1 =) 11$. Thus from I and II, we get required number of children = $(15 - 1) - 3 = 11$

101. (b) **From I :** We get



Since position of P still not clear, statement I alone is not sufficient.

From II: We get



Obviously, Q is second to the right of P. Hence, statement II alone is sufficient.

102. (d) **From I and II:** We get

$D > B \dots$ (i)

$K > W > M \dots$ (ii)

Still, we lack some clue as to whether B or M is the youngest. Hence, both statements I and II even together are not sufficient.

103. (d) From I: Na Ni Nok Ne → I will tell you ... (i)

Ni Nok Ne Nam → he will tell you ... (ii)

From (i) & (ii) Na → I and Nam = he

- From II:** Ni Ne Mo Nam → will he call you ... (iii) Ne Mok Sac Ni → how will you go ... (iv)
Ne Ni is common in all the four statements. Exact transformation of Ne can't be determined.
104. (c) **From I:** $P > R, P > T, U > P, U > Q, U > S$
→ U is tallest. [Since U is taller than P, Q & S and P is taller than R and T]
From II: $R < U, P & Q \dots (i); Q > P \dots (ii)$
From (i) and (ii) R P Q U
Hence U is tallest.
106. (b) **From I:** Q(-) — N(+) — S
|
P(+)-L(-)
N is maternal uncle of P.
From II: (+) M — (+) K — L(-)
|
G(-)
M is the paternal uncle of P
107. (c) **From I:** Ramesh = 17th
∴ Shyam = (17 + 6 =) 23th
Sudin = (23 + 7 =) 30th
From II: Savita = 17th
-
109. (e) $SP = \frac{(3350 + 150) \times \frac{105}{100}}{50}$ per kg = ₹ 73.5 per kg
110. (b) Ratio of men : women : children = 5 : 4 : 2
113. (e) **From I:** Ratio of boys and girls = 3k : 4k
From II: No of girls — No of boys = 18
From I and II:
 $4k - 3k = 18$ ∴ $k = 18$
∴ $4k + 3k = 18 \times 7 = 126$
114. (a) Only I alone is sufficient.
115. (d) To find out the cost of laying carpet we need (i) cost of carpet per square metre and, (ii) Area of the floor to be carpeted.
Both the information even together are not sufficient to fulfil our need.
116. (c) We know, if we have been given difference of CI and SI during two years, then this difference (D) is equal to $\frac{P \times r^2}{100^2}$ where P = Principal r = rate of interest
From I: We get the value of P and D. Hence, I alone is sufficient.
- Again we know $SI = \frac{P \times R \times T}{100}$
where P = principal
R = rate of interest
T = time period
From II: We get value of P = x(say).
Then $SI = x$ and $T = 6\frac{2}{3}$ years
Hence, using the above formula we can get rate of interest from II alone also.
117. (e) Suppose units place of number is occupied by y and tens place by x .
From I: $(10x + y) - (10y + x) = 63$
⇒ $9x - 9y = 63$
⇒ $x - y = 7$... (i)
From II: $x + y = 11$... (ii)
From eqns (i) and (ii), $x = 9, y = 2$
Hence, required number = 92
118. (a) **From statement I,**
Ratio of the costs of first, second and third necklace is 6 : 5 : 7. Hence, the price of second necklace can be calculated.
119. (e) **From Statement I,**
Rate of an item = $\frac{4500}{x}$... (i)
Here x = total number of items
Combining statement II and (i), we have
 $\left(\frac{4500}{x} + 5\right)(x - 10) = 4500$
or, $x^2 - 10x - 9000 = 0$ ∴ $x = 100$
Hence, both statements together are sufficient
121. (e) **Combining statements (I) and (II),**
 $1^2 + b^2 = 900$
 $\frac{25}{9} b^2 + b^2 = 900$
∴ $b \approx 15$ m & $l = 25$ m
∴ Area = 375 m^2
122. (c) **From statement I,**
 $32\% + 1 = 36\% - 1 =$ Minimum pass marks
∴ Minimum pass marks = 17
From statement II,
Minimum pass marks = $30\% + 2$ and
 $(40 - 30)\% = 5$ ∴ $30\% = 15$
∴ Minimum pass marks = $15 + 2 = 17$
Hence, either A or B alone is sufficient.
123. (d) Total surface area of a right circular cone = $\pi r^2 + \pi r h$, h = height and r = radius of the base of the cone.
I → $\pi r^2 + \pi r h =$ area of a rectangle whose length = 33 cm
II. $\pi r^2 = 154$ sq cm. So, r can be obtained but as the breadth of the rectangle has not been given, so, even after combining the two statements, h can't be obtained.
124. (e) I → $3C + 5T = 18800$ II → $6C + 4T = 20,800$
By combining the two statements clearly, C and T can be obtained. Hence, the answer is (e).
125. (d) I → speed of train A + speed of train B = 160 kmph
II → $\frac{\text{length of train B}}{\text{speed of train B}} = 9 \text{ sec.}$
As the length of train B has not been given, so the speed of train B and consequently the speed of train A cannot be obtained.
126. (b) Let, the two-digit no. be xy , i.e. $10x + y$.
I → $x + y = 8$;
II → $\frac{1}{5}(10x + y) = \frac{44}{2} - 15 = 22 - 15 = 7$
∴ The no., $10x + y = 7 \times 5 = 35$ and so, the reqd difference = $5 - 3 = 2$.

127. (e) I $\rightarrow Q = R + 6000, R = P - 3000$;
 II $\rightarrow P + Q = 27000$
 I + II $\rightarrow (R + 3000) + (R + 6000) = 27000$
 $\therefore R = 9000$ and $Q = R + 6000 = 15000$.
128. (e) Even after using all the statements we cannot separate the combined profit of P and R.
129. (a) I. $R = (3 - 1) \times \frac{100}{20} = 10\%$
 II. Here the sum is not given.
 Therefore, statement I alone is sufficient.
130. (e) From I, we can calculate the SI after 5 yrs. When we combine with II, we can get the value of the sum.
 i.e., $(P + 5000) = 2P$ or, $P = ₹ 5000$
131. (c) Let the length of the train be 'd' m.
 Speed of the train = $\frac{d}{X}$
 I. We know that when a train crosses a platform, it crosses not only its length but also the length of the platform.
 i.e., $\frac{d}{X} = \frac{d+100}{Y}$ or, $d = \frac{100X}{Y-X}$
 II. Length of the train (d) = $80 \times \frac{5}{18} X = \frac{200X}{9}$
 Therefore, either I alone or II alone is sufficient to answer the question.
132. (c) I. Radius of circle = $\frac{308 \times 7}{2 \times 22} = 49$ m
 Area of circle = $\frac{22}{7} \times 49 \times 49 = 7546$ m²
 II. Area of circle = $\frac{22}{7} \times 28 \times 28 = 2464$ m²
 Hence, either I alone or II alone is sufficient for answering the question.
133. (d) I. $A + B$ is odd \Rightarrow If A is an even no. then B will be an odd no. and vice versa.
 II. $C + B$ is odd \Rightarrow If B is an even no. then C will be an odd no. and vice versa.
 So, even by combining the two statements together, we are not able to say that B is an even integer.
134. (e)
-
135. (d) The given statements do not give any clue to answer the question.
136. (e) **From I:** go over there \Rightarrow *na ho ja ...* (i)
From II: over and again \Rightarrow *pit tak na ...* (ii)
 Only 'over' is common in both (i) and (ii). Thus code for 'over' is 'na'.

137. (c) In question part we have the following information:
 K(-)
 |
 B(+)-F
 We need to know only the sex of F to answer the question.
From I: K has one son (B) and one daughter. Implies that F is a female. Hence, F is the sister of B.
From II: B is the only son of M who has two children implies that F is a female. Hence, F is the sister of B.
138. (d) **From I:** B
 |
 R
 |
 M T
From II: R
 |
 M
 |
 T
From I and II:
 B
 |
 R
 |
 M
 |
 T
 But information regarding D is necessary to answer the question.
139. (d) From the statement I we will get the sum of length and breadth, but we need individual values of length and breadth.
140. (b) I $\rightarrow B \rightarrow G = 40$
 II $\rightarrow G = 80\%$ of $B \rightarrow B \times \frac{4}{5}$
 $\therefore B : G = 5 : 4$
141. (e) I $\rightarrow a = 60\%$ of b
 where a and b be the first and second numbers respectively.
 $a = \frac{6}{10} b$ II $\rightarrow (a + b) 50\% = 24$
 $\therefore a + b = 48$
 After combining these two statements, we get the difference between two numbers as 12.
142. (e) Combining both the statements, we get the speed of train = $\frac{180 + 120}{4} \times \frac{18}{5} = 270$ km/hr
143. (e) I $\rightarrow R = 5\%$
 II $\rightarrow (CI - SI)$ for two years = ₹ 20
 Combining I and II and using the **Method:**

$$\text{Sum} = \frac{\text{Diff} \times 100 \times 100}{\text{Rate} \times \text{Rate}} = \frac{20 \times 100 \times 100}{25} = ₹ 8,000$$

$$\text{So, CI} = 8000 \left(1 + \frac{5}{100} \right)^3 - 8000 = ₹ 1261$$

144. (a) **From I :** D B C
A
Hence, village 'C' is North-East of village 'A'.
From II : A
K
P E
145. (d) No statements discuss about pension benefits.
146. (d) **From I :** S > T > P, Q
From II and using I : S > T > P, Q > R
Hence either P or Q ranks third in terms of salary.
147. (e) **From I :**
Hence P is the son-in-law of Q.
From II :
- ```

 J
 / \
 (-) (-) R ↔ P
 (-)
 Q (-)
 |
 (-) S - R

```
- Using both I and II, we get,
- ```

    J (+) ↔ Q (-)
     (-) S   R (-) ↔ P (+)
    
```
- Hence P is the son-in-law of Q.
148. (d) **From I :** dem fu la pane = rose flower is beautiful... (i)
la quiz = beautiful tree(ii)
∴ la = beautiful
From II : dem fu chin = red rose flower (iii)
pa chin = red tea (iv)
From (i) & (iii), dem fu = rose flower
But there we get stuck.
149. (d) I. M + ph + ch = 165 %
II. Pr → M + 10% (average)
150. (b) I. CI in two years = ₹ 820
II. Rate = $\frac{250}{5000} \times 100 = 5\%$
151. (e) I. $x - y = \frac{1}{3}x$ or, $2x - 3y = 0$
II. $x + y = 30$
By combining I and II,
we get $y = 12$
152. (d) I. Area of right-angled triangle = $12 \times L$
II. $L = 18$ cm.
∴ By combining I and II we can find the area of right-angled triangle, but the height cannot be determined in absence of the base of the triangle.
153. (c) I. Speed = $\frac{90}{9} \times \frac{18}{5} = 36$ km/hr
II. Length of train = $\frac{\text{length of platform}}{\text{difference in time}} \times \text{Time taken to cross a signal post}$
 $= \frac{180}{18} \times 9 = 90$ m
Speed = $\frac{90}{9} \times \frac{18}{5} = 36$ km/hr.
154. (c) From I, P is easier than Q. From II, R is easier than S. But what about relationships like that between P and R?

155. (e) From I, we get BED as a sequence. Now, II tells us that B is at the extreme left. Clearly then, D is third from left, i.e. in the middle of the five.
156. (e) Taking Z as the reference point and using both the equations, we can get the distance between X and Y.
157. (c) **From I :** Sushma's husband is Nandini's brother (only son of mother) Sushma is Nandini's sister-in-law.
From II : Sushma's brother = cousin of Nandini's husband
⇒ Sushma = cousin of Nandini's husband
= Nandini's cousin-in-law
158. (b) I is not sufficient. Average leads us nowhere when it comes to specifics.
From II : $A = C - 2 = B - 1$ and $A + B + C = 45$.
Solving these, we can get the value of A.
159. (c) **From I :** It means the sun is to the left of Shashidhar and since it is morning, the left of Shashidhar is East. Hence, Shashidhar is facing South.
From II : Sun is to the left of Shashidhar. Hence, he is facing South [Since it is morning].
160. (a) **From I :** A teaches History among A, B, C, D and E [The name of other four subjects is given in the statement and A teaches none of them.]
From II : Either B or D teaches History.
161. (d) **From I :** Ramakant ___ Chandrakant Suresh
Hence, cannot be determined.
From II : Ramakant __ Suresh _ Naresh
Hence, cannot be determined.
The combination of both statements is not possible.
162. (e) **From I :** A, F > B > C, D, E
Either A or F has secured maximum marks.
From II : A > F > B
From I and II, A secured the maximum marks.
163. (d) At 7.30 PM, the hour hand of the clock will be between 7 and 8. The alphabet code of 8 can not known from the given statements.
164. (c) From I, Mahesh's flat is on the 3rd floor.
From II also, his flat is on the 3rd floor.
165. (e) I gives us the no. of voters in the last election. Now, if we add 15%, from II, we get the answer.
166. (e) XK.....GY..... (I)
K ___ M; M ___ Y ... (II)
Combing I and II, we get XK ___ M ___ GY.
Thus, there are eight stations between X and Y.
167. (b) Desire to purchase a thing is not enough; it is money that matters.
168. (b) (I) gives no additional information; it may be calculated from the statement itself.
(II) leads us to an answer. Thursday is 1st day (given in the statement). So first Saturday will be the 3rd day. And 5th Saturday = $3 + 4 \times 7 = 31$ st day. Since, this is the last day, there were 31 days in the month.
169. (a) **From I :** $(17 - 12) = 5$ girl students are taller than Samir
From II : $(29 - 18) = 11$ girl students are shorter than Samir. But, from II alone it is not known how many girls are there in the class.
170. (e) **From I :** A > N > S **From II :** S > R > Sud
From I and II, we get A > N > S > R > Sud
171. (b) From (I), B > C > A
D is not frostent here, so no conclusion.
isom (II),
B > C > D > A
So, A is not likely to win.

173. (e) **From I:** S P T R **From II:** T R Q East
Combining I & II, we get, S P T R Q
Hence, Q is at extreme right
174. (e) With the help of any two statements, the value of length and breadth can be calculated. And combining this with the cost per square metre, we get the total cost of flooring the rectangular hall.
175. (e) **From I alone,**
Rate of interest = $\frac{(2-1) \times 100}{5} = 20\%$
From II and III,
Rate of interest = $\frac{2 \times \text{diff. in CI \& SI}}{\text{SI}}$
[For 2 years only]
 $= \frac{2 \times 400}{4000} \times 100 = 20\%$
Hence, either I alone or II and III together are sufficient.
176. (e) Let the two-digit no. be $10x + y$.
I $\Rightarrow |10x + y - 10y - x| = 27$ or, $|x - y| = 3$
II $\Rightarrow |x - y| = 3$
III $\Rightarrow x - y = 3$
Here, by taking any two, the values of x and y can't be determined. So, choice (e) is the correct answer.
177. (a) Let the present age of Subir and his father be S and F respectively.
I $S = \frac{F}{2}$
II $\frac{S+5}{F+5} = \frac{6}{11}$ or, $6F - 11S = 25$
III $B - S = 5$ [$B =$ age of Subir's brother]
Now, with the help of I and II together, the value of S and F can be determined.
179. (c) By combining all the three statements together, Sudha's present salary is
 $= 10000 \left(1 + \frac{15}{100}\right)^5$
180. (e) None of the statements gives the amount of labelled price or SP. So, even by combining all the statements together, question can't be answered.
181. (d) Statements I and II give the percentage number of students studying in different disciplines. Combining this with (iii), the total number of students can be determined.
182. (b) Combining (ii) and (iii), total cost = $336 \times 550 = ₹ 184800$
183. (a) With the help of I and II, part of work done by A in 5 days
 $= \frac{5}{8}$ Remaining part will be $= \frac{3}{8}$
Therefore, B alone can do the work in $6 \times \frac{8}{3} = 16$ days

$$\therefore A + B = \frac{8 \times 16}{24} = \frac{16}{3} \text{ days}$$

Similarly, by combining any two of the three the required no. of days can be determined.

184. (e) To find the capacity of a cylindrical tank we need either radius of the tank or area of the base and height of the cylinder. Any two of the three fulfil our requirement.
187. (b) Note that with the help of II and III you can find only the two digits and not the two-digit number.
189. (d) Investment ratio or amount is not given, hence even all statements together are not sufficient.
190. (b) Let the base, height and hypotenuse of a right-angled triangle be b , p and h respectively.
From A, $b + p + h = 30$ (i)
From B, $b : p = 5 : 12$ (ii)
We know that $h^2 = p^2 + b^2 = 25x^2 + 144x^2 = 169x^2$
 $\therefore h = 13x$ (iii)
Combining equations (i), (ii) and (iii), we get
 $5x + 12x + 13x = 30$
 $\Rightarrow x = 1$

$$\therefore \text{Area of triangle} = \frac{1}{2} \times 5 \times 12 = 30 \text{ cm}^2$$

Hence, only A and B together are sufficient.

191. (e) Let the bigger and smaller nos. be x and y respectively.
From A, $x - y = 6$ (i)
From B, 40% of $y = 30\%$ of x
or, $4y = 3x$ (ii)
From C, $\frac{x}{2} : \frac{y}{3} = 2 : 1$ or, $3x = 4y$ (iii)
We see that equations (ii) and (iii) are same. Hence, A and either B or C is require.
193. (e) From A, B & C
Let labelled price = ₹ x
 \therefore C.P. = $x \times 85/100$
& S.P. = ₹ 3060

$$\therefore \text{Labelled price} = \frac{3,060 \times 100}{102} = ₹ 3000$$

$$\therefore \text{C.P.} = 85 \times 3000 / 100 = ₹ 2550$$

$$\text{Profit} = 3060 - 2550 = ₹ 510$$

$$\therefore \% \text{ profit} = \frac{510}{2550} \times 100 = 20\%$$

Hence, all statements are required.

194. (b) Let the length and breadth of rectangle be 'l' and 'b' respectively.
 $A \rightarrow l.b = 2400$ $B \rightarrow l^2 + b^2 = 2500$
 $C \rightarrow l = \frac{3}{2}b$
Solving any of the above two equations, we get the values of e and b .
195. (e) From C alone we can find out the rate per cent.



Alphabet & Number Arrangement

INTRODUCTION

As we know that English alphabet is a group of English letters, hence the problems based on alphabet are the problems based on English letters. Problems under this segment are very important part of the questions asked in various competitive exams to be conducted for the purpose of requirement of officers and clerks. Particularly for getting job in banking sector, this type of questions can not be ignored. This is the reason that we will discuss every aspect of such problems so that students do not face any kind of difficulty while solving the problems related to English alphabet.

TYPES OF PROBLEMS :

- (1) General series of alphabet
- (2) Random series of alphabet
- (3) Words in alphabetical order
- (4) Problems of word formation
- (5) Problems of letter gap

Now we will discuss all the six types of problems one by one in detail.

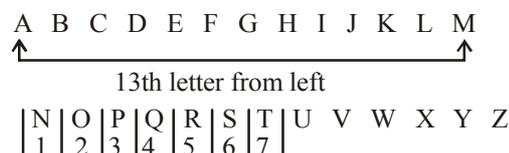
(1) General Series of Alphabet

EXAMPLE 1. Which of the following options is seventh to the right of the 13th letter from the left in a forward Alphabet series?

- (a) R (b) T (c) V
(d) W (e) None of these.

Sol. Now the question is how to solve it?

1st of all we will write the forward alphabet series as given below:



From above series it is clear that M is the 13th letter from left and to the right of M (13th letter from left), T is the 7th letter. Hence (b) is the correct option.

Here, we have solved this problem with a general method. But this type of problem can also be approached through quicker method that will help you save some extra consumed time.

Shortcut Approach

- ↗ If both the directions are same then subtraction of numbers takes place.
- ↖ If the directions are opposite then addition of numbers takes place.

SHORTCUT METHOD FOR ABOVE EXAMPLE :

Now, for solving the sample question we apply this rule. As we want to find out the 7th letter to the right of the 13th letter from the left, the directions are opposite and thus rule (b) will be applied here. Hence we add $7 + 13 = 20$. Therefore, the answer will be 20th from left. Also, 20th from left less mean $26 - 20 + 1 = 7$ th from right. We can easily see.

∴ 20th letter from left = T
Also 7th letter from right = T

∴ This method also gives the answer choice (b).

After solving the sample question, you must have noticed that the above mentioned trick is to calculate the actual position of the required letter before going to search for it.

OTHER VARIATIONS OF SUCH TYPE OF PROBLEMS

EXAMPLE 2. If alphabet series is given in backward or reverse order, then find out the eighth letter to right of O?

- (a) H (b) G (c) U
(d) X (e) None of these

Z Y X W V U T S R Q P O

Sol.

N	M	L	K	J	I	H	G	F	E	D	C	B	A
1	2	3	4	5	6	7	8						

It's clear (b) is the correct answer.

Note : Even with the forward alphabet series we can solve this problem because the letter which is eight to the right of O in the reverse order alphabet series must be eight to the left of O in forward alphabet series.

EXAMPLE 3. If the 1st half of the alphabet is written in reverse order, then find out the letter that would be 20th letter from the right.

- (a) G (b) F (c) D
(d) H (e) None of these

Sol. As the 2nd half is not reversed, the 1st 13 letters would be same when we do counting from right. But not letters coming after 13th will be actually from the left. Hence 14th letter from right would be A; 15th would be B; 16th would be C and we move further in the same manner. Hence from left which is G.
∴ Option (a) is the correct answer.

REMEMBER

I: While solving the problems based on alphabet, you must have in your mind the exact positions of every letters of alphabet in forward order as well as in backward or reverse order as given below:

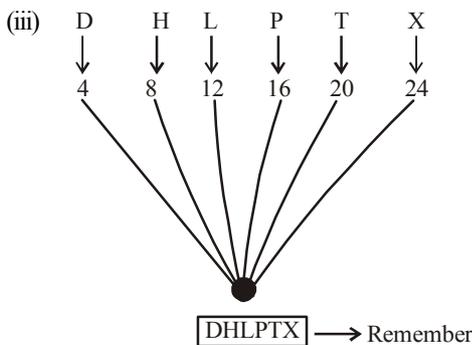
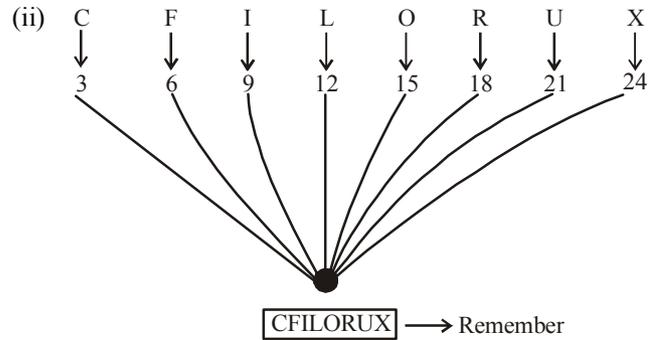
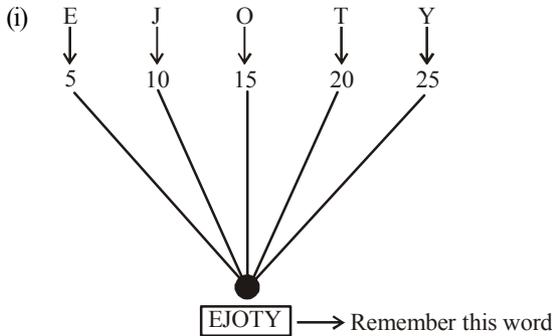
Letters positions in forward alphabetical order:

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Letters positions in backward or reverse alphabetical order:

Z	Y	X	W	V	U	T	S	R	Q	P	O	N	M	L	K	J	I	H	G	F	E	D	C	B	A
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

II: Just keep in mind, the following positions of the letters in the English alphabet (forward order).



III: m th element to be counted from left to right of a series of x characters is equal to $(x + 1 - m)$ th element to be counted from right to left of that series. This rule can be better illustrated by an example which is given below:

Let us take the forward order alphabet series,

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

As we know that English alphabet has 26 characters, hence, we have $x = 26$.

Now suppose, we have to find out the position of K in the above given series counting from right to left.

Position of 'K' in the English alphabet from left to right is 11. Thus $m = 11$

\therefore Position of K in the above given series from right to left would be $(26 + 1 - 11) = 16$

Note : I, II & III given under extra tips are very important as they are very helpful in solving problems based on general series of alphabet. Readers are advised to take them as a rule.

HOW TO SOLVE PROBLEMS WHEN LETTERS ARE DROPPED OR DELETED AT REGULAR INTERVALS?

EXAMPLE 4. If every 3rd letter from left to right of English alphabet is deleted, then what would be the 6th letter from left in the new series obtained?

Sol. General method:

A	B	Ⓞ	D	E	Ⓞ	G	H	Ⓞ	J	K	Ⓞ	M	N	Ⓞ
P	Q	Ⓞ	S	T	Ⓞ	V	W	Ⓞ	Y	Z				

Here, deleted letters have been encircled and we find the new series as given below:

A	B	D	E	G	H	J	K	M
1	2	3	4	5	6	7	8	9

N	P	Q	S	T	V	W	Y	Z
10	11	12	13	14	15	16	17	18

It is clear, that 6th letter from left in the new series is H.

Shortcut Approach

No doubt, that general method gives the correct answer. But we need to save extra consumed time and this is the reason we go for a quicker approach.

As per the example, every third letter is deleted in the original series. It does mean that we are left of two letters after every deletion. Here, '2' is the key digit for us and we have to find out 6th letter from the left in the new obtained series. Therefore, we have to find a digit which is just less than 6 but divisible by 2. For this question the digit just less than 6 and divisible by 2 is 4. Now we follow the operation given below:

6th letter from the left in the new series = $6 + \frac{4}{2}$
 = 8th letter from the left in the original series, which is it.
 In the same manners, we can find out any letter at a particular position in the new obtained series.

∴ 16th letter from the left in the new obtained series = $16 + \frac{14}{2}$
 = 23rd letter from the left in the original series which is W.
 18th letter from the left in the new obtained series
 = $18 + \frac{16}{2}$
 = 26th letter from the left in the original series which is Z.

The sample example can be asked in following way also:
 "If every third letter from left to right in English alphabet is dropped (or deleted), then find out the 13th letter from right in the new obtained series".

To solve this, we find first of all the number of letters in the new obtained series.

As every third letter is dropped, hence we have
 $\left(26 - \frac{26}{3}\right) = 26 - 8 = 18$ letters in the new series.

Point to be noted here that we divide 26 by 3 as every 3rd letter is dropped and after division we take approximate value of $\frac{26}{3}$

in round figure (approximate value of $\frac{26}{3}$ will be 8).

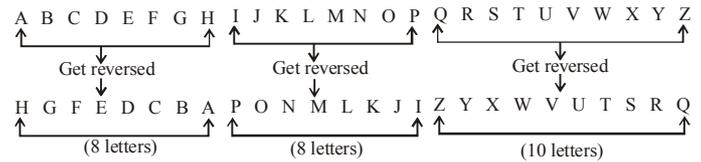
As per the example we have to find out 13th letter from right in the newly obtained series. This loss mean $(18 + 1 - 13) = 6$ th letter from left which is H.

Note: This quicker approach can also be applied to the dropping of every 4th, 5th, 6th, 7th..... and so on letters from left to right at regular intervals.

HOW TO SOLVE PROBLEMS BASED ON THE BACKWARD (REVERSED) ALPHABET SERIES?

While solving problems based on general series of alphabet, we come across the various cases. In some cases we see that whole alphabet series is reversed but in some other cases 1st half of the series is reversed, or second half of the series is reversed or many segments of the alphabet series are reversed.

Let us take a case when a forward order alphabet series get reversed in three segments. In 1st segment 8 letters get reversed; in 2nd segment the next 8 letters get reversed and in the 3rd segment the remaining 10 letters get reversed. Just see the presentation given below:



Now if you are asked to find out the 4th letter from left in the new obtained series, then through general method, we simply do counting from left in the new series and find out our required answer as 'E' because 'E' is at 4th position from left in the new obtained series. But while solving such type of problems, we have to do some time consuming formalities like (a) writing the original series (b) writing and reversing the letters of original series as per the question says and (c) counting them to get the required answer. Such time consuming processes can be avoided if we go through "Extra Tips III" and solve the question with shortcut approach.

Shortcut Approach

It is clear that 4th letter from left in the new obtained series falls into first segment which has 8 letters. Hence 4th letter in the new obtained series = $(8 + 1 - 4) = 5$ th letter from the left in the original series. As we know that exact position of 5th letter from left in the original alphabet series is the position of E. Hence E is our required answer. If we have to find out 18th letter from left in the new obtained series, then that will be $16 + (10 + 1 - 2) = 25$ th letter from left in the original alphabet series (why?) which is Y.

In fact, while finding out 18th letter, we can easily see that 18th letter is the 2nd letter of 3rd segment and hence it will be not affected by 1st two segments having 8 letters each. In other words to find out 18th letter in the new obtained series, we have to find out the 2nd letter in the 3rd segment. This is the reason we find out the 2nd letter in the 3rd segment and then add the 16 letters of 1st two segment to get the 18th letter in the new obtained series. From this, we find that 18th letter from left in the new obtained series is the 25th letter from left in the original series. As 25th letter from left in the original series is Y. So (Y) will be our required answer.

Readers are advised to practice such type of problems as you much as possible and after a certain time will notice that you have got a skill to solve such problems in a few seconds and that too, without the use of pen and paper.

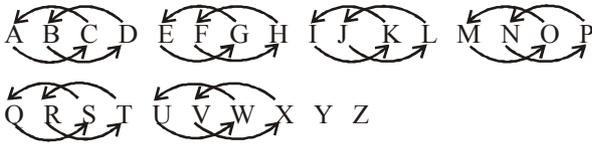
HOW TO SOLVE IF POSITIONS OF LETTERS ARE INTERCHANGED?

There is no any rule for such type of problems. Only the hard practice can given you a skill to solve such questions in a quick time.

EXAMPLE 5. If A and C interchange their places, B and D interchange their places, F and H interchange their places and so on, then which letter will be 5th to the left of Q?

- (a) P
- (b) N
- (c) M
- (d) T
- (e) None of these.

Sol. As per the question the interchanges take place as follows:



Here we can see that Q interchanges with S. Then to left of Q, the 5th letter would be P because P interchanges with N.

How to find the Middle Letter?

Case I : Remember that if m th and n th letter from the left in the English alphabet are given then

$$\text{Middle letter} = \left(\frac{m+n}{2}\right) \text{th letter from the left.}$$

EXAMPLE 6. Which letter will be midway between 8th letter from the left and 16th letter from the left in the English alphabet?

Sol. Here $m = 8$ and $n = 16$

$$\text{then middle letter} = \frac{8+16}{2} = \frac{24}{2} = 12\text{th letter from left in the alphabet} = \text{L}$$

Case II : Remember that if m th and n th letter from the right in the English alphabet are given then

$$\text{Middle letter} = \left(\frac{m+n}{2}\right) \text{th letter from right}$$

$$= \left[26 + 1 - \left(\frac{m+n}{2}\right)\right] = \left[27 - \left(\frac{m+n}{2}\right)\right] \text{th}$$

letter from the left in the English alphabet.

EXAMPLE 7. Which letter will be midway between 8th letter from the right and 16th letter from the right in the English alphabet.

$$\text{Middle letter} = \left[27 - \left(\frac{8+16}{2}\right)\right] \text{th letter from left in the alphabet.}$$

$$\text{or middle letter} = (27 - 12) = 15^{\text{th}} \text{ letter from left} = 0$$

Note : In case I and case II ($m + n$) must be divisible by 2.

Case III : Remember that if the m th letter from the left and the n th letter from the right are given then middle letter

$$= \left[\frac{(m-n)+27}{2}\right] \text{th letter from the left in the alphabet.}$$

EXAMPLE 8. Which letter will be midway between 8th letter from the left and 15th letter from the right?

Sol. Here $m = 8$ and $n = 15$.

$$\text{Then middle letter} = \left[\frac{(8-15)+27}{2}\right] = \left[\frac{20}{2}\right] = 10^{\text{th}}$$

letter from left in the English alphabet = J.

Note : In case III ($m - n$) + 27 must be divisible by 2.

Ranking Arrangement

Condition: To use below Table break the statement into two parts by 'OF' and the rank to be calculated from the last rank provided.

FIRST HALF STATEMENT	SECOND HALF STATEMENT	ACTION TO BE TAKEN
LEFT	LEFT	SUBTRACTION
RIGHT	RIGHT	SUBTRACTION
LEFT	RIGHT	ADDITION
RIGHT	LEFT	ADDITION
TO	FROM	NO ACTION
FROM	FROM	CONDITIONAL*

CONDITIONAL* means when the two ranks are added then subtract 1 rank to the addition or when the two ranks are subtracted then add 1 to the subtraction.

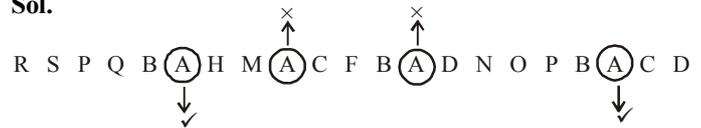
(2) Random Series of Alphabet

This series is not in the proper sequence and letters take their position in the series in jumbled manner. Further, there is also a possibility that all the 26 letters of English alphabet are not available in the series. Even same letters may be repeated in the series.

EXAMPLE 9. How many letters in the following series are immediately preceded by B but not immediately followed by D?

R S P Q B A H M A C F B A D N O P B A C D.

Sol.



\therefore Only the two times A fulfill the given condition and those A have been marked with the correct sign (\checkmark). Those not fulfilling the condition have been marked with the cross sign (\times). \therefore Required answer is 2.

(3) Words in Alphabetical Order

In such type of questions, words are given and you have to find out which word will appear in the dictionary 1st, 1st or 2nd or 3rd or 4th etc.

EXAMPLE 10. Which of the following words will come 2nd in the dictionary?

- (a) Name
- (b) Shame
- (c) Fame
- (d) Came
- (e) None of these.

Sol. 'Came' comes 1st in the dictionary.

'Fame' comes 2nd in the dictionary

'Name' comes 3rd in the dictionary

'Shame' comes 4th in the dictionary

\therefore (c) is the required answer.

EXERCISE

Directions (Qs. 1-5): Answer these questions referring to the symbol-letter-number sequence given below:

1. If every third letter from the following English alphabet is dropped, which letter will be seventh to the right of eleventh letter from your right?

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

- (a) V (b) U
(c) K (d) I
(e) None of these
2. If the first half of the English alphabet is reversed and so is the second half, then which letter is seventh to the right of twelfth letter from the left side?

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

- (a) S (b) V
(c) U (d) T
(e) None of these

3. In the alpha-numerical sequence/series given below, how many numbers are there which are (i) immediately followed by a letter at the even place in English alphabet and (ii) not immediately preceded by a letter at the odd place in the English alphabet?

W 2 N 1 V 9 G 2 P 4 X 6 K 7 R 1 T 8 L 3 H 5 Q 8 U 2 J

- (a) 3 (b) 5
(c) 2 (d) 4
(e) None of these

4. If the positions corresponding to the multiples of five in the following alphabet are replaced by symbols and that of multiples of seven by digits, how many letters will be left?

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

- (a) 15 (b) 18
(c) 21 (d) 17
(e) None of these

5. If second half of given sequence of alphabets is reversed then which of the following letter will be 9th letter to the right of 7th letter from your left?

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

- (a) T (b) S
(c) Y (d) X
(e) W

Directions (Qs. 6-10): Study the following arrangement carefully and answer the questions given below:

J 1 # P 4 E K 3 A D \$ R U M 9 N 5 I % T V * H 2 ÷
F 6 G 8 Q W

6. How many such numbers are there in the above arrangement, each of which is either immediately preceded by or immediately followed by a vowel or both?
- (a) None (b) One
(c) Two (d) Three
(e) More than three

7. Which of the following is exactly in the middle between the tenth from the left and the eighth from the right end in the above arrangement?

(a) M (b) N
(c) I (d) 5
(e) None of these

8. If the order of the last fifteen elements in the above arrangement is reversed, which of the following will be the ninth to the right of the eleventh element from the left end?

(a) G (b) %
(c) 8 (d) 3
(e) None of these

9. How many such consonants are there in the above arrangement, each of which is immediately preceded by a symbol but not immediately followed by either a number or a vowel?

(a) None (b) One
(c) Two (d) Three
(e) More than three

10. Four of the following five are alike in a certain way based on their position in the above arrangement and so form a group. Which is the one that **does not** belong to that group?

(a) A \$ E (b) % V N
(c) 2 F V (d) 4 K 1
(e) 6 Q ÷

Directions (Qs. 11-14): Study the following information and answer the questions given below:

25 boy-scouts bearing names from A to Y were standing in a row. The teacher wanted to select various teams from among them. He gave them random numbers from 3 to 8 as shown below:

A B C D E F G H I J K L M N O P Q R S T U V W X Y
4 4 6 3 5 4 3 3 5 6 7 5 8 5 8 3 3 8 4 8 6 5 4 6 6

11. If he decides to pick up those exclusive pairs of adjacent boys whose numbers if totalled turn out to be exactly 12, how many such pairs would be available?

(a) Nil (b) Six
(c) Five (d) Four
(e) None of these

12. If he decides to pick up those boys who bear even numbers and have boys bearing even numbers on both sides, how many boys will be picked up?

(a) One (b) Two
(c) Three (d) Four
(e) None of these

13. If he decides to pick up those boys who bear odd numbers but have boys bearing 7 and/or 8 on either side, how many boys will be picked up?

(a) Four (b) Three
(c) Two (d) One
(e) None of these

14. If he decides to pick up only those boys who bear even numbers but have on both sides students bearing odd numbers, how many boys will be picked up?
 (a) Six (b) Five
 (c) Four (d) Three
 (e) None of these

Directions (Qs.15-17): Study the following five numbers and answer the questions given below.
 517 325 639 841 792

15. What will be last digit of the third number from top when they are arranged in descending order after reversing the position of the digits within each number?
 (a) 7 (b) 3
 (c) 5 (d) 2
 (e) None of these
16. What will be the middle digit of the second lowest number after the position of only the first and the second digits within each number are interchanged?
 (a) 5 (b) 2
 (c) 7 (d) 3
 (e) None of these
17. What will be the first digit of the second highest number after the position of only the second and the third digits within each number are interchanged?
 (a) 7 (b) 2
 (c) 8 (d) 9
 (e) None of these

Directions.(Qs.18-22): Study the following elements (letters, digits and symbols sequence) to answer the questions given below:

AB7CD9ZY★P2M©KS3↑5NT@

Note: 'A' is to the left of 'B' and '@' is to right of 'T'.

18. If each symbol of the above sequence is replaced with a letter and each digit is replaced with a new symbol, then how many letters will be there in the sequence?
 (a) 16 (b) 17
 (c) 4 (d) 12
 (e) None of these
19. How many such digits are there in the sequence each of which is immediately preceded as well as followed by letters?
 (a) None (b) One
 (c) Two (d) Three
 (e) None of these
20. Which of the following letters is exactly midway between the letters falling between 'C' and '5'?
 (a) Y (b) K
 (c) P (d) M
 (e) None of these
21. If each symbol of the above sequence is replaced with the digits from '1' to '9' which are not there in the sequence, then what will be the sum of all digits? [Each symbol should be replaced with a different digit].
 (a) 19 (b) 45
 (c) 55 (d) 60
 (e) None of these
22. If the first element from the left interchanges place with the tenth element from the left, similarly, second with ninth, third with eighth, fourth and seventh, and so on, then which

of the following will be seventh to the left of eight element from the right?

- (a) 9 (b) 7
 (c) D (d) C
 (e) None of these

Directions (Qs. 23-27): Study the following arrangement of letters/symbols and answer the questions given below:

DFJT\$#PRZQ*CMAB@HKLS+?

23. How many such symbols are there each of which is immediately preceded by a symbol and immediately followed by a letter?
 (a) One (b) Two
 (c) Three (d) Four
 (e) None of these
24. If the order of the first half of the arrangement is reversed which of the following letters/symbols will be the fifth to the left of the fifteenth letter/symbol from the left?
 (a) * (b) Q
 (c) T (d) J
 (e) None of these
25. If all the symbols of the above sequence are denoted by 7 and each letter is denoted by 5, then what will be the sum of all the elements of the sequence?
 (a) 142 (b) 138
 (c) 132 (d) 122
 (e) None of these
26. If all the symbols from the above sequence are dropped, which letter will be seventh to the right of twelfth letter from the right?
 (a) H (b) B
 (c) K (d) A
 (e) None of these
27. Which of the following is related to 'FT' in the same way as 'DJ' is related to '?S'?
 (a) L+ (b) KS
 (c) HL (d) +L
 (e) None of these

Directions (Qs. 28-32): Study the following arrangement carefully and answer the questions given below:

M£5TRE3\$PJ17D12NA4FH6*U9#VB@W

28. If the positions of the first fourteen characters of the above arrangement are reversed, which of the following will be the twenty-second from the right end?
 (a) J (b) I
 (c) P (d) 3
 (e) None of these
29. How many such numbers are there in the above arrangement, each of which is immediately preceded by a vowel and immediately followed by a consonant?
 (a) None (b) One
 (c) Two (d) Three
 (e) More than three
30. What should come in place of the question mark (?) in the series given below based on the above arrangement?
 R3£PIE?AFI
 (a) DNJ (b) D2I
 (c) INI (d) N4D
 (e) None of these

31. How many such consonants are there in the above arrangement each of which is immediately preceded by a symbol but not immediately followed by a number?
 (a) None (b) One
 (c) Two (d) Three
 (e) More than three
32. Which of the following is the fifth towards right of the seventeenth from the right end?
 (a) \$ (b) 4
 (c) 7 (d) A
 (e) None of these
- Directions (Qs. 33-35):** Study the following letters/number series carefully and answer the questions given below it.
 W 3 7 H J Q T 5 1 2 G K 4 F P T 6 L B E 9 4 D M R 8 2 V
33. If the numbers from the first half of the sequence are dropped, which letter/number will be fifth to the right of sixth letter/number from the left?
 (a) 6 (b) T
 (c) Q (d) J
 (e) None of these
34. How many such letters are there in the sequence which are immediately followed by a number and immediately preceded by a letter ?
 (a) Four (b) Two
 (c) Three (d) Five
 (e) None of these
35. Four of the following five are alike in a certain way on the basis of their position in the sequence and so form a group. Which is the one that does not belong to the group ?
 (a) WVH (b) JMI
 (c) HRT (d) 78Q
 (e) 59G
- Directions (Qs. 36-38):** Study the following arrangement of digits, letters and symbols and answer the questions given below:
 M K 3 \$ R E 5 F % T U J * 8 P H B N 2 I S # A 3 7 D 4
36. How many such consonants are there each of which is either immediately preceded by a number and/or immediately followed by a symbol?
 (a) None (b) One
 (c) Two (d) Three
 (e) None of these
37. Four of the following five are alike in a certain way based on the above arrangement and form a group. Which is the one that **does not** belong to that group?
 (a) 3RF (b) %U8
 (c) 8H2 (d) I#7
 (e) H8U
38. If the positions of F and B are interchanged, similarly, the positions of U and A are interchanged, how many such vowels will be there each of which will be both immediately preceded and immediately followed by a consonant?
 (a) None (b) One
 (c) Two (d) Three
 (e) None of these
- Directions (Qs. 39-40):** Study the following arrangement carefully and answer the questions given below:
 B A 5 D % R I F H 6 # V 9 \$ 3 E 7 G 1 ÷ 2 M K X 8 U F W Z N
39. Which of the following is exactly in the middle of the eleventh element from the left end and the fifteenth element from the right end?
 (a) V (b) \$
 (c) 7 (d) E
 (e) None of these
40. Four of the following five are alike in a certain way based on their position in the above arrangement and so form a group. Which is the one that does not belong to that group?
 (a) EG\$ (b) RFD
 (c) I27 (d) XUM
 (e) H#
41. If it is possible to make a meaningful word with the second, the fourth, the sixth and the ninth letters of the word PERMEABILITY, which of the following will be the first letter of that word? If no such word can be formed give 'N' as the answer. If only two such words can be formed give 'D' as the answer and if more than two such words can be formed give 'Z' as the answer.
 (a) M (b) L
 (c) N (d) D
 (e) Z
42. Find the two letters in the word EXTRA which have as many letters between them in the word as in the alphabet. If these two letters are arranged in alphabetical order which letter will come second?
 (a) E (b) X
 (c) T (d) R
 (e) A
43. If it is possible to make a meaningful word with the third, the fifth, the sixth and the eleventh letters of the word MERCHANDISE, using each letter only once, which of the following will be the third letter of that word? If no such word can be formed, give 'X' as answer and if more than one such word can be formed, mark 'T' as answer.
 (a) H (b) E
 (c) R (d) X
 (e) T
44. If it is possible to make a meaningful word with the first, the fifth, the ninth and the eleventh letters of the word PENULTIMATE, using each letter only once, which of the following will be the third letter of that word? If no such word can be made give 'N' as the answer and if more than one such word can be formed give 'D' as the answer.
 (a) E (b) P
 (c) L (d) D
 (e) N
45. How many such pairs of letters are there in the word CREDIBILITY each of which has only one letter between them in the word as also in the alphabet?
 (a) None (b) One
 (c) Two (d) Three
 (e) More than three
46. If the letters in the word POWERFUL are rearranged as they appear in the English alphabet, the position of how many letters will remain unchanged after the rearrangement?
 (a) None (b) One
 (c) Two (d) Three
 (e) More than three

47. How many such pairs of letters are there in the word PRODUCTION each of which has as many letters between them in the word as in the English alphabet?
 (a) None (b) One
 (c) Two (d) Three
 (e) More than three
48. If it is possible to make only one meaningful word with the fourth, the fifth, the seventh and the eleventh letters of the word PREDICTABLE, which of the following will be the first letter of that word? If only two such words can be formed, give 'P' as the answer; if three or more than three such words can be formed, give 'Z' as the answer; and if no such word can be formed, give 'X' as the answer.
 (a) D (b) T
 (c) P (d) Z
 (e) X
49. If it is possible to make a meaningful word from the first, the fourth, the eighth, the tenth and the thirteenth letters of the word ESTABLISHMENT, using each letter only once, the last letter of that word is your answer. If more than one such word can be formed write 'P' as your answer and if no such word can be formed write 'X' as your answer.
 (a) X (b) P
 (c) T (d) E
 (e) M
50. How many meaningful words can be formed by replacing only the consonants in the word BREAK by the next letter in the English alphabet and keeping the vowels unchanged?
 (a) None (b) One
 (c) Two (d) Three
 (e) More than three
51. How many such pairs of letters are there in the word ORIENTAL each of which has as many letters between them in the word as in the English alphabet?
 (a) None (b) One
 (c) Two (d) Three
 (e) More than three
52. The positions of the first and the eighth letters in the word WORKINGS are interchanged. Similarly, the positions of the second and the seventh letters are interchanged, the positions of the third letter and the sixth letter are interchanged, and the positions of the remaining two letters are interchanged with each other. Which of the following will be the third letter to the left of R after the rearrangement?
 (a) G (b) S
 (c) I (d) N
 (e) None of these
53. If only the consonants in the word MEAT are changed in such a way that each of the them becomes the next letter in the English alphabet and the remaining letters are kept unchanged, then how many meaningful words can be formed with the new set of letters using each letter only once in a word?
 (a) None (b) Two
 (c) Three (d) One
 (e) None of these
54. If the first and the second letters of the word UNPRECEDENTED are interchanged with the last and the secondlast letters, and similarly the third and the fourth letters are interchanged with the third and the fourth letters from the last respectively, and so on, then what will be the 7th letter to the right of the 3rd letter from the left?
 (a) P (b) R
 (c) E (d) C
 (e) None of these
55. In the word 'PRESENCE', how many such pairs of letters are there as have as many letters between its units in the word as there are in the English alphabet?
 (a) One (b) Two
 (c) Three (d) Four
 (e) None of these
56. If the letters in each of the following five words are first rearranged in the alphabetical order and then the groups of letters so formed are rearranged as in a dictionary, which word would have its group of letters in the MIDDLE among the five?
 (a) Code (b) Lack
 (c) Meet (d) Deaf
 (e) Road
57. How many such pairs of letters are there in the word 'CORPORATE' each of which has as many letters in the same sequence between them in the word as in the English alphabet?
 (a) None (b) One
 (c) Two (d) Three
 (e) More than three
58. If it is possible to make only one meaningful word with the second, the seventh, the tenth and the eleventh letters of the word 'TRADITIONAL', what will be the second letter of the word? If no such word can be formed, give 'X' as the answer. If only two such words can be formed give 'Y' as the answer and if more than two such words can be formed give 'Z' as the answer.
 (a) L (b) I
 (c) X (d) Y
 (e) Z
59. How many pairs of letters are there in the word SPONTANEOUS which have number of letters between them in the word one less than the number of letters between them in English alphabet?
 (a) Five (b) One
 (c) Four (d) Two
 (e) Three
60. If each of the vowels i.e., A, E, I, O & U alongwith the 3rd letter to its right in the alphabet are taken out and arranged one after the other in the same order followed by the remaining letters of the alphabet, which of the following will be 5th to the left of the 19th letter from the left in the new arrangement?
 A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
 (a) G (b) H
 (c) J (d) W
 (e) None of these
61. If it is possible to make a meaningful word from the third, sixth, eighth and eleventh letters of the word 'DISTINGUISH' using each letter only once, first letter of the word would be

- your answer. If more than one such word can be formed, your answer would be 'M' and if no such word can be formed, answer is 'X'.
- (a) N (b) S
(c) H (d) M
(e) X
62. The letter of the word AYDFLRIGEN are in disorder. If they are arranged in proper order, the name of a vegetable is formed.
What is the last letter of the word so formed ?
(a) L (b) A
(c) G (d) R
(e) D
63. If it is possible to make a meaningful word with the second, the seventh, the ninth and the eleventh letters of the word ORGANISATION, which of the following will be the third letter of that word? If no such word can be formed, give 'X' as the answer and if more than one such word can be made, given answer as 'M'.
(a) S (b) R
(c) T (d) X
(e) M
64. By arranging the letters of the word IG SIM W NM the name of a game is formed, what are the first and last letter of the word so formed ?
(a) MS (b) SG
(c) NI (d) NG
(e) None of these
65. If it is possible to make a meaningful word from the second, fourth, tenth and twelfth letters of the word ADVERTISEMENT, using each letter only once, write the last letter of the word as your answer. If more than one such word can be formed, write 'P' as your answer and if no such word can be formed, write 'X' as your answer.
(a) P (b) X
(c) N (d) M
(e) D
66. How many pairs of letters are there in the word CRYSTALLIZE, which have as many letters between them as in the alphabet?
(a) 1 (b) 2
(c) 3 (d) 4
(e) None of these
67. If letters in the word UNIVERSAL are arranged in the alphabetical order and each letter is assigned numerical value equal to its serial number from the left in this rearranged order, what is the difference in the total of numerical values of vowels and that of consonants?
(a) 19 (b) 17
(c) 21 (d) 20
(e) None of these
68. How many pairs of letters are there in the word EXCLUSIVE which have as many letters between them as in the alphabet?
(a) 2 (b) 3
(c) 4 (d) Nil
(e) None of these
69. If it is possible to make a meaningful word from the fifth, seventh, eighth, ninth and thirteenth letters of the word 'EXTRAORDINARY' using each letter only once, write the second letter of that word as your answer. If no such word can be formed write 'X' as your answer and if more than one such word can be formed, write 'M' as your answer.
(a) A (b) I
(c) R (d) M
(e) X
70. The letters of the name of a vegetable are I, K, M, N, P, P, U. If the letters are rearranged correctly, then what is the last letter of the word formed ?
(a) M (b) N
(c) K (d) P
(e) None of these
71. If it is possible to make a meaningful word with the second, the fifth and the eighth letters of the word 'CARETAKER', which of the following will be the first letter of that word? If no such word can be made, give X as answer. If more than one such word can be made, give M as the answer.
(a) A (b) E
(c) X (d) M
(e) None of these
72. If it is possible to make a meaningful word with the first, the fourth, the seventh and the eleventh letters of the word 'INTERPRETATION', which of the following will be third letter of that word? If more than one such word can be made give M as the answer and if no such word can made, give X as the answer.
(a) I (b) R
(c) X (d) M
(e) None of these
73. If the second, third, fifth, eighth and ninth letters of the word CONTEMPLATION are combined to form a meaningful word, what will be the middle letter of that word ? If more than one such words can be formed, your answer is X and if no such word can be formed, your answer is Y.
(a) X (b) O
(c) A (d) Y
(e) None of these
74. How many such pairs of letters are there in the word CORPORATE each of which has as many letters in the same sequence between them in the word as in the english alphabet ?
(a) None (b) One
(c) Two (d) Three
(e) None of these
75. Select the combination of numbers so that letters arranged accordingly will form a meaningful word.
R A C E T
1 2 3 4 5
(a) 1, 2, 3, 4, 5 (b) 3, 2, 1, 4, 5
(c) 5, 2, 3, 4, 1 (d) 5, 1, 2, 3, 4
(e) None of these
76. Rearrange the first four letters, in any way, of the word DECISION. Find how many words can be formed by using all the four words.
(a) One (b) Two
(c) Three (d) More than three
(e) None of these

77. If it is possible to form a word with the first, fourth, seventh and eleventh letters of the word 'SUPERFLOUS', write the first letter of that word. Otherwise, X is the answer.
 (a) S (b) L
 (c) O (d) X
 (e) None of these
78. How many independent words can 'HEARTLESS' be divided into without changing the order of the letters and using each letter only once ?
 (a) Two (b) Three
 (c) Four (d) Five
 (e) None of these
79. How many independent words can 'STAINLESS' be divided into without changing the order of the letters and using each letter only once ?
 (a) Nil (b) One
 (c) Two (d) Three
 (e) None of these
80. Select the combination of numbers so that the letters arranged accordingly will form a meaningful word.
 VARSTE
 (a) 2, 3, 1, 6, 4, 5 (b) 4, 5, 2, 3, 1, 6
 (c) 6, 3, 4, 5, 2, 1 (d) 3, 2, 4, 5, 6, 1
 (e) None of these
81. If by arranging the letters of the word NABMODINT, the name of a game is formed, what are the first and the last letters of the word so formed?
 (a) B, T (b) B, N
 (c) N, D (d) M, T
 (e) None of these
82. Which one of the given responses would be a meaningful order of the following ?
 1. apartment 2. town
 3. street 4. building
 5. complex
 (a) 1, 5, 4, 3, 2 (b) 4, 5, 3, 2, 1
 (c) 2, 1, 3, 4, 5 (d) 1, 4, 5, 3, 2
 (e) None of these
83. If the following words are arranged in reverse dictionary order, which word comes second ?
 (a) Explosion (b) Express
 (c) Exploit (d) Expulse
 (e) None of these
84. A group of alphabets are given with each being assigned a number. These have to be unscrambled into a meaningful word and correct order of letters may be indicated from the given responses.
 T M H R E O
 5 4 3 2 1 0
 (a) 025314 (b) 315402
 (c) 405312 (d) 504231
 (e) None of these
85. From the given alternative words, select the word which cannot be formed using the letters of the given word :
 TRIVANDRUM
 (a) RAIN (b) DRUM
 (c) TRAIN (d) DRUK
 (e) None of these
86. How many meaningful English words can be made with the letters 'OEHM' using each letter only once in each word ?
 (a) FOUR (b) THREE
 (c) TWO (d) ONE
 (e) None of these
87. Which one of the given responses would be a meaningful order of the following ?
 1. Orange 2. Indigo 3. Red 4. Blue 5. Green 6. Yellow 7. Violet
 (a) 7, 2, 4, 5, 6, 1, 3 (b) 7, 2, 4, 6, 5, 1, 3
 (c) 7, 2, 6, 4, 5, 1, 3 (d) 7, 2, 6, 4, 1, 5, 3
 (e) None of these
88. Arrange the following words as per order in the dictionary.
 1. Forecast 2. Forget 3. Foreign 4. Forsook 5. Force
 (a) 3, 5, 1, 2, 4 (b) 5, 1, 3, 2, 4
 (c) 5, 1, 3, 4, 2 (d) 5, 1, 2, 3, 4
 (e) None of these
89. From the given alternatives select the word which can be formed using the letters given in the word.
 ULTRANATIONALISM
 (a) ULTRAMONTANE (b) ULTRAMODERN
 (c) ULTRAIST (d) ULULATE
 (e) None of these
90. From the given alternatives select the word which cannot be formed using the letters of the given word.
 LEGALIZATION
 (a) ALERT (b) ALEGATION
 (c) GALLANT (d) NATAL
 (e) None of these

ANSWER KEY

1	(a)	11	(e)	21	(b)	31	(c)	41	(e)	51	(c)	61	(b)	71	(d)	81	(b)
2	(c)	12	(c)	22	(d)	32	(b)	42	(a)	52	(d)	62	(d)	72	(d)	82	(d)
3	(b)	13	(a)	23	(a)	33	(a)	43	(e)	53	(a)	63	(e)	73	(b)	83	(b)
4	(b)	14	(b)	24	(e)	34	(d)	44	(d)	54	(b)	64	(b)	74	(c)	84	(c)
5	(d)	15	(b)	25	(d)	35	(b)	45	(c)	55	(c)	65	(e)	75	(d)	85	(d)
6	(d)	16	(d)	26	(b)	36	(e)	46	(b)	56	(e)	66	(c)	76	(a)	86	(d)
7	(d)	17	(a)	27	(d)	37	(e)	47	(d)	57	(d)	67	(b)	77	(b)	87	(a)
8	(a)	18	(a)	28	(d)	38	(b)	48	(d)	58	(e)	68	(b)	78	(b)	88	(b)
9	(b)	19	(d)	29	(c)	39	(e)	49	(b)	59	(c)	69	(d)	79	(c)	89	(c)
10	(e)	20	(c)	30	(e)	40	(b)	50	(c)	60	(a)	70	(b)	80	(b)	90	(a)

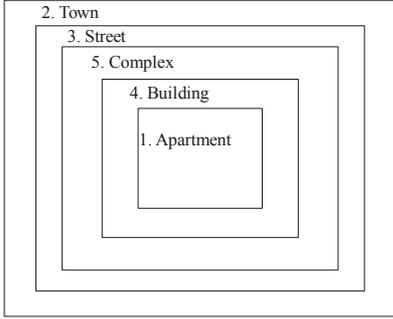
Hints & Explanations

1. (a) After dropping every third letter, we get
A B D E G H J K M N P Q S T V W Y Z
(11 - 7) = 4th from the right.
2. (c)
3. (b) W2N1V9G2P4X6K7R1T8L3H5Q8U2J
4. (b) Positions corresponding to the multiples of five are E, J, O, T, Y and that of multiples of seven are G, N and U. Hence, the total number of remaining letters in the series = $26 - 8 = 18$
5. (d) The changed sequence becomes
A B C D E F G H I J K L M Z Y X W V U T S R Q P O N
9th letter to the right of 7th letter from your left
= $(9 + 7) = 16$ th from left
= $(26 + 1 - 16) = 11$ th from right
So X is the required letter.
6. (d) We have to look for Vowel-Number and Number-Vowel sequences.
J1#P4EK3AD\$RUM9N5I%TV*H2÷F6G8QW
4, 3 and 5 are the required numbers.
7. (d) D\$RUM9N5I % TV*H2
7 elements 7 elements
8. (a) After the changing, the series becomes as follows;
J 1 # P 4 E K 3 A D \$ R U M 9 N W Q 8 G 6 F ÷ 2 H * V T % 15
Now, ninth to the right of the eleventh element from the left → $(11 + 9) = 20$ th element from the left, i.e., G.
9. (b) We have to look for Symbol = Consonant – Consonant sequence and Symbol – Consonant – Symbol sequences.
J I # P 4 E K 3 A D \$ R U M 9 N 5 I % T V H 2 ÷ F 6 G 8 Q W
Only T is such a consonant.
10. (e) See the difference between each two successive element.
(a) $A + 2 = \$ - 5 = E$
(b) $\% + 2 = V - 5 = N$
(c) $2 + 2 = F - 5 = V$
(d) $4 + 2 = K - 5 = 1$
(e) $6 + 3 = Q - 5 \neq 6 + 2 = 8 - 5 = 2$
Note that the difference between two successive elements in (e) is not similar to others.
11. (e) KL, RS, ST, XY — We have four such pairs of adjacent boys. But note the phrase “exclusive pairs” Since, S is common in RS and ST, we can have only one of the two pairs. Hence, three pairs.
12. (c) B, S and T
13. (a) L, N, P and Q.
14. (b) F, J, M, O and V.
15. (b) Here, the given numbers are:
517 325 639 841 792
After reversing the numbers become as follows:
715 523 936 148 297
When arranged in descending order the numbers become as follows:
936 715 523 297 148
Now, the third number from top is 523. Hence, the last digit of 523 is 3.
16. (d) After interchanging the first and the second digits, numbers become as follows;
157 235 369 481 792
When arranged in descending order the numbers become as follows;
972 481 369 235 157
Here, the second lowest number is 235.
Hence, middle digit of 235 is 3.
17. (a) If the positions of only the second and the third digits within each number are interchanged, the numbers become as follows.
571 352 693 814 729
Now, when the numbers are arranged in descending order, we get
814 729 693 571 352
Here, 729 is the second highest number
Hence, the first digit of 729 is 7.
18. (a) There are 21 elements in the series. Among them, there are only 5 digits. Since, symbols are replaced by letters and digits are replaced by symbols, ultimately there will be $(21 - 5) = 16$ letters in the series.
19. (d) We have to search for Letter-Digit-Letter sequence. Note the bold digits given in the series below.
A B **7** C D **9** Z Y * P **2** M © K S 3 **↑** 5 N T @
20. (c) The letters falling between C and 5 are as follows: DZYPMK. Hence, P is the required letter.
21. (b) Note that there are already five digits (7, 9, 2, 3, 5,) in the series. If the four symbols are replaced by the remaining digits from 1 to 9 (1, 4, 6, 8) then sum of the digits = $1 + 2 + \dots$
 $+ 9 = \frac{9 \times 10}{2} = 45$
[Sum of n natural numbers
 $= \frac{n \times (n + 1)}{2}$]
22. (d) Seventh to the left of eighth element from right = $(7 + 8) = 15$ th element from the right.
In original series 'Z' occupies the 15th place from right but after the changes 'Z' interchanges its position with 'C'.
23. (a) D F J T \$ # P R Z Q * C M A B @ H K L S + ?
only \$ # P is the required answer.

24. (e) * Q Z R P # \$ T J F D C M A B @ H K L S + ?
F is the required letter.
25. (d) Number of total symbols = 6; Number of total letters = 16. Since, all the symbols are denoted by 7 and all letters are denoted by 5, sum of the elements of the sequence = $6 \times 7 + 16 \times 5 = 122$
26. (b) When all the symbols are dropped the series becomes as follows:
D F J T P R Z Q C M A B H K L S
Now, seventh to the right of twelfth letter from the right = $(12 - 7) = 5$ th letter from the right, i.e., B.
27. (d) Compare 'DJ' and '?S'. 'D' is the first element from left end of the series and '?' is the first element from right end. Similarly, 'J' and 'S' are third elements from left and right end respectively. Hence, 'FT' is related to 'L'.
28. (d) After changing the series becomes as follows :
I D 7 1 J P \$ 3 E R T 5 £ M 2 N A 4 F H 6 U 9 # V B @ W
Now, twenty-second element from the right end is 3.
29. (c) We have to look for
Vowel-number-consonant sequence.
M £ 5 T R E 3 \$ P J I 7 D I 2 N A 4 F H 6 U 9 # V B @ W
Only 2 and 4 are such numbers.
30. (e) D 2 J
R +4 P +4 D +4 A
3 +4 1 +4 2 +4 F
£ +4 E +4 J +4 I
31. (c) M £ 5 T R E 3 \$ P J I 7 D I 2 N A 4 F H 6 U 9 # V B @ W
So P & V are such consonants
32. (b) Fifth element towards right of the seventeenth element from the right end implies twelfth element from the right end. Hence, the required element is 4.
33. (a) If the numbers from the first half of the sequence are dropped, the series becomes as follows:
W H J Q T G K F P T 6 L B E 9 4 D M R 8 2 V
Hence, 5th to the right of the sixth letter/ number from the left \Rightarrow 11th element from the left, ie 6.
34. (d) Here, we have to find out letter-letter-number sequence. Bold letters in the sequence given below represent those letters:
W 3 7 H J Q T 5 1 2 G K 4 F P T 6 L B E 9 4 D M 1 8 2 V
35. (b) Following is the common property found in others:
If first element of each group occupies nth position in the given sequence then the last element of the corresponding group occupies $(n + 3)$ th position in the given sequence.
36. (e) M K 3 \$ R E 5 F % T U J * 8 P H B N 2 I S # A 3 7 D 4
37. (e) Here the rule followed is: All the groups consist of three elements. Where, 1st element + 2 = 2nd element and 2nd element + 3 = 3rd element.
38. (b) After re-arrangement the new arrangement will be
M K 3 \$ R E 5 B % T A J * 8 P H F N 2 I S # U 3 7 D 4
39. (e) B A 5 D % R I F H ⑥ # V ⑨ \$ 3 ⑤ 7 G
 $1 \div 2 = M K X 8 U F W Z N$
Hence, the required element is '9'.
40. (b) See the difference between each two successive elements.

- (a) E + 2 G - 4 \$
(b) R + 3 F - 5 D
(c) 1 + 2 2 - 4 7
(d) X + 2 U - 4 M
(e) H + 2 # - 4
- Note that the difference between two successive elements in (b) is not similar to others.
41. (e) Here specific letters are E, M, A and L. Words formed with these letters are as follows
1. LAME 2. MALE 3. MEAL
Since, no. of words formed by the given letters is more than two, our answer is choice (e).
42. (a) E X T R A
When E and A are arranged in alphabetical order then i.e. AE, E will be second.
43. (e) Selected letters of the given word are R, H, A and E. By using each letter only once we can make the following words:
1. HEAR 2. HARE
This is more than one.
44. (d) The letters are: P, L, A, E. Meaningful words: PALE, LEAP, PEAL.
45. (c) C R E D I B I L I T Y
46. (b) P O W E R F U L
E F L O P R U W
only U remains unchanged.
47. (d) P I, R U and O N.
PRODUCTION
48. (d) The specified letters are D, I, T and E. Words formed by these letters are as follows:
(i) EDIT (ii) DIET
(iii) TIDE (iv) TIED
49. (b) Here specified letters are: E, A, S, M and T. Words formed from these letters are as follows:
1. STEAM 2. MATES
3. TEAMS
50. (c) Here letters are: B, R, E, A and K. When the consonants are replaced by the next letter then we have C, S, E, A and L to form words. These words are as follows:
1. SCALE 2. LACES
51. (c) O R I E N T A L
52. (d) After interchanging, the order of the letters in the word becomes as follows:
S G N I K R O W
Thus, the third letter to the left of R is N.
53. (a) The new set of letters are: N, E, A, U. Hence no meaningful word can be made.
54. (b) 7th letter to the right of 3rd letter from the left \Rightarrow 10th letter from the left. After changing the word becomes as follows
D E T N E D E C E R P N U

55. (c) $\overbrace{\text{P R E S E N C E}}$
56. (e) When the letters in each of the words are arranged in alphabetical order it becomes as follows: cdeo, ackl, eemt, adef and ador. Now when the words are rearranged as in a dictionary then their respective position becomes as follows: ackl, adef, ador, cdeo and eemt.
57. (d) $\overbrace{\text{C O R P O R A T E}}$
- Note that we have to find the pairs keeping the sequence of the letters of pair according to their sequence in English alphabet. Therefore go for search only from left to right.
58. (e) Here specified letters are: R, I, A and L. Words formed with these letters are:
1. RAIL 2. LIAR 3. LAIR
59. (c) $\overbrace{\text{S P O N T A N E O U S}}$
- In each shown pairs there is one letter less than the number of letters between them in English alphabet.
60. (a) Arranging English alphabet according to the instructions given, we get
A D E H I L O R U X B C F \textcircled{G} J K M N P Q S T V W Y Z
(19 - 5) = 14th from the left
61. (b) The 3rd, 6th, 8th and 11th letters are S, N, U and H respectively. The word that can be made is SHUN.
62. (d) L A D Y F I N G E R
63. (e) The specified letters are R, S, T and O. Meaningful word formed from these letters is SORT and ROTs.
64. (b) S W I M M I N G
65. (e) The respective letters are D, E, M and N. Of these letters, only MEND can be formed.
66. (c) $\overbrace{\text{C R Y S T A L L I Z E}}$
67. (b) Arranging 'UNIVERSAL' alphabetically and assigning values from leftward, we get A E I L N R S U V
1 2 3 4 5 6 7 8 9
Now, sum of position nos. of vowels (A, E, I, U)
 $1 + 2 + 3 + 8 = 14$
and sum of position nos. of consonants (L, N, R, S, V)
 $= 4 + 5 + 6 + 7 + 9 = 31$
Difference = $31 - 14 = 17$
68. (b) Letter are (X, U), (L, I) and (E, C).
69. (d) A, R, D, I, Y. We can make DIARY, DAIRY
70. (b) PUMPKIN
71. (d) The second, fifth and eighth letters of the word CARETAKER are A, T and E respectively. The words formed are EAT, ATE and TEA.

72. (d) The first, fourth, seventh and eleventh letters of the word INTERPRETATION are I, E, R and T respectively. The words formed are TIER, RITE and TIRE.
73. (b) Only one meaningful word 'ALONE' can be made. O is the middle letter.
74. (c) $\overbrace{\text{C O R P O R A T E}}$
- Three pairs — (P, R), (R, T) and (P, O) have as many letters between them in the word as in the English alphabet. But since the letters must be in the same sequence in the word as in English alphabet, so that desire pairs are (P, R) and (R, T) only.
75. (d) Clearly, the given letters, when arranged in the order 5, 1, 2, 3, 4 from the word 'TRACE'.
76. (a) The first four letters are D, E, C, I and only word DICE can be formed so the answer is (a).
77. (b) The letters selected are S, E, L and S respectively. The word formed is LESS. The first letter is L.
78. (b) The words are HE, ART, LESS
79. (c) Only two such words can be formed. The words are STAIN and LESS.
80. (b). Clearly the given letters, when arranged in the order 4, 5, 2, 3, 1, 6 form the word 'S T A R V E'.
81. (b) The name of the game is BADMINTON.
82. (d) 
83. (b) Arrangement in Reverse dictionary order—
Expulse → Express → Explosion → Exploit
1 2 3 4
84. (c) $\begin{matrix} 4 & 0 & 5 & 3 & 1 & 2 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ M & O & T & H & E & R \end{matrix}$
85. (d) DRUK cannot be formed using TRIVAN DROM as it does not contain letter 'K'.
86. (d) Home, only one meaningful word is formed.
87. (a) These all are colours of the rainbow. Hence, meaningful order is VIBGYOR.
88. (b) Force → Forecast → Foreign → Forget → Forsook
89. (c) By options,
(a) can not be formed as there is no 'E' in the given word.
(b) can not be formed as there is no 'D' in the given word.
(d) can not be formed as there is no 'E' and only 'U' in the given word.
90. (a) ALERT can not be formed as there is no 'R' in the word LEGALIZATION. Hence, (a) is the correct option.



Analogy & Classification

ANALOGY

The meaning of analogy is 'similar properties' or similarity. If an object or word or digit or activity shows any similarity with another object or word or digit or activity in terms of properties, type, shape, size, trait etc., then the particular similarity will be called analogy. For example, cricket : ground and chess: table are the analogous pairs (why?). In fact, both pairs of words have similar relationship in terms of place of playing as cricket is played in the ground and similarly chess is played on the table. In this chapter, we will discuss different types of analogy because problems based on analogy are an important category of questions to be asked in almost all examinations of competitive level.

TYPES OF ANALOGY

1. Tool & Object Based Analogy

This establishes a relationship between a tool and the object in which it works. Similar relations has to be discovered from answer choices.

Examples:

Scissors	:	Cloth
Saw	:	Wood
Eraser	:	Paper

2. Synonym Based Analogy

In such type of analogy two words have similar meaning.

Examples:

Huge	:	Gigantic
Endless	:	Eternal
Benevolent	:	Kind
Notion	:	Idea

3. Worker & Tool Based Analogy

This establishes a relationship between a particular tool and the person of that particular profession who uses that tool.

Examples:

Writer	:	Pen
Painter	:	Brush
Cricketer	:	Bat
Barber	:	Scissors

4. Worker & Product Based Analogy

This type of analogy gives a relationship between a person of particular profession and his/her creations.

Examples:

Writer	:	Book
Author	:	Novel
Singer	:	Song
Poet	:	Poem

5. Causes & Effect Based Analogy

In such type of analogy 1st word acts and the 2nd word is the effect of that action.

Examples:

Work	:	Tiredness
Bath	:	Freshness
Race	:	Fatigue
Shoot	:	Kill

6. Opposite Relationship (Antonym) Based Analogy

In such type of analogy the two words of the question pair are opposite in meaning. Similar relations has to be discovered from the answer choice word pairs.

Examples:

Poor	:	Rich
Fat	:	Slim
Tall	:	Short
Big	:	Small

7. Gender Based Analogy

In such type of analogy, one word is masculine and another word is feminine of it. In fact, it is a 'male and female' or 'sex' relationship.

Examples:

Man	:	Woman
Bull	:	Cow
Duck	:	Drake

8. Classification Based Analogy

This type of analogy is based on biological, physical, chemical or any other classification. In such problems the 1st word may be classified by the 2nd word and vice-versa.

Examples:

Oxygen	:	Gas
Water	:	Liquid
Snake	:	Reptile
Parrot	:	Bird

9. Function Based Analogy

In such type of analogy, 2nd word describes the function of the 1st word.

Examples:

Singer	:	Sings
General	:	Commands
Player	:	Plays
Surgeon	:	Operates

10. Quantity and Unit Based Analogy

In such type of analogy 2nd word is the unit of the first word and vice-versa.

Examples:

Distance	:	Mile
Mass	:	Kilogram
Length	:	Meter

11. Finished Product & Raw Material Based Analogy

In such type of analogy the 1st word is the raw material and 2nd word is the end product of that raw material and vice-versa.

Examples:

Yarn	:	Fabric
Milk	:	Curd
Flour	:	Bread
Latex	:	Rubber
Grape	:	Wine
Fruit	:	Juice

12. Utility Based Analogy

In such type of analogy the 2nd word shows the purpose of the 1st word or vice-versa.

Examples:

Pen	:	Writing
Food	:	Eating
Chair	:	Sitting
Bed	:	Sleeping

13. Symbolic Relationship Based Analogy

In such type of analogy, the 1st word is the symbol of the 2nd word and vice-versa.

Examples:

White	:	Peace
Red	:	Danger
Black	:	Sorrow
Red cross	:	Hospital

14. Adult & Young One Based Analogy

In such type of analogy, the 1st word is the adult one and 2nd word is the young one of the 1st word or vice-versa.

Examples:

Cow	:	Calf
Human	:	Child
Dog	:	Puppy
Duck	:	Duckling

15. Subject & Specialist Based Analogy

In such type of analogy the 2nd word is the specialist of 1st word (subject) or vice-versa.

Examples:

Heart	:	Cardiologist
Skin	:	Dermatologist

16. Habit Based Analogy

In this type of analogy 2nd word is the habit of 1st and vice-versa.

Examples:

Cat	:	Omnivorous
Tiger	:	Carnivorous
Cow	:	Herbivorous

17. Instrument and Measurement Based Analogy

We see in this type of analogy, the 1st word is the instrument to measure the 2nd word and vice-versa:

Examples:

Hygrometer	:	Humidity
Barometer	:	Pressure
Thermometer	:	Temperature
Sphygmomanometer	:	Blood pressure

18. Individual & Group Based Analogy

Second word is the group of 1st word (or vice-versa) in such type of analogy.

Examples:

Cow	:	Herd
Sheep	:	Flack
Grapes	:	Bunch
Singer	:	Chorus

19. State & Capital Based Analogy

1st word is the state and 2nd word is the capital of that state (1st word) (or vice-versa) in the analogy like this.

Examples:

Bihar	:	Patna
West Bengal	:	Kolkata
Maharashtra	:	Mumbai
Karnataka	:	Bengaluru

Note: Analogy based on country and capital is very similar to this type of analogy in which we put name of the country in place of the name of state and country capital in place of state capital. For example India: New Delhi and Nepal : Kathmandu.

20. Analogy Based on Individual & Dwelling Place

In such type of analogy 1st word is the individual & 2nd word is the dwelling place of that individual (1st word) and vice-versa.

Examples:

Horse	:	Stable
Bee	:	Apiary
Dog	:	Kennel
Birds	:	Aviary

21. Analogy Based on Worker and Working Place

In this type of analogy the 1st word represents a person of particular profession and 2nd word represents the working place of that person (1st word) and vice-versa.

Examples :

Doctor	:	Hospital
Clerk	:	Office
Cook	:	Kitchen
Professor	:	College

22. Analogy Based on Topic Study

1st word is the study of the 2nd word (or vice-versa) in the analogy like this.

Examples:

Birds	:	Ornithology
Earth quakes	:	Seismology
Eggs	:	Zoology

23. Analogy Based on Letters (or Meaningless Words)

Case I : (Forward alphabetical sequence)

Examples:

CD : FG :: PQ : UV

Here CD and FG are in the natural alphabetical sequence. Similarly, PQ & UV are in the natural alphabetical sequence.

Case II: (Backward or opposite alphabetical sequence)

Example:

DC : GF :: QP : VU

In fact this case is opposite of case I

Case III: (Vowel – consonant relation)

Example

ATL : EVX :: IPR : ORS

Here, the 1st two words start with the 1st two vowels A & E and the next two words start with the next two vowels I & O. Last two letter of every word are consonants.

Case IV: Example (Skip letter relation)

ABC : FGH :: IJK : NOP

Here between ABC & FGH two letters skip and they are D & E. Similarly, between IJK & NOP two letters skip and they are L & M.

Case V: (Jumbled letters relation)

Example:

- (i) LAIN : NAIL :: EVOL : LOVE

Here the 1st term gets reversed to produce the 2nd term and similar relation is shown in between 3rd and 4th term.

- (ii) ABCD : OPQR :: WXYZ : KLMN

In (ii) each letter of the 1st group 'ABCD' is moved fourteen steps forward to obtain the corresponding letter of the 2nd group 'OPQR'. A similar relation is established between the third group 'WXYZ' and the fourth group 'KLMN.'

NOTE : Every type of analogy discussed in (23) may have different variations of problems and you can get perfection on them by proper practice only.

EXAMPLE 1. Lion is to flesh as cow is to

- (a) snake (b) grass
(c) worm (d) animal
(e) None of these

Sol. Lion eats flesh, similarly, cow eats grass. Hence option (b) is the right answer.

EXAMPLE 2. Pen : Writer :: : Batsman

- (a) Brush (b) Fighter
(c) Stick (d) Bat
(e) None of these

Sol. Option (d) is the correct answer because a writer uses pen to write and similarly a batsman uses bat to play.

EXAMPLE 3. NCDP : ODEQ :: : MPRO

- (a) LOQN (b) NQOL
(c) OQNL (d) QNOL
(e) None of these

Sol. Option (a) is the correct answer as letters of 1st term go one step forward to be the 2nd term. Similarly, the letters of 3rd term will go one step forward to be the 4th term (Letters of 4th term go one step backward to be the 3rd term).

EXAMPLE 4. Bulky : Fat :: Happiness : ?

- (a) Bad (b) Ugly
(c) Joy (d) Sorrow
(e) None of these

Sol. (c) is the correct option because 'Bulky' is the synonym of 'Fat' and similarly 'Happiness' is the synonym of 'joy'.

Now, we can say that we have discussed almost all type of analogy to be asked frequently in the examinations. But examinees must prepare for any surprise kind of problems while solving the problems under this segment. But by practicing more & more, you can be master in solving these problems. Only keep in mind the following:

- (1) You must have strong word power.
- (2) You must have good understanding & reasoning ability.
- (3) You must have good general knowledge.

CLASSIFICATION

When we come to solve the reasoning part while preparing for any competitive examination of objective nature. We find that the problems based on classification are the very important segment. You can see such questions in every question paper and this is the reason why examinees are advised to be well aware of classification part of reasoning. In this chapter, efforts have been made to make, examinees of various objective competitive examinations, fully aware of reasoning based on classification.

WHAT IS CLASSIFICATION?

You must have in your mind that what does classification mean. In fact, in classification we take out an element out of some given elements and the element to be taken out is different from the rest of the elements in terms of common properties, shapes, sizes, types, nature, colours, traits etc. In this way the rest of the elements form a group and the element that has been taken out is not the member of that group as this single element does not possess the common quality to be possessed by rest of the elements. For example, if we compare the elements like, lion, cow, tiger, panther, bear and wolf then we find that this is a group of animals. How do we classify them? To understand this let us see the presentation given below :-

Lion	Cow	Tiger	Panther	Bear	Wolf
↓	↓	↓	↓	↓	↓
Wild animal	Domestic animal	Wild animal	Wild animal	Wild animal	Wild animal

4. General Knowledge Based Classification

Such classification is done on the basis of our general knowledge. No doubts that this is a word based classification but without having general knowledge this type of questions can not be solved.

EXAMPLE 10. Find the odd man out.

- (a) Patna
- (b) Mumbai
- (c) Kolkata
- (d) Bangluru
- (e) Madhya Pradesh

Sol.: Option (e) is the correct answer because Madhya Pradesh is an Indian state while all other options are capitals of Indian states. Patna is the capital of Bihar; Mumbai is the capital of Maharashtra; Kolkata is the capital of West Bengal and Bangluru is the capital of Karnataka. In case of Madhya Pradesh (it is an Indian state), we can say that it has its capital in Bhopal.

EXAMPLE 11. Which of the following animals does not fit into the group formed by remaining four animals?

- (a) Cat
- (b) Dog
- (c) Tiger
- (d) Octopus
- (e) Lion

Sol.: Option (d) is the correct option as this is the only animal out of given options which is a water animal. Rest of the options are land animals.

Now, this chapter has come to an end. Readers are advised to move as per the following steps while solving the problems related to classification :-

- Step I:** See all the given options with a serious eye.
- Step II:** Try to make relation of similarity among the given options.
- Step III:** Find out the one word not having the common similarity like other four options and that one word will be your answer.

EXERCISE

- Which of the following is related to 'Melody' in the same way as 'Delicious' is related to 'Taste'?
 (a) Memory (b) Highness
 (c) Tongue (d) Speak
 (e) Voice
- In a certain way 'Diploma' is related to 'Education'. Which of the following is related to 'Trophy' in a similar way?
 (a) Sports (b) Athlete
 (c) Winning (d) Prize
 (e) None of these
- Marathon is related to race, in the same way 'Hibernation' is related to ____
 (a) laugh (b) burn
 (c) freeze (d) sleep
 (e) flow
- "Illness" is related to "Cure" in the sameway as "Grief" is - related to
 (a) Happiness (b) Ecstasy
 (c) Remedy (d) Solicitude
 (e) Consolation
- 'Yard' is related to inch, in the sameway 'quart' is related to
 (a) gram (b) ounce
 (c) gallon (d) pound
 (e) None of these
- 'Bouquet' is related to 'Flowers' in the same way as 'sentence' is related to
 (a) Letters (b) Paragraph
 (c) Content (d) Words
 (e) Construction
- Which of the following relates to FLOWER in the same way as RTERBN relates to SECTOR?
 (a) RWLGPF (b) EOFKUQ
 (c) EOFMXS (d) RWLEPD
 (e) RWLEND
- 'Income' is related to 'Profit' in the same way as 'Expenditure' is related to
 (a) Sale (b) Receipts
 (c) Surplus (d) Loss
 (e) Balance
- 'Electricity' is related to 'Wire' in the same way as 'Water' is related to
 (a) Bottle (b) Jug
 (c) River (d) Pipe
 (e) None of these
- 'Hospital' is related to 'Nurse' in the same way as 'Court' is related to
 (a) Justice (b) Lawyer
 (c) Judgement (d) Trial
 (e) None of these
- 'Frame work' is related to 'House' in the same way as 'Skeleton' is related to which of the following?
 (a) Ribs (b) Skull
 (c) Body (d) Grace
 (e) None of these

Directions (Qs. 12-61) : In each of the following questions, there are two words / set of letters / numbers to the left of the sign :: which are connected in some way. The same relationship obtains between the third words / set of letters / numbers and one of the four alternatives under it. Find the correct alternative in each question.

- Ocean : Water :: Glacier : ?
 (a) Refrigerator (b) Ice
 (c) Mountain (d) Cave
 (e) None of these
- PRLN : XZTV :: JLFH : ?
 (a) NPRT (b) NRPT
 (c) NTRP (d) RTNP
 (e) None of these
- DRIVEN : EIDRVN :: BEGUM : ?
 (a) EUBGM (b) MGBEU
 (c) BGMEU (d) UEBGM
 (e) None of these
- Medicine : Sickness :: Book : ?
 (a) Ignorance (b) Knowledge
 (c) Author (d) Teacher
 (e) None of these
- Bank : River :: Coast : ?
 (a) Flood (b) Waves
 (c) Sea (d) Beach
 (e) None of these
- ACE : HIL :: MOQ : ?
 (a) XVT (b) TVX
 (c) VTX (d) TUX
 (e) None of these
- NUMBER : UNBMER :: GHOST : ?
 (a) HOGST (b) HOGTS
 (c) HGOST (d) HGSOT
 (e) None of these
- Court : Justice :: School : ?
 (a) Teacher (b) Student
 (c) Ignorance (d) Education
 (e) None of these
- Breeze : Cyclone :: Drizzle : ?
 (a) Earthquake (b) Storm
 (c) Flood (d) Downpour
 (e) None of these
- 3 : 27 :: 4 : ?
 (a) 140 (b) 75
 (c) 100 (d) 64
 (e) None of these
- Foresight : Anticipation :: Insomnia : ?
 (a) Treatment (b) Disease
 (c) Sleeplessness (d) Unrest
 (e) None of these
- Ocean : Pacific :: Island : ?
 (a) Greenland (b) Ireland
 (c) Netherland (d) Borneo
 (e) None of these

24. 12 : 30 :: 20 : ?
 (a) 25 (b) 32
 (c) 35 (d) 42
 (e) None of these
25. 3 : 10 :: 8 : ?
 (a) 10 (b) 13
 (c) 14 (d) 17
 (e) None of these
26. 13 : 19 :: ? : 31
 (a) 21 (b) 23
 (c) 25 (d) 26
 (e) None of these
27. 48 : 122 :: 168 : ?
 (a) 284 (b) 286
 (c) 288 (d) 290
 (e) None of these
28. TSR : FED :: WVU : ?
 (a) CAB (b) MLK
 (c) PQS (d) GFH
 (e) None of these
29. CJDL : FMGR :: IKJR : ?
 (a) OQPT (b) RSTU
 (c) LSNT (d) KRMO
 (e) None of these
30. BCDA : STUR :: KLMJ : ?
 (a) VWXU (b) EFHG
 (c) SRTU (d) QSRP
 (e) None of these
31. ACBD : EFGH :: OQPR : ?
 (a) STUV (b) RSTU
 (c) UVWX (d) QRST
 (e) None of these
32. CEG : EGC :: LNP : ?
 (a) LPN (b) UWY
 (c) NPL (d) MOP
 (e) None of these
33. KLM : PON :: NOP : ?
 (a) LMK (b) MLK
 (c) NML (d) KLN
 (e) None of these
34. ACE : FGH :: LNP : ?
 (a) QRS (b) PQR
 (c) QST (d) MOQ
 (e) None of these
35. 211 : 333 :: 356 : ?
 (a) 358 (b) 359
 (c) 423 (d) 388
 (e) None of these
36. Length : Metre :: Power : ?
 (a) Calories (b) Degree
 (c) Watt (d) Kilogram
 (e) None of these
37. Square : Cube :: Circle : ?
 (a) Ellipse (b) Parabola
 (c) Cone (d) Sphere
 (e) None of these
38. Paper : Tree :: Glass : ?
 (a) Window (b) Sand
 (c) Stone (d) Mirror
 (e) None of these
39. ACFJ : ZXUQ :: EGIN : ?
 (a) VUSQ (b) VRPM
 (c) UTRP (d) VTRM
 (e) None of these
40. ACEG : DFHJ :: QSUW : ?
 (a) TVXZ (b) TQST
 (c) MNPR (d) EGIJ
 (e) None of these
41. EGIK : FILO :: FHJL : ?
 (a) JGMP (b) JGPM
 (c) GJPM (d) GJMP
 (e) None of these
42. 10 : 91 :: 9 : ?
 (a) 69 (b) 72
 (c) 89 (d) 97
 (e) None of these
43. 7 : 56 :: 9 : ?
 (a) 63 (b) 81
 (c) 90 (d) 99
 (e) None of these
44. 20 : 50 :: 100 : ?
 (a) 150 (b) 250
 (c) 200 (d) 156
 (e) None of these
45. Voyage : Sea sickness :: Heights : ?
 (a) Ship (b) Travel
 (c) Giddiness (d) Motion
 (e) None of these
46. Waitress : Restaurant :: ?
 (a) Doctor : Nurse (b) Driver : Truck
 (c) Teacher : School (d) Actor : Role
 (e) None of these
47. AROUND : RAUODN :: GROUND : ?
 (a) RGUODN (b) NDOOGR
 (c) OUNDGR (d) DNUURG
 (e) None of these
48. APPROACHED : ROACHEDAPP :: BARGAINED : ?
 (a) AINEDBARG (b) GAINEDBAR
 (c) GAINEDRAB (d) RABGAINED
 (e) None of these
49. 8 : 256 :: ?
 (a) 7 : 343 (b) 9 : 243
 (c) 10 : 500 (d) 5 : 75
 (e) None of these
50. 21 : 3 :: 574 : ?
 (a) 23 (b) 82
 (c) 97 (d) 113
 (e) None of these
51. Saint : Meditation :: Scientist : ?
 (a) Research (b) Knowledge
 (c) Spiritual (d) Rational
 (e) None of these
52. King : Palace :: Eskimo : ?
 (a) Caravan (b) Asylum
 (c) Monastery (d) Igloo
 (e) None of these
53. AFKP : DINS :: WBGL : ?
 (a) ORUX (b) OSWA
 (c) OTYD (d) OQSU
 (e) None of these

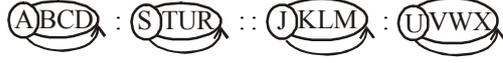
54. SINGER : QGLECP :: MONSTER : ?
 (a) KLNSCP (b) KLMSCP
 (c) KMLQRCP (d) KLMTDO
 (e) None of these
55. 18 : 5 :: 12 : ?
 (a) 4 (b) 10
 (c) 3 (d) 6
 (e) None of these
56. Haematology : Blood :: Phycology : ?
 (a) Fungi (b) Fishes
 (c) Algae (d) Diseases
 (e) None of these
57. Pride of Lions : : _____ of cats
 (a) Herd (b) School
 (c) Clowder (d) Bunch
 (e) None of these
58. MAN : PDQ :: WAN : ?
 (a) ZDQ (b) NAW
 (c) YQD (d) YDQ
 (e) None of these
59. AEFJ : KOPT :: ? : QUVZ
 (a) GLKP (b) GKLP
 (c) HLKP (d) HKQL
 (e) None of these
60. 2 : 32 :: 3 : ?
 (a) 243 (b) 293
 (c) 183 (d) 143
 (e) None of these
61. $D \times H : 4 \times 8$ as $M \times Q : ?$
 (a) 12×17 (b) 12×16
 (c) 13×17 (d) 14×18
 (e) None of these
- Directions (Qs. 62-97):** Four of the following five are alike in a certain way and so form a group. Which is the one that **does not** belong to that group?
62. (a) 29 (b) 85
 (c) 147 (d) 125
 (e) 53
63. (a) Crow (b) Vulture
 (c) Bat (d) Ostrich
 (e) Eagle
64. (a) Food : Hunger (b) Water : Thirst
 (c) Air : Suffocation (d) Talent : Education
 (e) Leg : Lameness
65. (a) 126 (b) 122
 (c) 65 (d) 50
 (e) 170
66. (a) 226 (b) 290
 (c) 360 (d) 170
 (e) 122
67. (a) Rice (b) Wheat
 (c) Barley (d) Mustard
 (e) Bajra
68. (a) Arrow (b) Sword
 (c) Knife (d) Axe
 (e) Pistol
69. (a) 169 (b) 179
 (c) 135 (d) 149
 (e) 157
70. (a) Kiwi (b) Eagle
 (c) Emu (d) Ostrich
 (e) Penguins
71. (a) 72 (b) 42
 (c) 152 (d) 110
 (e) 156
72. (a) Aluminium (b) Copper
 (c) Mercury (d) Iron
 (e) Zinc
73. (a) 143 (b) 63
 (c) 195 (d) 15
 (e) 257
74. (a) Producer (b) Director
 (c) Investor (d) Financier
 (e) Entrepreneur
75. (a) Jackal (b) Cheetah
 (c) Tiger (d) Lion
 (e) Dog
76. (a) Cheese (b) Butter
 (c) Milk (d) Curd
 (e) Ghee
77. (a) 131 (b) 151
 (c) 181 (d) 171
 (e) 161
78. (a) Anxiety (b) Anger
 (c) Sorrow (d) Joy
 (e) Feeling
79. (a) Touch : Skin (b) Tongue : Taste
 (c) Hear : Ears (d) See : Eye
 (e) Smell : Nose
80. (a) 170 (b) 226
 (c) 120 (d) 290
 (e) 362
81. (a) BROTHER : DORVEHT
 (b) ENGLISH : GGNNISJ
 (c) ANOTHER : CONVEHT
 (d) BETWEEN : DTEZEEP
 (e) HUSBAND : JSUDNAF
82. (a) ISLOJ (b) LUOQM
 (c) AKDGB (d) FPILG
 (e) NXQTO
83. (a) Pear (b) Jackfruit
 (c) Watermelon (d) Papaya
 (e) Mango
84. (a) 131 (b) 133
 (c) 143 (d) 87
 (e) 57
85. (a) 168 (b) 728
 (c) 290 (d) 380
 (e) 120
86. (a) Swan (b) Crocodile
 (c) Frog (d) Snake
 (e) Chicken
87. (a) PY8 (b) EK5
 (c) RV3 (d) DG2
 (e) JR6
88. (a) Liberty (b) Society
 (c) Equality (d) Fraternity
 (e) None of these

- | | | | | | |
|-----|--|-----------------------------|-----|--|--------------------------------|
| 89. | (a) DWFU
(c) HSKP
(e) None of these | (b) EVHS
(d) KQNN | 94. | (a) Pathology
(c) Cardiology
(e) None of these | (b) Geology
(d) Radiology |
| 90. | (a) CBEF
(c) IHKL
(e) None of these | (b) EDGH
(d) GFHJ | 95. | (a) Rivulet
(c) River
(e) None of these | (b) Stream
(d) Pond |
| 91. | (a) 4025
(c) 6023
(e) None of these | (b) 7202
(d) 5061 | 96. | (a) Konark
(c) Dilwara
(e) None of these | (b) Madurai
(d) Ellora |
| 92. | (a) 96 : 80
(c) 80 : 60
(e) None of these | (b) 64 : 48
(d) 104 : 78 | 97. | (a) Fervent
(c) Apathetic
(e) None of these | (b) Enthusiastic
(d) Ardent |
| 93. | (a) Radio
(c) Transistor
(e) None of these | (b) Television
(d) Tube | | | |

ANSWER KEY

1	(e)	12	(b)	23	(a)	34	(a)	45	(c)	56	(c)	67	(d)	78	(e)	89	(a)
2	(a)	13	(d)	24	(d)	35	(d)	46	(c)	57	(c)	68	(e)	79	(b)	90	(d)
3	(d)	14	(b)	25	(d)	36	(c)	47	(a)	58	(a)	69	(a)	80	(c)	91	(d)
4	(c)	15	(a)	26	(b)	37	(d)	48	(b)	59	(b)	70	(b)	81	(d)	92	(a)
5	(b)	16	(c)	27	(d)	38	(b)	49	(c)	60	(a)	71	(c)	82	(b)	93	(d)
6	(d)	17	(d)	28	(b)	39	(d)	50	(b)	61	(c)	72	(c)	83	(c)	94	(b)
7	(e)	18	(d)	29	(a)	40	(a)	51	(a)	62	(c)	73	(e)	84	(a)	95	(d)
8	(d)	19	(d)	30	(a)	41	(d)	52	(d)	63	(c)	74	(b)	85	(d)	96	(d)
9	(d)	20	(d)	31	(a)	42	(b)	53	(c)	64	(d)	75	(e)	86	(e)	97	(c)
10	(b)	21	(d)	32	(c)	43	(c)	54	(c)	65	(a)	76	(c)	87	(e)		
11	(c)	22	(c)	33	(b)	44	(b)	55	(c)	66	(c)	77	(e)	88	(b)		

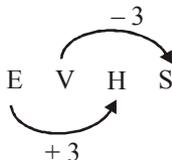
Hints & Explanations

1. (e) 'Delicious' is the adjective used for 'Taste'. Similarly, 'Melodious' is the adjective used for 'Voice'.
2. (a) A successful finish of 'Education' equips one with 'Diploma'. Similarly, a successful finish in 'Sports' equips one with 'Trophy'.
3. (d) Marathon is a form of long race in the same way hibernation is lengthy period sleep or inactivity.
4. (c) Cure ensures removal of illness in the same way as remedy insures removal of grief.
5. (b) Yard is bigger unit of inch (1 yard = 36 inches) in the same way quart is bigger unit of ounce (1 quart = 32 ounces)
6. (d) Bouquet is a bunch of flowers. Similarly, Sentence is a set of words that is complete in itself.
7. (e) 
8. (d) When Income is more than expenditure, it bears Profit. But when Expenditure is more than income, then loss occurs.
9. (d) Wire is the medium to transmit Electricity. Similarly, Pipe is the medium to carry Water.
10. (b) Here, the first is the working place of the second.
11. (c) Framework is foundation on which house is built. Similarly, body is built around skeleton.
12. (b) First consists of the second.
13. (d) As $P \xrightarrow{+8} X$ Similarly, $J \xrightarrow{+8} R$
 $R \xrightarrow{+8} Z$ $L \xrightarrow{+8} T$
 $L \xrightarrow{+8} T$ $F \xrightarrow{+8} N$
 $N \xrightarrow{+8} V$ $H \xrightarrow{+8} P$
14. (b) Fifth and third letters of the first term are first and second letters of the second term and first two letters of the first term are third and fourth letters of the second term.
15. (a) As medicine cures sickness, in the same way, books remove ignorance.
16. (c) Bank is the land beside a river. Similarly, coast is the land beside a sea.
17. (d) As, $A \xrightarrow{+7} H$ Similarly, $M \xrightarrow{+7} T$
 $C \xrightarrow{+6} I$ $O \xrightarrow{+6} U$
 $E \xrightarrow{+7} L$ $Q \xrightarrow{+7} X$
18. (d) First two letters of the first term are in reverse order in the second term and so are the next two letters.
19. (d) First is the place where the second is imparted.
20. (d) Second is more intense than the first.
21. (d) Second term = (First term)³
 \therefore Fourth term = (Third term)³
22. (c) The words in each pair are synonyms.
23. (a) The largest ocean is Pacific Ocean. Similarly, the largest island is Greenland.
24. (d) $12 = 3^2 + 3$, $30 = 5^2 + 5$:
 $20 = 4^2 + 4$: $? = 6^2 + 6$
25. (d) $3 = 2^2 - 1$, $10 = 3^2 + 1$
 $8 = 3^2 - 1$, $? = 4^2 + 1$
26. (b) 13 and 19 are primes with 17 left out in between.
27. (d) $48 = 7^2 - 1$, $122 = 11^2 + 1$:
 $168 = 13^2 - 1$, $? = 17^2 + 1$
28. (b) The letters are consecutive and written in reverse order.
29. (a) $C \xrightarrow{+3} F$ $I \xrightarrow{+6} O$
 $J \xrightarrow{+3} M$ $K \xrightarrow{+6} Q$
 $D \xrightarrow{+3} G$ $J \xrightarrow{+6} P$
 $L \xrightarrow{+6} R$ $R \xrightarrow{+3} T$
30. (a) In each group the first three letters are consecutive and they follows the fourth letter.

31. (a) 
 Here B and D are skipped
32. (c) The second set EGC is formed by simply putting the first letter of CEG at last to form EGC, and so on.
33. (b) Because KLM are assigned No. 11, 12 & 13 from A onwards, this corresponds to PON, which are also numbered 11, 12 and 13 from Z to A in reverse order. Hence NOP will correspond to MLK.
34. (a) The three letters moved 5, 4, and 3 and steps forward respectively.
35. (d) $211 \Rightarrow 2 + 1 + 1 = 4$] +5
 $333 \Rightarrow 3 + 3 + 3 = 9$] +5
 Similarly,
 $356 \Rightarrow 3 + 5 + 6 = 14$] +5
 $388 \Rightarrow 3 + 8 + 8 = 19$] +5
36. (c) Metre is a unit of length likewise watt is a unit of power.
37. (d) As cube is 3-D of square. Similarly sphere is 3-D of circle.
38. (b) As paper is product of Tree. Similarly glass is a product of sand.
39. (d) As, A C F J similarly, E G I N
 $\downarrow \downarrow \downarrow \downarrow$ $\downarrow \downarrow \downarrow \downarrow$
 Z X U Q V T R M

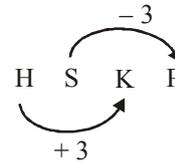
40. (a) As, Similarly
 $A \xrightarrow{+3} D$ $Q \xrightarrow{+3} T$
 $C \xrightarrow{+3} F$ $S \xrightarrow{+3} V$
 $E \xrightarrow{+3} H$ $U \xrightarrow{+3} X$
 $G \xrightarrow{+3} J$ $W \xrightarrow{+3} Z$
41. (d) As, Similarly
 $E \xrightarrow{+1} F$ $F \xrightarrow{+1} G$
 $G \xrightarrow{+2} I$ $H \xrightarrow{+2} J$
 $I \xrightarrow{+3} L$ $J \xrightarrow{+3} M$
 $K \xrightarrow{+4} O$ $L \xrightarrow{+4} P$
42. (b) The relationship is $x : (x^2 - 9)$.
43. (c) The relationship is $x : x(x + 1)$
44. (b) $50 = 20 \times 2 + 20/2$, So $100 \times 2 + 100/2 = 250$
45. (c) Sea sickness is to feel ill when you are travelling on a ship or boat.
 Similarly, Giddiness is to feel that you are going to fall.
46. (c) Waitress is a person whose job is to serve customers in a restaurant.
 Similarly, A teacher teaches students in a school.
47. (a) $A \begin{matrix} \curvearrowright \\ \curvearrowleft \end{matrix} R \begin{matrix} \curvearrowright \\ \curvearrowleft \end{matrix} O \begin{matrix} \curvearrowright \\ \curvearrowleft \end{matrix} U \begin{matrix} \curvearrowright \\ \curvearrowleft \end{matrix} N \begin{matrix} \curvearrowright \\ \curvearrowleft \end{matrix} D \Rightarrow R A U O D N$
 Similarly,
 $G \begin{matrix} \curvearrowright \\ \curvearrowleft \end{matrix} R \begin{matrix} \curvearrowright \\ \curvearrowleft \end{matrix} O \begin{matrix} \curvearrowright \\ \curvearrowleft \end{matrix} U \begin{matrix} \curvearrowright \\ \curvearrowleft \end{matrix} N \begin{matrix} \curvearrowright \\ \curvearrowleft \end{matrix} D \Rightarrow R G U O D N$
48. (b) $\boxed{APP} R O A C H E D \Rightarrow R O A C H E D \boxed{APP}$
 Similarly,
 $\boxed{BAR} G A I N E D \Rightarrow G A I N E D \boxed{BAR}$
49. (c) $8 \times 8 = 64 \times 4 = 256$
 $10 \times 10 = 100 \times 5 = 500$
50. (b) $\frac{21}{3} = 7$
 Similarly, $\frac{574}{x} = 7, x = \frac{574}{7} = 82$
51. (a) A saint practices meditation.
 Similarly,
 A scientist does research.
52. (d) A palace is the official home of a king.
 Similarly,
 An igloo is a small round house of an Eskima.
53. (c) $A \xrightarrow{+5} F \xrightarrow{+5} K \xrightarrow{+5} P$
 $D \xrightarrow{+5} I \xrightarrow{+5} N \xrightarrow{+5} S$
 $W \xrightarrow{+5} B \xrightarrow{+5} G \xrightarrow{+5} L$
 $O \xrightarrow{+5} T \xrightarrow{+5} Y \xrightarrow{+5} D$

54. (c) $S \xrightarrow{-2} Q$ Similarly $M \xrightarrow{-2} K$
 $I \xrightarrow{-2} G$ $O \xrightarrow{-2} M$
 $N \xrightarrow{-2} L$ $N \xrightarrow{-2} L$
 $G \xrightarrow{-2} E$ $S \longrightarrow Q$
 $E \xrightarrow{-2} C$ $T \longrightarrow R$
 $R \xrightarrow{-2} P$ $E \longrightarrow C$
 $R \longrightarrow P$
55. (c) $18/3 - 1 = 5$
 $12/3 - 1 = \boxed{3}$
56. (c) Haematology is the branch of medicine concerned with the study and prevention of diseases related to the blood.
 Similarly, phycology is the scientific study of algae.
57. (c) A group of Lions is called a pride.
 A group of Cats is called a clowder.
58. (a) $M \begin{matrix} \downarrow +3 \\ P \end{matrix} A \begin{matrix} \downarrow +3 \\ D \end{matrix} N \begin{matrix} \downarrow +3 \\ Q \end{matrix}$ Similarly, $W \begin{matrix} \downarrow +3 \\ Z \end{matrix} A \begin{matrix} \downarrow +3 \\ D \end{matrix} N \begin{matrix} \downarrow +3 \\ Q \end{matrix}$
59. (b) $A \begin{matrix} \downarrow +10 \\ K \end{matrix} E \begin{matrix} \downarrow +10 \\ O \end{matrix} F \begin{matrix} \downarrow +10 \\ P \end{matrix} J \begin{matrix} \downarrow +10 \\ T \end{matrix}$
 Similarly,
 $G \begin{matrix} \uparrow -10 \\ Q \end{matrix} K \begin{matrix} \uparrow -10 \\ U \end{matrix} L \begin{matrix} \uparrow -10 \\ V \end{matrix} P \begin{matrix} \uparrow -10 \\ Z \end{matrix}$
60. (a) $2^5 = 32$
 $3^5 = 243$
61. (c) $D \times H$ $M \times Q$
 \downarrow \downarrow Similarly, \downarrow \downarrow
 4×8 13×17
 Respective place value of letters in English alphabet.
 Hence, option (c) is the correct answer.
62. (c) All other numbers are in the form of $n^2 + 4$ where n is a natural number.
63. (c) Except (c) others are birds whereas bat is a mammal
64. (d) Lack of first one causes second one.
65. (a) The rest are based on the expression $x^2 + 1$.
 But $126 = 11^2 + 5$.
66. (c) After a close look you will get that except 360 each number is one more than square of a natural number, i.e., $226 = 15^2 + 1$; $290 = 17^2 + 1$; $170 = 13^2 + 1$; $122 = 11^2 + 1$
67. (d) Except 'mustard' each belongs to the same category, viz food grains. Mustard is an oilseed.
68. (e) All others are held in the hand and not shot out.
69. (a) The rest are not squares of a number.
70. (b) All others are flight less change numbering birds while Eagle is not.
71. (c) $72 = 9^2 - 9$
 $42 = 7^2 - 7$
 $152 = 12^2 + 8$
 $110 = 11^2 - 11$
 $156 = 13^2 - 13$
 Except 152, others show the trend $x^2 - x$.

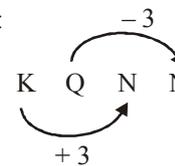
72. (c) All others are found in solid state while mercury is found in liquid state.
73. (e) The given numbers can be written as follows:
 $143 = 12^2 - 1$; $63 = 8^2 - 1$; $195 = 14^2 - 1$;
 $15 = 4^2 - 1$
 But, $257 = 16^2 + 1$
 Obviously, except 257, others can be written in the form $x^2 - 1$.
74. (b) All except Direction spend money.
75. (e) Others are wild animals.
76. (c) Others are the products made from 'milk'.
77. (e) The digit-sums are as follows:
 $131 \rightarrow 1 + 3 + 1 = 5$
 $151 \rightarrow 1 + 5 + 1 = 7$
 $181 \rightarrow 1 + 8 + 1 = 10 \rightarrow 1 + 0 = 1$
 $171 \rightarrow 1 + 7 + 1 = 9$
 $161 \rightarrow 1 + 6 + 1 = 8$
 Only 161 has its digit-sum even.
78. (e) All others are specific feelings.
79. (b) Others represent sensation and respective organs. Here the order is reversed.
80. (c) 170 can be written as $(13^2 + 1)$. Similarly, 226, 290 and 362 can be written as $(15^2 + 1)$, $(17^2 + 1)$ and $(19^2 + 1)$ respectively. In general, they can be written as $(x^2 + 1)$. But 120 is $(11^2 - 1)$.
81. (d) The following rule is followed in other pairs: The first, fourth and last letters of the first word are being replaced with two letters ahead in English alphabet in the second word and both pairs of letters between the first and fourth, and the fourth and last in the first word are interchanging between themselves in the second word. But in option (d), the fourth letter 'W' in the first word becomes Z in the second word, which should be Y.
82. (b)
- | | | | | | | | | | |
|-----|----|----|----|---|-----|----|----|----|---|
| I | S | L | O | J | L | U | O | Q | M |
| ┌ | ┌ | ┌ | ┌ | ┌ | ┌ | ┌ | ┌ | ┌ | ┌ |
| +10 | -7 | +3 | -5 | | +9 | -6 | +2 | -4 | |
| | | | | | | | | | |
| A | K | D | G | B | F | P | I | L | G |
| ┌ | ┌ | ┌ | ┌ | ┌ | ┌ | ┌ | ┌ | ┌ | ┌ |
| +10 | -7 | +3 | -5 | | +10 | -7 | +3 | -5 | |
| | | | | | | | | | |
| N | X | Q | T | O | | | | | |
| ┌ | ┌ | ┌ | ┌ | ┌ | | | | | |
| +10 | -7 | +3 | -5 | | | | | | |
83. (c) Except it all others grow on trees.
84. (a) Except it all others are non-prime numbers.
85. (d) Except it other numbers are either 1 less or 1 more than a perfect square number.
86. (e) Chicken is young one of hen.
87. (e) In all others, the digit indicates the gap between the two letters.
88. (b) Except (b), all others are principles of society.
89. (a) Option (b):



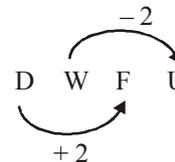
Option (c):



Option (d):



Option (a):



Hence, option (a) is the group of odd letters.

90. (d) Option (a): $C \xrightarrow{-1} B \xrightarrow{+3} E \xrightarrow{+1} F$ Option (b): $E \xrightarrow{-1} D \xrightarrow{+3} G \xrightarrow{+1} H$ Option (c): $I \xrightarrow{-1} H \xrightarrow{+3} K \xrightarrow{+1} L$ Option (d): $G \xrightarrow{-1} F \xrightarrow{+1} H \xrightarrow{+1} J$

Hence, option (d) is the odd group of letters.

91. (d) $4 + 0 + 2 + 5 = 11$ $6 + 0 + 2 + 3 = 11$ $7 + 2 + 0 + 2 = 11$ $5 + 0 + 6 + 1 = 12$

Hence, (d) is the odd one out.

92. (a) $64 : 48$ $(8 \times 8) : (8 \times 6)$ $80 : 60$
 $(10 \times 8) : (10 \times 6)$ $104 : 78$
 $(13 \times 8) : (13 \times 6)$

Hence, option (a) is odd one out

93. (d) Radio, Transistor and television are the way of broadcasting. Hence, tube is odd one out.

94. (b) As all terms given in question are medical terms except geology.

95. (d)

96. (d) All except Ellora are famous for temples, while Ellora is famous for caves.

97. (c) Fervent: having or displaying a passionate intensity.
 Enthusiastic: having or showing intense and eager enjoyment.

Ardent: very enthusiastic or passionate

Apathetic: showing or feeling no interest, enthusiasm or concern.

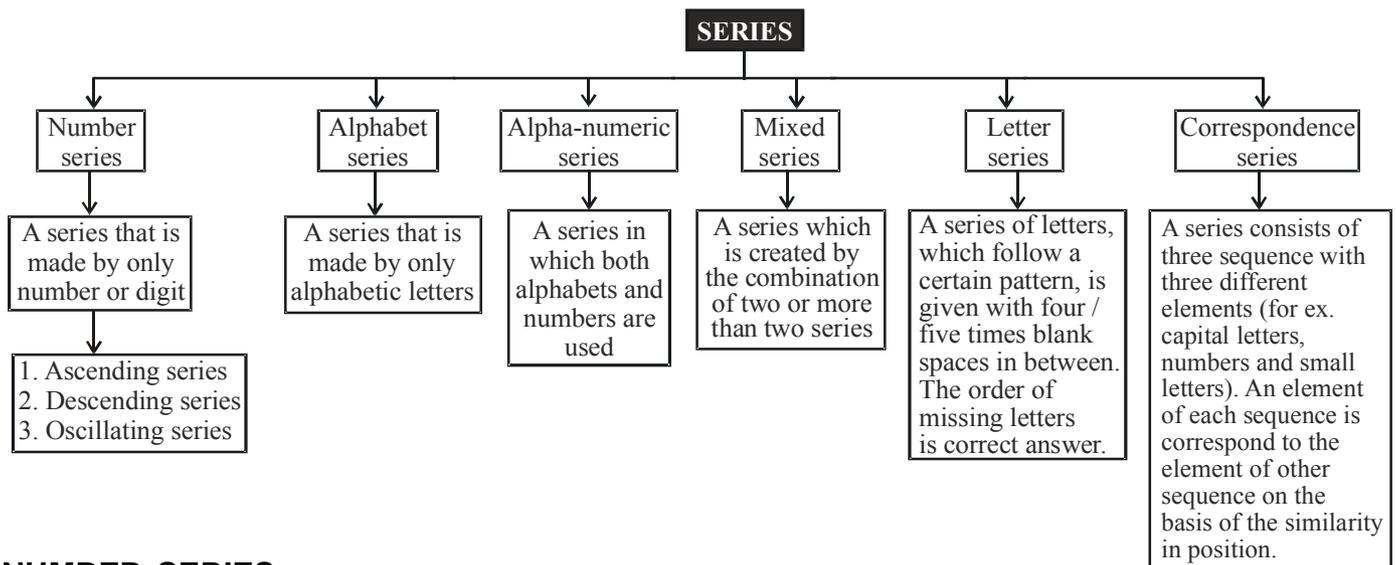
Hence, apathetic is odd one out.

Series

INTRODUCTION

A series is a sequence of numbers/alphabetical letters or both which follow a particular rule. Each element of series is called 'term'. We have to analyse the pattern and find the missing term or next term to continue the pattern.

Types of series are explained in the following chart :



NUMBER SERIES

Number series is a form of numbers in a certain sequence, where some numbers are mistakenly put into the series of numbers and some number is missing in that series, we need to observe first and then find the accurate number to that series of numbers. Different types of Number Series–

1. Perfect square series

This type of series are based on square of a number which is in same order and one square number is missing in that given series.

E.g. 841, ?, 2401, 3481, 4761

Sol. $29^2, 39^2, 45^2, 59^2, 69^2$

2. Perfect cube series

Perfect cube series is a arrangement of numbers is a certain order, where some number which is in same order and one cube is missing in that given series.

E.g. 4096, 4913, 5832, ?, 8000

Sol. $16^3, 17^3, 18^3, 19^3, 20^3$

3. Mixed number series

Mixed number series is a arrangement of numbers in a certain order. This type of series are more than are different order which arranged in alternatively in single series or created according to any non conventional rule.

E.g 1, 111, 220, 438, ?, 1746.

At first you can calculate missing number in mixed series and that you place the actual missing number in the ? or missing place. Be prepared when you calculate differences because it is either one or two step calculation. So when you calculate and get two difference numbers result you need follow some step wise.

This kind the missing series calculation you go thorough some common calculation shortcut tricks square of division, cube, addition, multiplication.

EXAMPLE ➤ 6, ?, 33, 69, 141, 285

Sol. $\times 2 + 3, \times 2 + 3$

EXAMPLE ➤ 4, 16, 64, 256, 1024, ?

Sol. Multiply each number by 4 to get the next number.

$$4 \times 4 = 16$$

$$16 \times 4 = 64$$

$$64 \times 4 = 256$$

$$256 \times 4 = 1024$$

$$1024 \times 4 = 4096$$

4. Geometric Series

Geometric Number series is a arrangement of numbers in a certain order, where some numbers are this type of series are based on ascending or descending order of numbers and each continues number is obtain by multiplication or division of the previous number with a static number.

In geometric series number is a combination of number arranged. E.g 5, 45, 405, 3645, ?

At first calculate the first number 5 with 9 and second number value we get that is 45 then again second number calculate multiply with 9 and get the third number and follow same steps which is carry up to last and after that you get actual missing number by finding the common value when you put the missing number you have noticed that all series numbers are common 9 which multiply with number and get next number difference.

EXAMPLE  21, 84, 336, ?, 5376

Sol. $21 \times 4 = 84$

$$84 \times 4 = 336$$

$$336 \times 4 = 1344$$

$$1344 \times 4 = 5376$$

5 Prime series :

In which the terms are the prime numbers in order

EXAMPLE  2, 3, 5, 7, 11, 13, __, 19

Sol. Here the terms of the series are the prime numbers in order. The prime number after 13 is 17. So the answer to this question is 17.

6 Alternate Primes :

It can be explained by below examples

EXAMPLE  2, 11, 17, 13, __, 41

Sol. Here the series is framed by taking the alternative prime numbers. After 23, the prime number are 29 and 31. So the answer is 31.

7 The difference of any term from its succeeding term is constant (either increasing series or decreasing series):

EXAMPLE  4, 7, 10, 13, 16, 19, __, 25

Sol. Here the difference of any term from its succeeding term is 3.

$$7 - 4 = 3$$

$$10 - 7 = 3$$

$$\text{so, the answer is } 19 + 3 = 22$$

8 The difference between two consecutive terms will be either increasing or decreasing by a constant number:

EXAMPLE  2, 10, 26, 50, 82, __

Sol. Here, the difference between two consecutive terms are $10 - 2 = 8$

$$26 - 10 = 16$$

$$50 - 26 = 24$$

$$82 - 50 = 32$$

Here, the difference is increased by 8 (or you can say the multiples of 8). So the next difference will be 40 (32 + 8). So, the answer is $82 + 40 = 122$

9 The difference between two numbers can be multiplied by a constant number:

EXAMPLE  15, 16, 19, 28, 55, __

Sol. Here, the differences between two numbers are

$$16 - 15 = 1$$

$$19 - 16 = 3$$

$$28 - 19 = 9$$

$$55 - 28 = 27$$

Here, the difference is multiplied by 3. So, the next difference will be 81. So, the answer is $55 + 81 = 136$

10 The difference can be multiples by number which will be increasing by a constant number:

EXAMPLE  2, 3, 5, 11, 35, __

Sol. The difference between two number are

$$3 - 2 = 1$$

$$5 - 3 = 2$$

$$11 - 5 = 6$$

$$35 - 11 = 24$$

11 Every third number can be the sum of the preceding two numbers :

EXAMPLE  3, 5, 8, 13, 21, __

Sol. Here starting from third number

$$3 + 5 = 8$$

$$5 + 8 = 13$$

$$8 + 13 = 21$$

$$\text{So, the answer is } 13 + 21 = 34$$

12 Every Third number can be the product of the preceding two numbers :

EXAMPLE  1, 2, 2, 4, 8, 32, __

Sol. Here starting from the third number

$$1 \times 2 = 2$$

$$2 \times 2 = 4$$

$$2 \times 4 = 8$$

$$4 \times 8 = 32$$

$$\text{So, the answer is } 8 \times 32 = 256$$

13 Every succeeding term is got by multiplying the previous term by a constant number or numbers which follow a special pattern.

EXAMPLE 5, 15, 45, 135, ___

Sol. Here,

$$5 \times 3 = 15$$

$$15 \times 3 = 45$$

$$45 \times 3 = 135$$

So, the answer is $135 \times 3 = 405$

14 In certain series the terms are formed by various rule (miscellaneous rules). By keen observation you have to find out the rule and the appropriate answer.

EXAMPLE 4, 11, 31, 90, ___

Sol. Terms are,

$$4 \times 3 - 1 = 11$$

$$11 \times 3 - 2 = 31$$

$$31 \times 3 - 3 = 90$$

So, the answer will be $90 \times 3 - 4 = 266$

TYPES OF QUESTIONS :

- (I) Complete the series
- (II) Find missing number of the series
- (III) Find wrong number of the series

EXAMPLES ON NUMBER SERIES

(I) Complete the series

EXAMPLE 1. Which of the following is the next term of series given below ?

4, 6, 9, 13,

- (a) 17 (b) 18
(c) 19 (d) 20

Sol. (b) $4 \xrightarrow{+2} 6 \xrightarrow{+3} 9 \xrightarrow{+4} 13 \xrightarrow{+5} 18$ Correct answer

EXAMPLE 2. Choose the next term of series given below.

64, 32, 16, 8, ?

- (a) 0 (b) 1
(c) 2 (d) 4

Sol. (d) Each number is half of its previous number.

(II) To find the missing number of series :

EXAMPLE 3. What will come in place of question mark in the following series?

79, 87, ?, 89, 83

- (a) 80, (b) 81 (c) 82 (d) 88

Sol. (b) $79 \xrightarrow{+8} 87 \xrightarrow{-6} 81 \xrightarrow{+8} 89 \xrightarrow{-6} 83$

EXAMPLE 4. What will come in place of question mark in the following series?

37, 41, ?, 47, 53

- (a) 42 (b) 43 (c) 46 (d) 44

Sol. (b) Consecutive prime numbers.

EXAMPLE 5. What will come in place of question mark in the following series?

21, 34, ?, 89, 144

- (a) 43 (b) 55 (c) 64 (d) 71

Sol. (b) Each number is the sum of the two preceding numbers.

$$21 + 34 = 55$$

$$34 + 55 = 89$$

$$55 + 89 = 144$$

(III) To find the wrong term in the series :

EXAMPLE 6. Find the wrong term in the series

3, 8, 15, 24, 34, 48, 63.

- (a) 15 (b) 15 (c) 34 (d) 63

Sol. (c) $2^2 - 1, 3^2 - 1, 4^2 - 1, 5^2 - 1, 6^2 - 1$

EXAMPLES ON ALPHABETIC SERIES

EXAMPLE 7. What will come in place of question mark in the following series?

G, H, J, M, ?

- (a) R (b) S (c) Q (d) P

Sol. (c) $G \xrightarrow{+1} H \xrightarrow{+2} J \xrightarrow{+3} M \xrightarrow{+4} Q$

EXAMPLE 8. What will come in place of question mark in the following series?

BF, CH, ?, HO, LT

- (a) FG (b) EK (c) CE (d) FJ

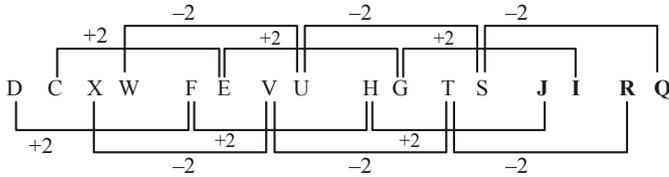
Sol. (b) $BF \xrightarrow{+1} CH \xrightarrow{+2} EK \xrightarrow{+3} HO \xrightarrow{+4} LT$

EXAMPLE 9. What will come in place of question mark in the following series?

DCXW, FEVU, HGTS, ?

- (a) LKPO (b) ABYZ
(c) JIRQ (d) LMRS

Sol. (c) JIRQ



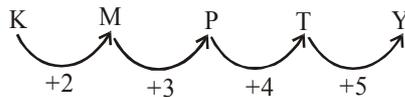
EXAMPLES ON ALPHA-NUMERIC SERIES

EXAMPLE 10. What will come in place of question mark in the following series?

K 1, M 3, P 5, T 7, ?

- (a) Y 9 (b) Y 11 (c) V 9 (d) V 11

Sol. (a) Alphabets follow the sequence



And numbers are increasing by 2

EXAMPLE 11. What will come in place of question mark in the following series?

2 Z 5, 7 Y 7, 14 X 9, 23 W 11, 34 V 13, ?

Sol. First number is the sum of the number of the preceding term.

Middle letter is moving one step backward.

Third number in a term is a series of odd numbers.

∴ 6th term = 47 U 15.

EXAMPLES ON MIXED SERIES

EXAMPLE 12. Complete the series

Z, L, X, J, V, H, T, F, __, __

- (a) D, R (b) R, D (c) D, D (d) R, R

Sol. (b) The given sequence consists of two series

(i) Z, X, V, T, __

(ii) L, J, H, F, __. Both consisting of alternate letters in the reverse order.

∴ Next term of (i) series = R, and

Next term of (ii) series = D

EXAMPLE 13. What will come in place of question mark in the following series?

7, 5, 26, 17, 63, 37, 124, 65, ?, ?

- (a) 101, 215 (b) 101, 101
(c) 215, 101 (d) 215, 215

Sol. (c) The given series consists of two series

(i) 7, 26, 63, 124

(ii) 5, 17, 37, 65

In the first series,

$7 = 2^3 - 1, 26 = 3^3 - 1, 63 = 4^3 - 1,$

$124 = 5^3 - 1, \therefore 6^3 - 1 = 215$

and in the second series.

$5 = 2^2 + 1, 17 = 4^2 + 1,$

$37 = 6^2 + 1, 65 = 8^2 + 1,$

$\therefore 10^2 + 1 = 101$

EXAMPLES ON LETTER SERIES

EXAMPLE 14. Which sequence of letters when placed at the blanks one after another will complete the given letter series?

b a a b - a b a - b b a - -

- (a) bbaa (b) aaaa (c) abab (d) baba

Sol. (d) b a a b b a / b a a b b a / b a.

Shortcut Approach

(i) If numbers are in ascending order in the number series.

- Numbers may be **added or multiplied** by certain numbers from the first number.

Step 1 : Check whether it is ascending, descending or mixed order.

19 23 26 30 33 ?
19 23 26 30 33 37



Step 2: It is in ascending order. So add or multiply by certain numbers from the first number.

Step 3: The difference between first number and second, and difference between second and third and so on., are in increasing order of +4 and +3

Step 4: Hence the answer for above series is 37.

1 3 12 60 ?
1 3 12 60 360



Step 1: Check whether it is ascending, descending or mixed order.

Step 2: It is in ascending order. So add or multiply by certain numbers from the first number.

Step 3: By adding first number and second, and second and third and so on., it is not in the sequence of increasing order. Try multiplication

Step 4: Take 1 and 3, let's start multiplying $1 \times 3 = 3$, by seeing this we get to know, by multiplying 3×4 it gives 12, and $12 \times 5 = 60$.

Step 4: Hence the answer for above series is 360.

If numbers are in descending order in the number series,

- Numbers may be **subtracted or divided** by certain numbers from the first number.

Step 1: Find whether the given number is in **descending order**.

34 18 10 6 4 ?
 34 18 10 6 4 3

$\boxed{-16}$ $\boxed{-8}$ $\boxed{-4}$ $\boxed{-2}$ $\boxed{-1}$
 → → → → →

Step 2 : It is in **descending** order . So subtract or divide by certain numbers from the first number.

Step 3: The difference between first number and second, and difference between second and third and so on, are in order of -16, -8, -4, -2

Step 4: Hence the answer for above series is 3.

720 120 24 6 2 1 ?
 720 120 24 6 2 1

$\boxed{/6}$ $\boxed{/5}$ $\boxed{/4}$ $\boxed{/3}$ $\boxed{/2}$
 → → → → →

Step 1: Check whether it is ascending , descending or mixed order.

Step 2: It is in descending order. So subtract or divide by certain numbers from the first number.

Step 3: By dividing first number by 6 it gives 120.

Divide $120/5=24$, $24/4=6$, $6/3=2$, $2/2=1$. It is in decreasing order.

Step 4: Hence the answer for above series is 1.

If numbers are in mixing order (increasing and decreasing) in the number series.

- Numbers may be in **addition, subtraction, multiplication** and **division** in the alternate numbers.

200 165 148 117 104 ?
 200 165 148 117 104 77

$\boxed{(14) 2+4}$ $\boxed{(13) 2-4}$ $\boxed{(12) 2+4}$ $\boxed{(11) 2-4}$ $\boxed{(10) 2+4}$ $\boxed{(9) 2-4}$
 → → → → → →

Step 1: Check whether it is ascending , descending or mixed order.

Step 2: It is in mixing order. So it may be in addition, subtraction, division and multiplication, squares and cubes.

Step 3: In above series it is mixing of square, addition and subtraction.

$$(14)^2 = 196 + 4 = 200$$

$(13)^2 = 169$. By adding 4 it gives 173. Try subtraction.
 $169 - 4 = 165$

Here we found it is in order of squaring a number, adding by 4 and subtracting by 4.

Step 4: Hence the answer for above series is 77.

14 17 31 48 ? 127

14 17 31 48 79 127
 $\boxed{14+17=31}$ $\boxed{17+31=48}$ $\boxed{31+48=79}$ $\boxed{48+79=127}$
 → → → →

Step 1: Check whether it is ascending , descending or mixed order.

Step 2: It is in ascending order. So add or multiply by certain numbers from the first number.

Step 3 : In above series lets add first number with 3 i.e $14 + 3 = 17$

But with second number we can't able to add +3 and so on.

Let's try adding first number and second number i.e.

$$14 + 17 = 31$$

Second and third, i.e. $17 + 31 = 48$ and so on

This series is in the form of **miscellaneous**

Step 4: Hence the answer for above series is 79

EXERCISE

Directions (Qs. 1-15): In each of these questions a number series is given. Only one number is wrong in each series. You have to find out the wrong number.

1. 10 15 24 35 54 75 100
(a) 35 (b) 75
(c) 24 (d) 15
(e) 54
2. 1 3 4 7 11 18 27 47
(a) 4 (b) 11
(c) 18 (d) 7
(e) 27
3. 3 2 3 6 12 37.5 115.5
(a) 37.5 (b) 3
(c) 6 (d) 2
(e) 12
4. 2 8 32 148 765 4626 32431
(a) 765 (b) 148
(c) 8 (d) 32
(e) 4626
5. 2 3 11 38 102 229 443
(a) 11 (b) 229
(c) 120 (d) 38
(e) 3
6. 2807, 1400, 697, 347, 171, 84, 41, 20
(a) 697 (b) 347
(c) 371 (d) 84
(e) 41
7. 108 54 36 18 9 6 4
(a) 54 (b) 36
(c) 18 (d) 9
(e) 6
8. 2 3 5 8 14 23 41 69
(a) 5 (b) 8
(c) 14 (d) 41
(e) 69
9. 0 1 9 36 99 225 441
(a) 9 (b) 36
(c) 99 (d) 225
(e) 441
10. 3 7.5 15 37.5 75 167.5 375
(a) 167.5 (b) 75
(c) 37.5 (d) 15
(e) 7.5
11. 2 3 6 15 45 156.5 630
(a) 3 (b) 45
(c) 15 (d) 6
(e) 156.5
12. 36 20 12 8 6 5.5 4.5
(a) 5.5 (b) 6
(c) 12 (d) 20
(e) 8

13. 1 3 9 31 128 651 3913
(a) 651 (b) 128
(c) 31 (d) 9
(e) 3
14. 1, 30, 136, 417, 836, 829
(a) 136 (b) 417
(c) 836 (d) 829
(e) 30
15. 5 8 16 26 50 98 194
(a) 8 (b) 26
(c) 50 (d) 16
(e) 98
16. 1 2 4.5 11 30 92.5 329
(a) 92.5 (b) 4.5
(c) 11 (d) 2
(e) 30
17. 2 5 7 12 19 32 50
(a) 7 (b) 12
(c) 32 (d) 19
(e) 5
18. 2 13 65 271 817 1639 1645
(a) 13 (b) 65
(c) 271 (d) 817
(e) 1639
19. 3 4 16 75 366 1945 11886
(a) 16 (b) 75
(c) 366 (d) 1945
(e) 4
20. 2 14 91 546 3002 15015
(a) 15015 (b) 91
(c) 14 (d) 3002
(e) 546

Directions (Qs. 21-25): In each of the following questions, a number series is given in which one number is wrong. You have to find out that number and have to follow the new series which will be started by that number. By following this, which will be the second number of the new series?

21. 1 2 6 33 148 765 4626
(a) 46 (b) 124
(c) 18 (d) 82
(e) None of these
22. 2 9 5 36 125 648 3861
(a) 12 (b) 11
(c) 75 (d) 72
(e) None of these
23. 3 4 12 45 190 1005 6066
(a) 98 (b) 96
(c) 384 (d) 386
(e) None of these
24. 11 18 39 97.5 295.5 1037.5
(a) 122 (b) 122.5
(c) 123 (d) 124
(e) None of these

25. 2 7 19 43 99 209 431
 (a) 181 (b) 183
 (c) 87 (d) 85
 (e) None of these
26. 1 2 8 21 88 445
 (a) 24.5 (b) 25
 (c) 25.5 (d) 25
 (e) None of these
27. 6 7 18 63 265 1365
 (a) 530 (b) 534
 (c) 526 (d) 562
 (e) None of these
28. 7 23 58 127 269 555
 (a) 263 (b) 261
 (c) 299 (d) 286
 (e) None of these
29. 5 4 9 18 66 195
 (a) 12 (b) 25
 (c) 20 (d) 18
 (e) None of these
30. 2 7 28 146 877 6140
 (a) 242 (b) 246
 (c) 252 (d) 341
 (e) None of these

Directions (Qs. 31-35): What will come in the place of question mark (?) in the following number.

31. 2 11 38 197 ? 1170 8227 65806?
 (a) 1170 (b) 1172
 (c) 1174 (d) 1178
 (e) 1180
32. 16 ? 21 30 46 71 107
 (a) 17 (b) 19
 (c) 21 (d) 23
 (e) 25
33. 7 9 16 25 41 ? 107 173
 (a) 74 (b) 70
 (c) 68 (d) 66
 (e) 72
34. 42 ? 7.5 26.25 118.125
 (a) 5 (b) 4
 (c) 3.5 (d) 3
 (e) 4.5
35. 16 4 2 1.5 ? 1.875
 (a) 1.875 (b) 1.5
 (c) 1.75 (d) 2
 (e) 3
36. 0, 7, 26, 63, ?
 (a) 125 (b) 126
 (c) 217 (d) 124
 (e) None of these
37. 2, 5, 10, 19, 36, ?
 (a) 70 (b) 71
 (c) 68 (d) 69
 (e) None of these
38. 1, 2, 6, 24, ?, 720
 (a) 3 (b) 5
 (c) 120 (d) 8
 (e) None of these

39. 156, 506, ?, 1806
 (a) 1056 (b) 856
 (c) 1456 (d) 1506
 (e) None of these
40. -1, 0, ?, 8, 15, 24
 (a) 4 (b) 3
 (c) 2 (d) 1
 (e) None of these
41. BCFG, JKNO, RSVW, ?
 (a) ZADE (b) HIKL
 (c) STUX (d) MNPQ
 (e) None of these
42. 251 (12) 107
 381 (?) 125
 (a) 14 (b) 24
 (c) 11 (d) 16
 (e) None of these
43. 2, 3, 6, 7, 14, 15, ?
 (a) 16 (b) 30
 (c) 31 (d) 32
 (e) None of these
44. 3120, ?, 122, 23, 4
 (a) 488 (b) 621
 (c) 610 (d) 732
 (e) None of these
45. 0, 5, 60, 615, ?
 (a) 6030 (b) 6170
 (c) 6130 (d) 6000
 (e) None of these

Directions (Qs. 38-42) : In each of the following questions a number series is given. A number is given after the series and then (a), (b), (c), (d) and (e) are given. According to the given series, you have to form a new series which begins with the given number, and then answer the question asked.

46. 6 3.0 4.5 2.25
 40 (a) (b) (c) (d) (e)
 Which of the following numbers will come in place of (c)?
 (a) 20.5 (b) 21.5
 (c) 33.75 (d) 69.5
 (e) 15
47. 5 9 26 90
 13 (a) (b) (c) (d) (e)
 Which of the following numbers will come in place of (e)?
 (a) 2880 (b) 2292
 (c) 1716 (d) 3432
 (e) None of these
48. 4 9 25 103
 3 (a) (b) (c) (d) (e)
 Which of the following numbers will come in place of (c)?
 (a) 391 (b) 81
 (c) 91 (d) 79
 (e) None of these
49. 6 10 32 126
 2 (a) (b) (c) (d) (e)
 Which of the following numbers will come in place of (a)?
 (a) 4 (b) 6
 (c) 2 (d) 3
 (e) None of these

50. 1260 628 312 154
788 (a) (b) (c) (d) (e)
Which of the following numbers will come in place of (d)?
(a) 194 (b) 45.5
(c) 48 (d) 72.5
(e) None of these
51. 5 6 16 57 244 1245
2 (a) (b) (c) (d) (e)
What will come in place of (d)?
(a) 46 (b) 39
(c) 156 (d) 173
(e) None of these
52. 3 5 9 17 33 65
7 (a) (b) (c) (d) (e)
What will come in place of (d)?
(a) 95 (b) 51
(c) 99 (d) 49
(e) None of these
53. 7 4 5 9 20 52.5
3 (a) (b) (c) (d) (e)
What will come in place of (c)?
(a) 4.5 (b) 2
(c) 6 (d) 7
(e) None of these
54. 3 10 32 111 460 2315
2 (a) (b) (c) (d) (e)
What will come in place of (b)?
(a) 29 (b) 30
(c) 26 (d) 28
(e) None of these
55. 5 8 6 10 7 12
7 (a) (b) (c) (d) (e)
What will come in place of (c)?
(a) 14 (b) 16
(c) 9 (d) 11
(e) None of these
56. 3 12 30 66 138 282
7 (a) (b) (c) (d) (e)
What will come in place of (b)?
(a) 34 (b) 70
(c) 46 (d) 62
(e) None of these
57. 2 3 10 39 172 885
5 (a) (b) (c) (d) (e)
What will come in place of (d)?
(a) 244 (b) 175
(c) 208 (d) 196
(e) None of these
58. 3 5 22 13.5 35 19
1 (a) (b) (c) (d) (e)
What will come in place of (a)?
(a) 3 (b) 2
(c) 5 (d) 4
(e) None of these
59. 2 3 7 25 121 721
3 (a) (b) (c) (d) (e)
What will come in place of (c)?
(a) 31 (b) 49
(c) 45 (d) 39
(e) None of these
60. 10 11 15 24 40
6 (a) (b) (c) (d) (e)
What will come in place of (c)?
(a) 14 (b) 13
(c) 12 (d) 10
(e) None of these
61. 13 14 5 18 0.5 19
(a) (b) (c) (d) (e)
What would come in place of (e)?
(a) 13.75 (b) 27
(c) 18.75 (d) 6.75
(e) None of these
62. 17 21.5 30.5 44 62
21 (a) (b) (c) (d) (e)
What would come in place of (e)?
(a) 84.5 (b) 88.5
(c) 86 (d) 88
(e) None of these
63. 1 8 10 35 136
2 (a) (b) (c) (d) (e)
What would come in place of (c)?
(a) 40 (b) 42
(c) 51 (d) 49
(e) None of these
64. 12 26 11 36 9
7 (a) (b) (c) (d) (e)
What would come in place of (c)?
(a) 7 (b) 21
(b) 4 (d) 11
(e) None of these
65. 2 3 6 15 45
16 (a) (b) (c) (d) (e)
What would come in place of (d)?
(a) 360 (b) 120
(c) 300 (d) 240
(e) None of these
66. 9 19.5 41 84.5
12 (a) (b) (c) (d) (e)
Which of the following numbers will come in place of (c)?
(a) 111.5 (b) 118.5
(c) 108.25 (d) 106.75
(e) None of these
67. 4 5 22 201
7 (a) (b) (c) (d) (e)
Which of the following numbers will come in place of (d)?
(a) 4948 (b) 4840
(c) 4048 (d) 4984
(e) None of these
68. 5 5.25 11.5 36.75
3 (a) (b) (c) (d) (e)
Which of the following numbers will come in place of (c)?
(a) 34.75 (b) 24.75
(c) 24.5 (d) 34.5
(e) None of these
69. 38 19 28.5 71.25
18 (a) (b) (c) (d) (e)
Which of the following numbers will come in place of (d)?
(a) 118.75 (b) 118.25
(c) 108.25 (d) 118.125
(e) None of these

70. 25 146 65 114
39 (a) (b) (c) (d) (e)
Which of the following numbers will come in place of (e)?
(a) 122 (b) 119
(c) 112 (d) 94
(e) None of these

Directions (Qs. 71-75) : In each of the following questions a number series is given. A number in the series is suppressed by letter 'A'. You have to find out the number in the place of 'A' and use this number to find out the value in the place of the question mark in the equation following the series.

71. 36 216 64.8 388.8 A 699.84 209.952
 $A \div 36 = ?$

- (a) 61.39 (b) 0.324
(c) 3.24 (d) 6.139
(e) 32.4

72. 42 62 92 132 A 242 312
 $A + 14 = ? \times 14$

- (a) $11\frac{6}{7}$ (b) 14
(c) $12\frac{5}{7}$ (d) $12\frac{1}{2}$
(e) $12\frac{1}{6}$

73. 4 7 12 19 28 A 52
 $A^2 - 4 = ?$

- (a) 1365 (b) 1353
(c) 1505 (d) 1435
(e) 1517

74. 18 24 A 51 72 98 129

$$A \times \frac{3}{7} \times \frac{4}{5} = ?$$

- (a) 12 (b) $11\frac{23}{35}$
(c) $12\frac{12}{35}$ (d) $14\frac{2}{5}$
(e) $10\frac{2}{7}$

75. $\frac{3}{8} \frac{3}{4} \frac{9}{16} \frac{9}{8} \frac{27}{32} \frac{27}{16} A$

$$\sqrt{A} = ?$$

- (a) $\frac{2}{3}$ (b) $\frac{6}{8}$
(c) $\frac{6}{4}$ (d) $\frac{3}{4}$
(e) $\frac{9}{8}$

Directions (Qs. 76-85) : Complete the given series.

76. BYCXW, CXDWV, EVFUT, GTHSR, ?

- (a) IRJQP (b) KPOLN
(c) KPLON (d) JOKPO
(e) None of these

77. FOX, GP?, HQZ

- (a) Y (b) Z
(c) T (d) W
(e) None of these

78. QPO, SRQ, UTS, WVU, (?)

- (a) XVZ (b) YXW
(c) ZYA (d) VWX
(e) None of these

79. YEB, WFD, UHG, SKI, (?)

- (a) QOL (b) TOL
(c) QGL (d) QNL
(e) None of these

80. AZ, CX, FU, (?)

- (a) IR (b) JQ
(c) IV (d) KP
(e) None of these

81. ABD, DGK, HMS, MTB, SBL, ?

- (a) ZAB (b) XKW
(c) ZKU (d) ZKW
(e) None of these

82. OTE, PUF, QVG, RWH, ?

- (a) SYJ (b) TXI
(c) SXJ (d) SXI
(e) None of these

83. BEH, KNQ, TWZ, ?

- (a) IIL (b) CFI
(c) BDF (d) ADG
(e) None of these

84. MHZ, NIW, OKT, PNQ, ?

- (a) RRN (b) QRN
(c) QRM (d) QQN
(e) None of these

85. A, CD, GHI, ?, UVWXY

- (a) LMNO (b) MNO
(c) NOPQ (d) MNOP
(e) None of these

Directions (Qs. 86-95): Which sequence of letters when placed at the blanks one after another will complete the given letter series?

86. ba _ b _ aab _ a _ b

- (a) abaa (b) abba
(c) baab (d) babb
(e) None of these

87. c _ bba _ cab _ ac _ ab _ ac

- (a) abcbc (b) acbcb
(c) babcc (d) bcacb
(e) None of these

88. abca _ bcaab _ ca _ bbc _ a

- (a) ccaa (b) bbaa
(c) abac (d) abba
(e) None of these

89. b _ b _ bb _ bbb _ bb _ b

- (a) bbbba (b) bbaabb
(c) ababab (d) aabaab
(e) None of these

90. aa - bb - aa - abbb - a

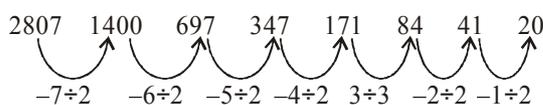
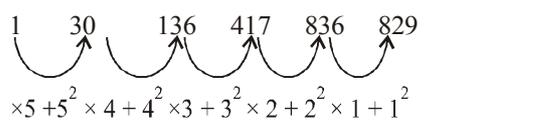
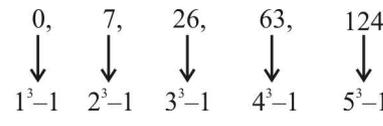
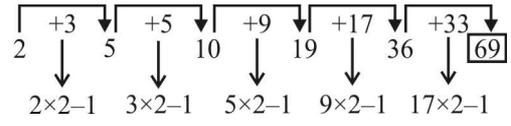
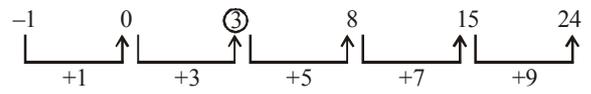
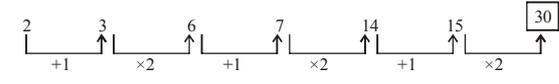
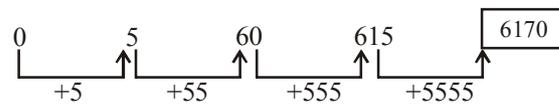
- (a) bbaa (b) aabb
(c) baba (d) abab
(e) None of these

91. - aba - abc - dcba - bab - a
 (a) abdca (b) bcadc
 (c) abcdd (d) cbdaa
 (e) None of these
92. ba _ b _ aab _ a _ b
 (a) abaa (b) abba
 (c) baab (d) babb
 (e) None of these
93. c _ bba _ cab _ ac _ ab _ ac
 (a) abcbc (b) acbcb
 (c) babcc (d) bcacb
 (e) None of these
94. aab - cc - daa - bbb - ccddd
 (a) bdbd (b) ddca
 (c) dbbc (d) bdac
 (e) None of these
95. adb _ ac _ da _ cddeb _ dbc _ cbda
 (a) bccba (b) cbbaa
 (c) ccbba (d) bbcad
 (e) None of these

ANSWER KEY

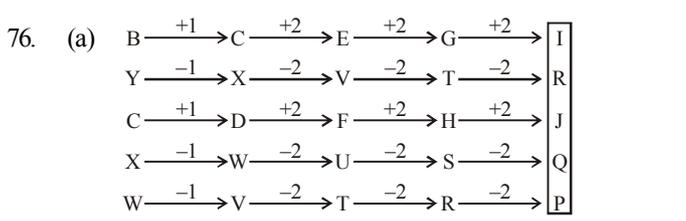
1	(a)	11	(e)	21	(c)	31	(c)	41	(a)	51	(e)	61	(c)	71	(c)	81	(d)	91	(a)
2	(e)	12	(a)	22	(e)	32	(a)	42	(d)	52	(e)	62	(b)	72	(b)	82	(d)	92	(b)
3	(e)	13	(b)	23	(d)	33	(d)	43	(b)	53	(c)	63	(e)	73	(e)	83	(b)	93	(b)
4	(d)	14	(c)	24	(a)	34	(d)	44	(b)	54	(b)	64	(b)	74	(a)	84	(b)	94	(d)
5	(b)	15	(d)	25	(b)	35	(b)	45	(b)	55	(a)	65	(a)	75	(e)	85	(d)	95	(b)
6	(b)	16	(a)	26	(e)	36	(d)	46	(e)	56	(c)	66	(e)	76	(a)	86	(b)		
7	(d)	17	(c)	27	(e)	37	(d)	47	(e)	57	(a)	67	(a)	77	(a)	87	(b)		
8	(e)	18	(b)	28	(b)	38	(c)	48	(d)	58	(d)	68	(b)	78	(b)	88	(c)		
9	(c)	19	(c)	29	(d)	39	(a)	49	(c)	59	(b)	69	(d)	79	(a)	89	(c)		
10	(a)	20	(d)	30	(d)	40	(b)	50	(b)	60	(e)	70	(c)	80	(b)	90	(a)		

Hints & Explanations

1. (a) The series is $+5, +9, +13, +17 \dots$. The difference in successive nos. $9 - 5 = 13 - 9 = 17 - 13 = \dots = 4$. Hence, 35 is wrong. It should be 37.
2. (e) The sum of the first two nos. is the third no. Hence, 27 is wrong. It should be 29.
3. (e) The series is $\times 0.5 + 0.5, \times 1 + 1, \times 1.5 + 1.5 \dots$. Hence, 12 is wrong. It should be 14.
4. (d) The series is $\times 2 + 2^2, \times 3 + 3^2, \times 4 + 4^2, \times 5 + 5^2 \dots$. Hence, 32 is wrong. It should be 33.
5. (b) The series is $+1^3, +2^3, +3^3, +4^3 \dots$. Hence, 229 is wrong. It should be 227.
6. (b) 
7. (d) The series is $\div 2, \div 1.5$ alternately.
8. (e) The series is an alternate series, having $S_1 = 2 \ 5 \ 14 \ 41; \times 3 - 1$ in each term
 $S_2 = 3 \ 8 \ 23 \ 69; \times 3 - 1$ in each term
9. (c) The differences are $1 - 0 = 1 = 1^3; 9 - 1 = 8 = 2^3; 36 - 9 = 27 = 3^3; 99 - 36 = 63 \neq 4^3$, but $100 - 36 = 64 = 4^3; 225 - 100 = 125 = 5^3; 441 - 225 = 216 = 6^3$
10. (a) The series is $\times 2.5, \times 2$ alternately.
11. (e) The series is $\times 1.5, \times 2, \times 2.5, \times 3$ and so on.
12. (a) The series is $-16, -8, -4, -2, -1, 0.5$, and so on.
13. (b) The series is $\times 1 + 2, \times 2 + 3, \times 3 + 4$, and so on.
14. (c) 
15. (d) The series is $\times 2 - 2$
16. (a) The series is $\times 1 + 1, \times 1.5 + 1.5, \times 2 + 2, \times 2.5 + 2.5, \dots$
17. (c) The series is $2 + 5 = 7; 7 + 5 = 12; 12 + 7 = 19; \dots$
18. (b) The series is $\times 6 + 1, \times 5 + 2, \times 4 + 3, \times 3 + 4, \dots$
19. (c) The series is $\times 1 + 1^3, \times 2 + 2^3, \times 3 + 3^3, \times 4 + 4^3, \dots$
20. (d) The series is $\times 7, \times 6.5, \times 6, \times 5.5, \dots$
21. (c) The series is $\times 1 + 1^2, \times 2 + 2^2, \times 3 + 3^2, \times 4 + 4^2 \dots$. Here, 6 is the wrong number. New series $6 \times 1 + 1^2 = 7; 6 \times 2 + 2^2 = 18$.
22. (e) The series is $\times 1 + 7, \times 2 - 11, \times 3 + 15, \dots$
23. (d) The series is $\times 1 + 1^2, \times 2 + 2^2, \times 3 + 3^2, \times 4 + 4^2, \dots$
24. (a) The series is $\times 1.5 + 1.5, \times 2 + 2, \times 2.5 + 2.5, \times 3 + 3, \dots$
25. (b) The series is $\times 2 + 3, \times 2 + 5, \times 2 + 7, \times 2 + 9, \dots$
26. (e) The series is $\times 1 + 1, \times 2 + 2, \times 3 + 3, \dots$. So 8 is wrong. Beginning with 8, we get 20 as third term.
27. (e) The series is $\times 1 + 1^2, \times 2 + 2^2, \times 3 + 3^2, \dots$
28. (b) The series is $\times 2 + 9, \times 2 + 11, \times 2 + 13, \dots$
29. (d) The series is $\times 1 - 1, \times 2 + 2, \times 2 - 2, \times 3 + 3, \dots$
30. (d) The series is $\times 3 + 1, \times 4 + 1, \times 5 + 1, \dots$
31. (c) The series $\times 3 + 5, \times 4 - 6, \times 5 + 7, \times 6 - 8, \dots$
32. (a) The series is $+1^2, +2^2, +3^2, +4^2, \dots$
33. (d) The series is $7 + 9 = 16; 16 + 9 = 25; 25 + 16 = 41; 41 + 25 = 66; 66 + 41 = 107, \dots$
34. (d) The series is $\times 0.5, \times 1.5, \times 2.5, \times 3.5, \dots$
35. (b) The series is $\times 0.25, \times 0.5, \times 0.75, \times 1, \dots$
36. (d) 
37. (d) 
38. (c) $1 \times 2 = 2$
 $2 \times 3 = 6$
 $6 \times 4 = 24$
 $24 \times 5 = 120$
 $120 \times 6 = 720$
39. (a) $156 + 350 = 506$
 $506 + 550 = 1056$
 $1056 + 750 = 1806$
40. (b) 
41. (a) B C F G \rightarrow 2, 3, 6, 7
J K N O \rightarrow 10, 11, 14, 15
R S V W \rightarrow 18, 19, 22, 23
Next sequence = 26, 27, 30, 31 = 26, 1, 4, 5 = Z A D E (subtract the excess value by 26)
42. (d) $251 - 107 = 144 = (12)^2$
 $\therefore 381 - 125 = 256 = (16)^2$
Hence, 16 is the missing number in the given question.
43. (b) 
44. (b) 4th term $23 = 5 \times 4 + 3 = 23$
3rd term $122 = 5 \times 23 + 7 = 122$
2nd term $? = 5 \times 122 + 11 = 621$
1st term $3120 = 5 \times 621 + 15 = 3120$
45. (b) 
46. (e) The series is $\div 2, \times 1.5 \dots$
47. (e) Ans = 2860. The series is $\times 1 + 4, \times 2 + 8, \times 3 + 12, \dots$
48. (d) The series is $\times 2 + 1, \times 3 - 2, \times 4 + 3, \times 5 - 4, \dots$

49. (c) The series is $\times 2 - 2, \times 3 + 2, \times 4 - 2, \dots$
 50. (b) The series is $\div 2 - 2$ in each steps.
 51. (e) The series is $\times 1 + 1^2, \times 2 + 2^2, \times 3 + 3^2, \dots$
 52. (e) The series is $\times 2 - 1$ in each term.
 53. (c) The series is $\times 0.5 + 0.5, \times 1 + 1, \times 1.5 + 1.5, \times 2 + 2, \dots$
 54. (b) The series is : $3 \times 1 + 7 \times 1 = 10; 10 \times 2 + 6 \times 2 = 32; 32 \times 3 + 5 \times 3 = 111; 111 \times 4 + 4 \times 4 = 460; 460 \times 5 + 3 \times 5 = 2315 \dots$
 55. (a) The series is $\times 2 - 2, \div 2 + 2, \times 2 - 2, \div 2 + 2, \dots$
 56. (c) The series is $\times 2 + 6$ in each term.
 57. (a) The series is $\times 1 + 1^2, \times 2 + 2^2, \times 3 + 3^2, \dots$
 58. (d) The series is $\div 2 + 3.5, \times 2 + 12, \div 2 + 2.5, \times 2 + 8, \dots$
 59. (b) The series is $\times 2 - 1, \times 3 - 2, \times 4 - 3, \dots$
 60. (e) The series is $+ 1^2, + 2^2, + 3^2, + 4^2 \dots$
 61. (c) The series is $\times 1 + 1, \div 2 - 2, \times 3 + 3, \dots$
 62. (b) The series is $+ 4.5, + 9, + 13.5, \dots$
 63. (e) The series is $\times 1 + 7, \times 2 - 6, \times 3 + 5, \times 4 - 4, \dots$
 64. (b) The series is $\times 2 + 2, \div 2 - 2, \times 3 + 3, \div 3 - 3, \dots$
 65. (a) The series is $\times 1.5, \times 2, \times 2.5, \times 3 \dots$
 66. (e) The series is $\times 2 + 1.5, \times 2 + 2, \times 2 + 2.5 \dots$
 So, 108.5 should come in place of (c).
 67. (a) The series is $\times 1^2 + 1, \times 2^2 + 2, \times 3^2 + 3, \times 4^2 + 4, \dots$
 68. (b) The series is $\times 1 + 0.25 \times 1, \times 2 + 0.25 \times 4, \times 3 + 0.25 \times 9 \dots$. So 24.75 should come in place of (c).
 69. (d) The series is $\times 0.5, \times 1.5, \times 2.5 \dots$. So 118.125 should come in place of (d).
 70. (c) The series is $+ 11^2, - 9^2, + 7^2, - 5^2, \dots$. So 112 should come in place of (e).

71. (c) The series is $\times 6, \times \frac{3}{10}$ alternately. So, 116.64 will come in place of A. $116.64 \div 36 = 3.24$
 72. (b) The series is $+ 20, + 30, + 40 \dots$ So 182 will come in place of A. $? = \frac{182 + 14}{14} = 14$
 73. (e) The series is $+ 3, + 5 + 7, + 9 \dots$ So 39 will come in place of A. $? = 39^2 - 4 = 1517$
 74. (a) The series is $+ 6, + 11, + 16, + 21$ So 35 will come in place of A. $? = 35 \times \frac{3}{7} \times \frac{4}{5} = 12$
 75. (e) The series is $\times 2$ and $\times \frac{3}{4}$ alternately. So $\frac{81}{64}$ will come in place of A. $? = \sqrt{\frac{81}{64}} = \frac{9}{8}$



77. (a)
78. (b) Each letter moves $+2$ steps.
 79. (a) 1st letter moves -2 steps each time.
 2nd letter moves $+1, +2, +3, +4$ steps respectively.
 3rd letter moves $+2, +3$, steps alternatively.
 80. (b) 1st letter moves $+2, +3$ and $+4$ steps respectively.
 2nd letter moves $-2, -3$ and -4 steps respectively.
 81. (d)
82. (d) The first letters of the terms are in alphabetical order, and so are the second and third letters.
 83. (b) All the letters of each term are moved nine steps forward to obtain the corresponding letters of the next term.
 84. (b) The first letters of the terms are consecutive letters. The third letter of each term is moved three steps backward to obtain the third letter of the successive term. The middle letters of the first, second, third and fourth terms are moved one, two, three, and four steps forward respectively to obtain the middle letter of the successive terms.
 85. (d) The number of letters in the terms goes on increasing by one at each step. Also, there is a gap of one letter between the last letter of the first term and first letter of the second term and a gap of two letters between the last letter of the second term and first letter of the third term. So, the first letter of the required term would be four steps ahead of the last letter of the third term.
 86. (b) bab/baab/baab
 87. (b) cabbac/cabbac/cabbac.
 88. (c) The series is abc/aabc/aabc/aabbcc/a.
 89. (c) The series is babb/babb/babb/babb.
 Thus, in each sequence, 'a' moves one step forward and 'b' takes its place and finally in the fourth sequence, it is eliminated.
 90. (a) a a b b / b b a a / a a b b / b b a a.
 91. (a) The series formed is :
a a b a b c a b c d d c b a c b a b a a
 in which the letters equi-distant from the beginning and end are the same.
 92. (b) baab/baab/baab
 93. (b) cabbac/cabbac/cabbac.
 94. (d) a a b b c c d d / a a a b b b c c c d d d
 95. (b)



Coding-Decoding

In this segment of commonsense reasoning, secret messages or words have to be decoded. They are coded as per a definite pattern/ rule which should be identified 1st. Then the same is applied to decode another coded word. Under this segment you come across types of coding letter coding and number coding. Based on these two types of coding-decoding various types of problems come in your way. This chapter makes you familiar with every types of problems based on coding-decoding.

TYPE I (CODING BY LETTER SHIFTING)

Pattern 1: Coding in forward sequence

EXAMPLE 1. If 'GOOD' is coded as 'HPPE', then how will you code 'BOLD'?

Explanation: Here, every letter of the word 'GOOD' shifts one place in forward alphabetical sequence.

G	O	O	D
+1↓	+1↓	+1↓	+1↓
H	P	P	E

Similarly, every letter in the word 'BOLD' will move one place in forward alphabetical sequence as given below:

B	O	L	D
+1↓	+1↓	+1↓	+1↓
C	P	M	E

∴ Code for 'BOLD' will be 'CPME'.

Pattern 2: Coding in backward sequence.

EXAMPLE 2. If 'NAME' is coded as 'MZLD', then how will code SAME?

Explanation: Here, every letter of the word 'MZLD' moves one place in backward alphabet sequence. Let us see:

N	A	M	E
-1↓	-1↓	-1↓	-1↓
M	Z	L	D

Similarly, every letter of the word 'SAME' will move one place in backward alphabet sequence. Let us see :

S	A	M	E
-1↓	-1↓	-1↓	-1↓
R	Z	L	D

∴ Code for 'SAME' will be 'RZLD'.

Pattern 3: Coding based on skipped sequence.

EXAMPLE 3. If the word 'FACT' is coded as 'IDFW'; then how will you code 'DEEP'?

Explanation: Here, you see that 2 letters are omitted in alphabetic sequence. The following diagram gives you the more clear picture :

F	A	C	T
+3↓	+3↓	+3↓	+3↓
I	D	F	W

Clearly, 'F' (skip 2 letters) 'I'
 'A' (skip 2 letters) 'D'
 'C' (skip 2 letters) 'F'
 'T' (skip 2 letters) 'W'

Similarly, 'DEEP' can be coded. Let us see :

D	E	E	P
+3↓	+3↓	+3↓	+3↓
G	H	H	S

∴ Code for 'DEEP' will be 'GHHS'.

TYPE II (CODING BY ANALOGY)

EXAMPLE 4. If 'RPTFA' stands for 'BLADE', how will you code 'BALE'.

Explanation: Here, 'BLADE' has been coded as 'RPTFA'. You will see that all the letters in the word 'BALE', which have to be coded, are also there in the word 'BLADE'. Hence, all that needs to be done is to choose the relevant code letters from the code word 'RPTFA'. Therefore, B becomes R, A becomes T, L becomes P, and E becomes A. Therefore, 'BALE' will be coded as 'RTPA'.

∴ Correct answer is 'RTPA'.

EXAMPLE 5. If 'cages' are called 'rockets'. rockets are called traps, 'traps' are called 'planets' 'planets' are called 'airplanes', 'airplanes' are called 'cycles' are cycles' are called 'cars', what is Earth

- | | |
|------------|---------------|
| (a) cycles | (b) rockets |
| (c) planet | (d) airplanes |
| (e) cars | |

Explanation: (d) Earth is a planet and here planets are called airplanes. So earth will be called airplanes.

TYPE III (CODING BY REVERSING LETTERS)

EXAMPLE 6. If 'TEMPERATURE' is coded as 'ERUTAREPMET', then how will you code 'EDUCATION' following the same scheme.

Explanation: Here, the word 'TEMPERATURE' has been reversed. Hence, the code for 'education' will be 'NOITACUDE'.

TYPE IV (CODING IN FICTION LANGUAGE)

In some cases of coding-decoding, fictions language is used to code some words. In such questions, the codes for a group of words is given. In such types of problems, codes for each word can be found by eliminating the common words.

EXAMPLE 7. In a certain code language 'over and above' is written as 'da pa ta' and 'old and beautiful' is written as 'Sa na pa'. How is 'over' written in that code language?

Explanation: Over (and) above = da (Pa) ta

Old (and) beautiful = Sa na (Pa)

Clearly, 'and' is common in both and a common code is 'Pa'.

∴ Code for 'and' must be 'Pa'.

Code for 'over' = 'da' or 'ta'.

Code for above = 'da' or 'ta'.

Code for old = 'Sa' or 'na'

Code for beautiful = 'Sa' or 'na'

∴ We can't certainly say what will be exact code for 'over'. But it is sure that code for 'over' must be either 'da' or 'ta'.

TYPE V (CODING BASED ON NUMBERS)

Pattern 1: When numerical values are given to words.

EXAMPLE 8. If in a certain language A is coded as 1, B is coded as 2, C is coded as 3 and so on, then find the code for AEECD.

Explanation: As given the letters are coded as below:

A	B	C	D	E	F	G	H	I
1	2	3	4	5	6	7	8	9

Now,

A	E	E	C	D
1	5	5	3	4

∴ Code for AEECD = 15534

Pattern 2: When alphabetical code value are given for numbers.

EXAMPLE 9. In a certain code 3 is coded as 'R', 4 is coded as 'D', 5 is coded as 'N', 6 is coded as 'P', then find the code for '53446'.

Explanation: As per the given condition

3	4	5	6
R	D	N	P

Now,

5	3	4	4	6
N	R	D	D	P

∴ Code for 53446 = NRDDP.

TYPE VI (MATHEMATICAL OPERATIONS WITH THE POSITION NUMBERS OF LETTERS)

Example: In a certain code, if 'TALE' is written as 38, then how will you code 'CAME' using the same coding scheme?

Explanation : Look at the numbered alphabet and write down the number corresponding to the letters of the word 'TALE'.

T	A	L	E
20	1	12	5

The fact that the code for 'TALE' is 38, gives you a clue that the code is probably obtained by performing an arithmetical operations of the numbers of each other. Let us see :

$$20 + 1 + 12 + 5 = 38$$

Thus, the code for 'CAME' is

C	A	M	E
3	1	13	5

$$3 + 1 + 13 + 5 = 22$$

∴ Code for 'CAME' = 22

TYPE VII : CODING LETTER OF WORD

Directions: These questions are based on code language which utilizes letters in the English alphabet. In each question, there is a word written in capital letter, with one letter underlined. For each letter in that word there is a code written in small letters. That code is denoted by (a), (b), (c), (d) and (e) not in the same order. You have to find out the exact code for the underlined letter in the word. The number of that code is the answer. Please note that the same letter appearing in other word(s) may be coded differently.

- QUITE

(a) hj	(b) su
(c) tv	(d) pr
(e) df	
- PRISM

(a) R	(b) O
(c) H	(d) Q
(e) I	
- BEAST

(a) c	(b) w
(c) d	(d) h
(e) v	

Solution:

- (d) is the correct answer.

Explanation Each single letter is expressed as two letters, one behind and the other ahead of the given letter. Therefore, A becomes zb, B comes ac and so on.

- (d) is the correct answer.

Explanation All the letters of the word are coded as one letter behind.

- (b) is the correct answer.

Explanation All the letters of the word are coded as three letters ahead.

Now, you must have been aware of the various kind of coding-decoding patterns. Point to be noted that the patterns discussed under this chapter are commonly known pattern/ basic patterns. So, if you practice hard, you find that after some times you become competent enough to solve coding-decoding problems even if certain changes are made in such problems to surprise or puzzle you.

EXERCISE

- In a certain code language BEAM is written as 5 % * K and COME is written as \$ 7 K %. How is BOMB written in that code?
 - 5 % K5
 - 5 7 K5
 - \$ 7 K \$
 - 5 \$ % 5
 - None of these
- In a certain code PATHOLOGIST is written as PIUBQKSRHFN. How is CONTROVERSY written in that code?
 - SUOPDNXRQDU
 - SUOPDNZTSFW
 - QSMNBXPQRDU
 - QSMNBPZTSFW
 - None of these
- In a certain code language NATIONALISM is written as OINTANMSAIL. How is DEPARTMENTS written in that code?
 - RADEPTSTMNE
 - RADPETSTMNE
 - RADPESTMTNE
 - RADPETSTNME
 - None of these
- In a certain code language OUTCOME is written as OQWWEQOE. How is REFRACT written in that code?
 - RIGITCET
 - RIGTICET
 - RIGTECT
 - RIGICTET
 - None of these
- If the sentence "you must go early to catch the train" is coded as "early catch train must to go the you", what will be code for the sentence "morning exercise will help you to keep fit"?
 - help to fit you exercise will keep morning
 - help to fit exercise you will keep morning
 - will help to fit you exercise keep morning
 - will fit to exercise you help keep morning
 - None of these
- If NOR is coded as 2-3-6, then how should REST be coded in the same code language ?
 - 6-19-6-7
 - 5-19-5-8
 - 6-19-5-6
 - 6-18-5-8
 - 8-6-9-19
- If 'α δ γ η ε' is coded as 'ARGUE' and σ φ λ π ε is SOLVE, What is π α γ η ε λ ω is ?
 - VAGUELY
 - VAGRANT
 - VAGUELE
 - VAGUER
 - None of these

Directions (Qs. 8-17): In a certain code, letters of English alphabet (consonants and vowels) are coded as given for some a words. The numeric code for each letter is given in bracket under coded form and corresponds to the letter in the word in the same serial order. Study the coded forms of the given words and find out the rules for their codification. Applying those rules, answer the questions that follow in the two sets.

Word		Coded Form
SEAT	:	[5][15][15][5]
CUT	:	[5][10][5]
ONE	:	[0][5][0]
DEEP	:	[5][20][20][5]

POUR	:	[5][15][15][5]
PIN	:	[5][10][5]
NONE	:	[5][25][5][25]
BOOK	:	[5][20][20][5]
OPEN	:	[30][5][30][5]
ATE	:	[0][5][0]
PAGE	:	[5][25][5][25]
UNIT	:	[30][5][30][5]

Directions (Qs. 8-12) : Find out the coded form of each of the words printed in bold.

- DOSE**
 - [5][15][5][15]
 - [5][10][5][30]
 - [5][30][5][30]
 - [5][0][5][15]
 - None of these
- SIP**
 - [5][0][5]
 - [0][5][0]
 - [5][5][5]
 - [5][10][5]
 - None of these
- AGED**
 - [0][5][0][5]
 - [30][10][30][10]
 - [30][5][30][5]
 - [25][5][25][5]
 - None of these
- DATA**
 - [5][30][5][30]
 - [5][25][5][25]
 - [5][15][5][15]
 - [5][10][5][10]
 - None of these
- EVE**
 - [0][5][0]
 - [0][15][0]
 - [15][15][15]
 - [0][10][10]
 - None of these

Directions (Qs. 13-17): Which of the words denoted by (A), (B), & (C) can be the correct words (s) for the codes given against each questions number?

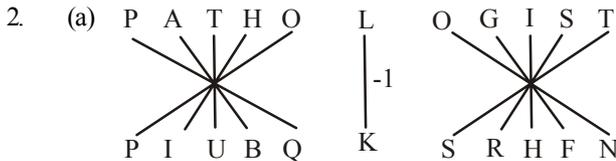
- [5][25][5][25]
 - TRAP
 - DRAW
 - BOAT
 - A and B only
 - B and C only
 - A and C only
 - All the three
 - None of these
- [5][20][20][5]
 - DOLL
 - MOOD
 - BEEP
 - A and B only
 - B and C only
 - A and C only
 - All the three
 - None of these
- [5][10][5]
 - MAN
 - TOP
 - CAT
 - A and B only
 - B and C only
 - A and C only
 - All the three
 - None of these

16. [0][5][0]
 (A) ARE
 (B) AND
 (C) ORE
 (a) None (b) All the three
 (c) A and B only (d) B and C only
 (e) A and C only
17. [30][5][30][5]
 (A) ARID
 (B) EVIL
 (C) OURS
 (a) A and B only (b) B and C only
 (c) A and C only (d) All the three
 (e) None of these
18. A trader in order to code the prices of article used the letters of PSICHOLAZY in the form of '0 to 9' respectively. Which of the following code stands for ₹ 875.50?
 (a) AIL.HP (b) AIL.HS
 (c) ZYA.HO (d) ZCA.OP
 (e) None of these
19. If B is coded as 8, F is coded as 6, Q is coded as 4, D is coded as 7, T is coded as 2, M is coded as 3, and K is coded as 5, then what is the coded form of QKTBFM?
 (a) 452683 (b) 472683
 (c) 452783 (d) 425783
 (e) None of these
20. If in a certain code language 'pen pencil' is written as '\$ £', 'eraser sharpener' is written as '@ #', and 'pencil eraser' is written as '\$ @', then what is the code for 'pen'?
 (a) £ (b) @
 (c) \$ (d) #
 (e) None of these
21. In a certain code language GAME is written as '\$ ÷ * %' and BEAD is written as '# % ÷ ×'. How will the word MADE be written in that code language?
 (a) \$ ÷ × % (b) * ÷ \$ %
 (c) * ÷ × % (d) # ÷ × %
 (e) None of these
22. In a certain code language BORN is written as APQON and LACK is written as KBBLK. How will the word GRID be written in that code language?
 (a) FQHCD (b) FSHED
 (c) HSJED (d) FSHCD
 (e) None of these
23. In a certain code language STREAMLING is written as CGTVUHOJMN. How will the word PERIODICAL be written in that language?
 (a) PJSFQMNBJE (b) QKTGRMBDJE
 (c) QKTGRMCEKF (d) PJSFQMBDJE
 (e) None of these
24. If 'green' is called 'white', 'white' is called 'yellow', 'yellow' is called 'red', 'red' is called 'orange', then which of the following represents the colour of sunflower?
 (a) red (b) yellow
 (c) brown (d) indigo
 (e) None of these
25. In a certain code language GEOPHYSICS is written as IOPDHRJBT. How is ALTIMETE ₹ written in that code?
 (a) NHULBFSDQT (b) NIUKBFSDQT
 (c) NHUKCFSDQT (d) NHUKBFSEQT
 (e) None of these
26. In a certain code BROUGHT is written as SGFVAQN. How is SUPREME written in that code?
 (a) FNFSRTO (b) RTOSDLD
 (c) DLDSRTO (d) DLDSTVQ
 (e) None of these
27. If W means White, Y means Yellow, B means Black, G means Green, R means Red, which of the following will come next in the sequence given below?
 WW Y W Y B W Y B G W Y B G R W W Y W Y B W Y B
 (a) Red (b) White
 (c) Green (d) Yellow
 (e) None of these
28. In a certain code 'CLOUD' is written as 'GTRKF'. How is SIGHT written in that code?
 (a) WGJHV (b) UGHHT
 (c) UHJFW (d) WFJGV
 (e) None of these
29. In a certain code CHAIR is written as # * • ÷ % and HIDE is written as * ÷ + \$. How is DEAR written in that code?
 (a) \$ + • % 2 (b) + \$ ÷ %
 (c) \$ + % ÷ 4 (d) + # • % 5
 (e) None of these
30. In a certain code AROMATIC is written as BQPLBSJB. How is BRAIN written in that code?
 (a) CQBJO (b) CSBJO
 (c) CQBHO (d) CSBHO
 (e) None of these
31. If 'yellow' means 'green', 'green' means 'white', white means 'red', 'red' means 'black', 'black' means 'blue' and 'blue' means 'violet', which of the following represents the colour of human blood?
 (a) black (b) violet
 (c) red (d) blue
 (e) None of these
32. In a certain code 'FEAR' is written as '+ × ÷ *' and 'READ' is written as '* × ÷ \$'. How is 'FADE' written in that code?
 (a) + ÷ \$ × (b) × ÷ + \$
 (c) \$ ÷ + * (d) ÷ \$ + ×
 (e) None of these
33. In a certain code BREAK is written as ASDBJ. How is SOLAR written in that code?
 (a) RPKBS (b) TPMBS
 (c) RPKBQ (d) TPKBQ
 (e) None of these
34. In a certain code language EMPHASIS is written as NDIOBRJR. How will CREATURE be written in that code language?
 (a) SBBDUTSD (b) QBBDTUSD
 (c) DSDBSTSF (d) SBDBUTDS
 (e) None of these
35. In a certain code '289' means 'Read from newspaper', '276' means 'tea from field' and '85' means 'Wall newspaper'. Which of the following number is used for 'tea'?
 (a) 2 (b) 6
 (c) Either 7 or 6 (d) Either 2 or 6
 (e) None of these

36. If **FRUMOUR** can be written as **QSKPL**, then how **HERMIT** can be written?
 (a) **GEPKHR** (b) **GCOIDN**
 (c) **GCPIDM** (d) **GCPIEN**
 (e) None of these
37. In a certain code language 'CREATIVE' is written as 'BDSBFUJS'. How is 'TRIANGLE' written in that code?
 (a) **BSHSFHKM** (b) **BHSSMHFF**
 (c) **BSSHFMKH** (d) **BHSSFKHM**
 (e) None of these
38. In a certain code 'BROTHER' is written as '\$%53#4%' and 'DREAM' is written as '9%47'. How is 'THREAD' written in that code?
 (a) **#3%479** (b) **3#%479**
 (c) **3\$%479** (d) **3#% 79**
 (e) None of these
39. In a certain code language 'allow children to play on the ground' is written as 'play allow on children the to ground' then how will 'the do open not electric touch wires' be **decoded** from that language?
 (a) not the electric do touch open wries
 (b) do not touch the electric open wires
 (c) do not touch the open electric wires
 (d) not the do electric touch open wires
 (e) None of these
40. In a certain code "MOUSE" is written as "PRUQC". How is "SHIFT" written in that code ?
 (a) **VJIDR** (b) **VIKRD**
 (c) **RKIVD** (d) **VKIDR**
 (e) None of these
41. In a certain code, '253' means 'books are old'; '546' means 'man is old' and '378' means 'buy good books'. What stands for "are" in that code?
 (a) **2** (b) **4**
 (c) **5** (d) **6**
 (e) **8**
42. In a certain code, **FRACTION** is written as **FNAITCOR**. How is **QUANTITATIVE** written in that code ?
 (a) **QTNVIAITETU** (b) **QIATAETUTNVI**
 (c) **QTEATUIAVITN** (d) **QEAITATITNVU**
 (e) None of these
43. In a certain coding system **APPLE** stands for **ETTPI**. What is the code for 'DELHI' ?
 (a) **CQMND** (b) **ZAHDE**
 (c) **HIPLM** (d) **CQPLM**
 (e) None of these
44. In a certain code language, **GRAPE** is written as **27354** and **FOUR** is written as **1687**. How is **GROUP** written in that code?
 (a) **27384** (b) **27684**
 (c) **27685** (d) **27658**
 (e) **27862**
45. **WAYIN** is written as **TXVFX**. How **LBUK** can be written in that code?
 (a) **IYRH** (b) **KATJ**
 (c) **JZSI** (d) **NDWM**
 (e) **NEAT**
46. In a certain code language, if the word **PARTNER** is coded as **OZQSMDQ**, then what is the code for the word **SEGMENT**?
 (a) **TFHNFOU** (b) **RDFLDMS**
 (c) **RDELDMS** (d) **RDFEDNS**
 (e) None of these
47. If **DOCTOR** is written as **FQEVQT**; how **PATIENT** can be written in that code?
 (a) **RVKGPV** (b) **RCKPGVV**
 (c) **RCVKGVP** (d) **RVCKGVP**
 (e) None of these
48. If 'S' is written as 'H' 'R' as '@' 'A' as '∇' 'M' as '#', 'T' as '\$' and 'E' as '%' then how is 'MASTER' written in that code ?
 (a) **#∇HS%@** (b) **#H∇\$%@**
 (c) **#∇SH%@** (d) **#∇H%@\$**
 (e) None of these
49. In a certain code **DEPUTATION** is written as **ONTADEPUTI**. How is **DERIVATION** written in that code ?
 (a) **ONVADERITI** (b) **ONDEVARITI**
 (c) **ONVAEDIRTI** (d) **ONVADEIRIT**
 (e) None of these
- Directions (Qs. 50-54) :** Select the correct alternatives by using below rules.
Digits : 9 2 1 7 5 3 6 4 8
Letters : B V M L D P A F R
- Conditions for coding the group of digits:-
 I. If the first as well as the last digits are even, both are to be coded by the code for the first digit.
 II. If the first as well as the last digits are odd, both are to be coded by the code for the last digit.
50. **397416**
 (a) **PBLFMP** (b) **ABLFMA**
 (c) **PVLFMA** (d) **PBDFMA**
 (e) None of these
51. **562183**
 (a) **PAVMRP** (b) **DAVMRD**
 (c) **PAVMRD** (d) **DAVMRP**
 (e) None of these
52. **734192**
 (a) **DPFMBV** (b) **LPAMBV**
 (c) **LPFMVB** (d) **LPFMBV**
 (e) None of the these
53. **812354**
 (a) **RLVPDF** (b) **FMVPDF**
 (c) **RMVPDR** (d) **RMVADF**
 (e) None of these
54. **627851**
 (a) **PULRDM** (b) **AVLRDM**
 (c) **AULRDM** (d) **ABLRDM**
 (e) None of these
- Directions (Qs. 55-59) :** These questions are based on code language which utilizes letters on the English alphabets. In each question, there is a word written in capital letters, with one letter underline. For each letter on that word there is a code written in small letters. That code is denoted by (a), (b), (c), (d) or (e) on the same order. You have to find out the exact code for the underlined letter in the word. The number of that code is the answer. Please note that the same letter appearing on other word (s) may be coded differently.

Hints & Explanations

1. (b) Here, $B \Rightarrow 5$, $E \Rightarrow \%$, $A \Rightarrow *$,
 $M \Rightarrow K$, $C \Rightarrow \$$, $O \Rightarrow 7$
 Therefore, BOMB $\Rightarrow 57K5$



Five letters of the word PATHOLOGIST are reversed first and then coded as one place forward. Similarly, the last five letters of the word are reversed then coded as one place backward. Middle letter is coded as one place backward.

Hence, CONTROVERSY will be written as SUOPDNXRQDU.

3. (b) Divide the word into two groups of five letters each. The first five letters are in group I and the last five letters are in group II. Now, for its coding the middle letters remain unchanged. While the letters in each group change their position as $1 \rightarrow 3$, $2 \rightarrow 5$, $3 \rightarrow 4$, $4 \rightarrow 2$ and $5 \rightarrow 1$.

4. (a) The first letter is coded as two letters: the first remains unchanged and the second two letters forward as in English alphabet. The second, fourth, fifth and sixth letters are coded as two letters forward while the third letter is coded as three letters forward as in English alphabet. The last letter remains unchanged.

5. (b) you must go early to catch the train
 1 2 3 4 5 6 7 8
 early catch train must to go the you
 4 6 8 2 5 3 7 1

Similarly,

morning	exercise	will	help	you	to	keep	fit
1	2	3	4	5	6	7	8
4	6	8	2	5	3	7	1
help	to	fit	exercise	you	will	keep	morning

6. (c) Difference between alphabetical positions of N and O = 1 = difference between 2 and 3
 Difference between alphabetical positions of O and R = 3 = Diff. between 3 and 6.
 Similarly, for REST,
 difference between R and E = 13,
 difference between E and S = 14
 and difference between S and T = 1
 Here, only option (c) follows above condition

7. (a)
8-17: Coding of letters is based on the structure of the word. Logic of coding is very simple. Observe the word and the codes. It gives us following information:

If the word consists of four letters,

- (i) and consonants occupy places at extreme ends only, then those consonants are replaced by [5] while vowels are replaced by either [20] (if both the vowels are same) or [15] (if both the vowels are different).
 (ii) and the vowels occupy the second and the fourth places only then those vowels are replaced by [25], while the consonants are replaced by [5].
 (iii) and the vowels occupy the first and third places only then those vowels are replaced by [30], while the consonants are replaced by [5].

If the word consists of three letters,

- (i) and the vowels occupy places at extreme ends only then those vowels are replaced by [0], while the consonant is replaced by [5].
 (ii) and the consonants occupy places at extreme ends only then those consonants are replaced by [5], while the vowel is replaced by [10].

Thus, in each and every case consonants are coded as [5] but numeric value assigned to vowels varies according to the position of vowels in a particular word.

8. (e) D O S E
 Consonant - Vowel - Consonant - Vowel
 Code for DOSE will be same as the codes for PAGE and NONE, i.e., [5] [25] [5] [25].
9. (d) S I P
 Consonant - Vowel - Consonant
 Code for SIP will be same as the codes for PIN and CUT, i.e., [5] [10] [5].
10. (c) A G E D
 Vowel - Consonant - Vowel - Consonant
 Code for AGED will be same as the codes for UNIT and OPEN, i.e., [30] [5] [30] [5].
11. (b) D A T A
 Consonant - Vowel - Consonant - Vowel
 Code for DATA will be same as the codes for PAGE and NONE, i.e., [5] [25] [5] [25].
12. (a) E V E
 Vowel - Consonant - Vowel
 Code for EVE will be same as the codes for ONE and ATE, i.e., [0] [5] [0].
13. (e) [5] [25] [5] [25] is the coded form of NONE and PAGE. Among the given words TRAP, DRAW and BOAT, no word has similar structure as compared with the words NONE and PAGE.
14. (b) [5] [20] [20] [5] is the coded form of DEEP and BOOK. Among the given words DOLL, MOOD and BEEP, the last two words have a structure similar to the words DEEP and BOOK.
15. (d) [5] [10] [5] is the coded form of PIN and CUT. Among the given words MAN, TOP and CAT, all the words have the same structure as the words PIN and CUT.

16. (e) [0] [5] [0] is the coded form of ONE and ATE. Among the given words ARE, AND and ORE, the two words ARE and ORE have the same structure as the words ONE and ATE
17. (a) [30] [5] [30] [5] is the coded form of OPEN and UNIT. Among the given words ARID and EVIL have the same structure as OPEN and UNIT.
18. (e) P S I C H O L A Z Y
0 1 2 3 4 5 6 7 8 9
875.50 = ZAO.OP
19. (e) Q K T B F M = 4 5 2 8 6 3
20. (a) pen pencil = \$£ ... (i)
eraser sharpner = @# ... (ii)
pencil eraser = \$@ ... (iii)
From (i) and (iii), the code for 'pencil' is \$.
Hence, from (i), the code for 'pen' is £.
21. (c) G(\$), A(+), M(*), E(%) B(#), E(%), A(+), D(×) MADE = * ÷ × %
22. (b) B O R N
-1 +1 -1 +1
A P Q O N
L A C K
-1 +1 -1 +1
K B B L K
Similarly,
G R I D
-1 +1 -1 +1
F S H E D
23. (b) Split the word STREAMLING into two groups consisting of equal letters. You get STREA and MLING. Now, reverse both the groups. You get AERTS and GNILM. Now, write each letter of first group two places forward. You get CGTVU. Write each letter of second group one place forward. You get HOJMN. Now, join both the groups without changing the order of letters. You get CGTVUHOJMN.
Similarly, PERIODICAL is coded as PERIODICAL → OIREPLACID → QKTGRMBDJE
24. (a) The colour of sunflower is yellow and yellow is called 'red'. Hence sunflower is red.
25. (e) Divide the word into two halves. Now, reverse the order of the letters of the first half and replace odd positioned letters with one letter forward and even positioned letter with one letter backward as in English alphabet. For the second half letters, the odd-positioned letters are coded as one letter forward and even-positioned letters are coded as one letter backward as in English alphabet.
26. (c) Here the given word is BROUGHT. Reversing the order of the letters, it becomes THGUORB. Now, write each letter one place backward except the middle letter (write middle letter one place forward). It becomes SGFVNQA. Now, reverse the order of the last three letters and it becomes SGFVAQN.
Similarly,
SUPREME → EMERPUS → DLDSOTR → DLDSRTO
27. (c) The series is W/WY/WYB/WYBG/WYBGR
28. (a) Here, each letter of the word CLOUD is written as three letters forward and one letter backward alternately. Following this CLOUD becomes FKRTG. After that,

- reverse the order of the result obtained in the previous operation. Thus, FKRTG becomes GTRKF.
Similarly, SIGHT will change its form as follows:
SIGHT → VHJGW → WGJHV
29. (e) Letter: # * • ÷ % + \$
Code: C H A I R D E
Therefore, code for DEAR = + \$ • %
30. (c) A R O M A T I C
+1 -1 +1 -1 +1 -1 +1 -1
B Q P L B S J B
Similarly, B R A I N
+1 -1 +1 -1 +1
C Q B H O
31. (a) The colour of human blood is red. Here *black* means *red*. Therefore, *black* is our answer.
32. (a) It is clear that F → +, A → ÷, D → \$ and E → ×
∴ FADE → + ÷ \$ ×
33. (c) The odd-positioned letters are coded as one position backward and the even-positioned letters are coded as one position forward as in English alphabet.
34. (a)
MIND: M (+1) → N (-1), I (-1) → D (+1)
HISIOR: H (+1) → I (-1), S (-1) → O (+1), I (+1) → R (-1), O (-1) → J (+1), R (+1) → R (-1)
35. (c) '289' means 'Read from newspaper' (i)
'276' means 'tea from field' (ii)
On comparing (i) and (ii), 2 is used for, 'from'
∴ From (ii) for tea the number is either 6 or 7.
36. (b) R U M O U R
-1 ↓ -2 ↓ -3 ↓ -4 ↓ -5 ↓ -6 ↓
Q S J K P L
H E R M I T
-1 ↓ -2 ↓ -3 ↓ -4 ↓ -5 ↓ -6 ↓
∴ G C O I D N
37. (d) Words are arranged in alphabetical order but from right to left. It becomes UISOMC
A E R C E V I T
+1 -1 +1 -1 +1 -1 +1 -1
B D S B F U J S
Next, the letters have been written as one place forward and one place backward alternately.
Similarly, TRIANGLE is coded as follows:
T R I A N G L E
A I R T E L G N
+1 -1 +1 -1 +1 -1 +1 -1
B H S S F K H M
Hence, code for TRIANGLE is BHSSFKHM
38. (b) Here code for BROTHER is %53#4% and code for DREAM is 9%47*. Now, see the position of two Rs in the word BROTHER. Each 'R' has been replaced by '%'. This is also true for the word DREAM. Again, see the position of E in both the words. Each 'E' has been replaced by '4'. This implies that the elements used as the code for letters are in the same order as the letters of the word. It represent codes of respective letters. Hence, code for THREAD ⇒ 3#%479.

39. (c) allow children to play on the ground
 1 2 3 4 5 6 7



Coded as :

play allow on children the to ground
 4 1 5 2 6 3 7

Similarly the do open not electric touch wires
 4 1 5 2 6 3 7



do not touch the open electric wires
 1 2 3 4 5 6 7

40. (d) M O U S E
 ↓+3 ↓+3 ↓+0 ↓-2 ↓-2

Coded as: P R U Q C

Similarly,

S H I F T
 ↓+3 ↓+3 ↓+0 ↓-2 ↓-2

Coded as: V K I D R

41. (a) 2 (5) (3) ⇒  are (old)

(5) 4 6 ⇒ man is (old)

(3) 7 8 ⇒ buy good 

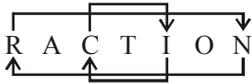
Codes are :

5 ⇒ old 4 ⇒ man or is 8 ⇒ buy or good

3 ⇒ books 6 ⇒ man or is

2 ⇒ are 7 ⇒ buy or good

2 stands for "are" in that code.

42. (d) F R A C T I O N

 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 F N A I T C O R

Similarly,

Q U A N T I T A T I V E

 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓
 Q E A I T A T I T N V U

43. (c) A P P L E
 +4 ↓ +4 ↓ +4 ↓ +4 ↓ +4 ↓
 E T T P I

Similarly,

D E L H I
 +4 ↓ +4 ↓ +4 ↓ +4 ↓ +4 ↓
 H I P L M

44. (c) GRAPE = 2 7 3 5 4
 FOUR = 1 6 8 7
 So, G=2, R=7, A=3, P=5, E=4, F=1, O=6, U=8,
 R=7
 GROUP = 2 7 6 8 5

45. (a) As W A Y I N
 -3 ↓ -3 ↓ -3 ↓ -3 ↓ -3 ↓
 T X V F K

Similarly, L B U K
 -3 ↓ -3 ↓ -3 ↓ -3 ↓
 I Y R H

46. (b) As, P A R T N E R
 -1 ↓ -1 ↓ -1 ↓ -1 ↓ -1 ↓ -1 ↓ -1 ↓
 O Z Q S M D Q

Similarly,

S E G M E N T
 -1 ↓ -1 ↓ -1 ↓ -1 ↓ -1 ↓ -1 ↓ -1 ↓
 R D F L D M S

47. (c) As, D O C T O R
 +2 ↓ +2 ↓ +2 ↓ +2 ↓ +2 ↓ +2 ↓
 F Q E V Q T

Similarly,

P A T I E N T
 +2 ↓ +2 ↓ +2 ↓ +2 ↓ +2 ↓ +2 ↓ +2 ↓
 R C V K G P V

48. (a) Letter → S R A M T E
 ↓ ↓ ↓ ↓ ↓ ↓
 code → H @ ∇ # \$ %
 MASTER = # ∇ H \$ % @

49. (a)

1	2	3	4
DEPU	TA	TI	ON

 Code →

ON	TA	DEPU	TI
4	2	1	3

Similarly,

1	2	3	4
DERI	VA	TI	ON

 Coded →

ON	VA	DERI	TI
4	2	1	3

50. (e) None of the condition is applicable
 3 9 7 4 1 6
 ↓ ↓ ↓ ↓ ↓ ↓

P B L F M A

51. (a) Condition II is applicable
 5 6 2 1 8 3
 ↓ ↓ ↓ ↓ ↓ ↓
 P A V M R P

52. (d) None of the condition is applicable
 7 3 4 1 9 2
 ↓ ↓ ↓ ↓ ↓ ↓
 L P F M B V
53. (c) Condition I is applicable
 8 1 2 3 5 4
 ↓ ↓ ↓ ↓ ↓ ↓
 R M V P D R
54. (b) None of the condition is applicable
 6 2 7 8 5 1
 ↓ ↓ ↓ ↓ ↓ ↓
 A V L R D M

55. (c) D U E L
 ↓+5 ↓-5 ↓+5 ↓-5
 i p j g
56. (b) P I T Y
 16 9 20 25
 ↓ ↓ ↓ ↓
 27-16=11 27-9=18 27-20=7 27-25=2
 (k) (r) (g) (b)
57. (a)
58. (c) G O A L
 ↓-4 ↓-5 ↓+4 ↓+5
 c j e q
59. (c) S L A P
 +3↓-3 -3↓+3 +3↓-3 -3↓+3
 vp io dx ms



Direction & Distance

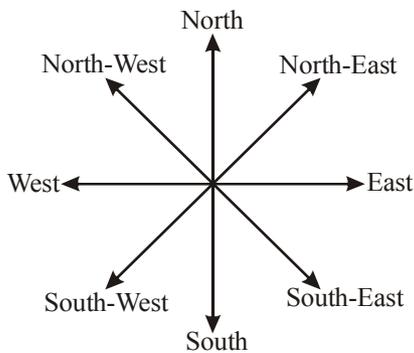
INTRODUCTION

This part of reasoning comes under the category of common sense reasoning. In fact, this segment gauges the sense of direction of a candidate. In every objective competitive examinations, these type of questions are asked. Particularly, in banking exams, these questions can be seen in every question papers. This is the reason, examinees are required to pay special attention towards such questions.

CONCEPT OF DIRECTION

In our day to day life, we make our concept of direction after seeing the position of sun. In fact, this is a truth that sun rises in the East and goes down in the West. Thus when we stand facing sunrise, then our front is called East while our back is called West. At this position our left hand is in the Northward and the right hand is in the Southward. Let us see the following direction map that will make your concept more clear:

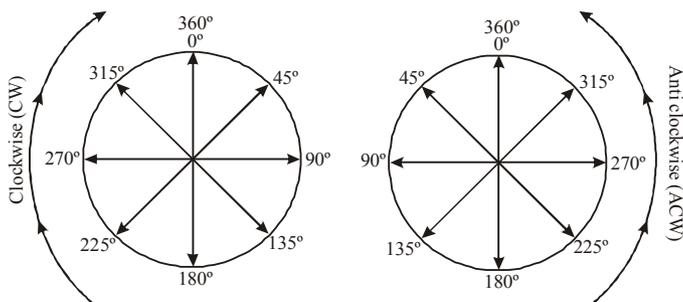
Direction Map



Note: On paper North is always on top be while South is always in bottom.

CONCEPT OF DEGREE

Let us see the following picture:

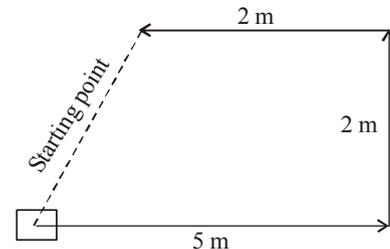
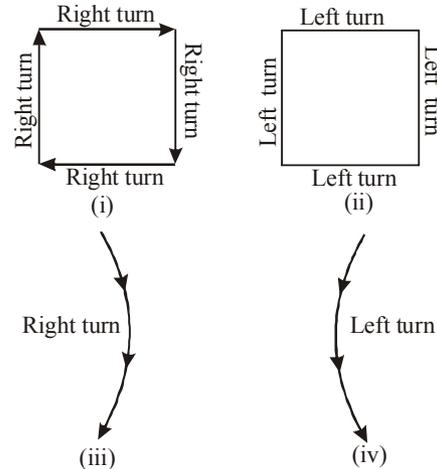


CONCEPT OF TURN

Right turn = Clockwise turn

Left turn = Anticlockwise turn

Let us understand it through pictorial representation:



IMPORTANT POINTS REGARDING DIRECTION

- If our face is towards North, then after left turn our face will be towards West while after right turn, it will be towards East.
- If our face is towards South, then after left turn our face will be towards East and after right turn it will be towards West.
- If our face is towards East, then after left turn our face will be towards North and after right turn it will be towards South.
- If our face is towards West, then after left turn our face will be towards South and after right turn it will be towards North.
- If our face is towards North-West, then after left turn our face will be towards South-West and after right turn it will be towards North-East.
- If our face is towards South-West, then after left turn our face will be towards South-East and after right turn it will be towards North-West.
- If our face is towards South-East, then after left turn our face will be towards North-East and after right turn it will be towards South-West.
- If our face is towards North-East, then after left turn our face will be towards North-West and after right-turn it will be towards South-East.

CONCEPT OF MINIMUM DISTANCE

Minimum distance between initial and last point

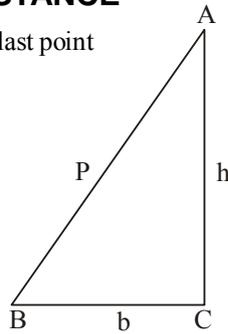
$$h^2 = b^2 + p^2, \text{ where}$$

h = Hypotenuse

b = Base

P = Perpendicular

Remember this important rule is known as 'Pythagoras Theorem'



SHADOW CASE

In Morning/Sunrise Time

- If a person facing towards Sun, the shadow will be towards his back or in West.
- If a person facing towards South, the shadow will be towards his right.
- If a person facing towards West, the shadow will be towards his front.
- If a person facing towards North, the shadow will be towards his left.

In Evening/Sunset Time

- If a person facing towards Sun, the shadow will be towards his back or in East.
- If a person facing towards North, the shadow will be towards his right.
- If a person facing towards East, the shadow will be towards his front.
- If a person facing towards South, the shadow will be towards his left.

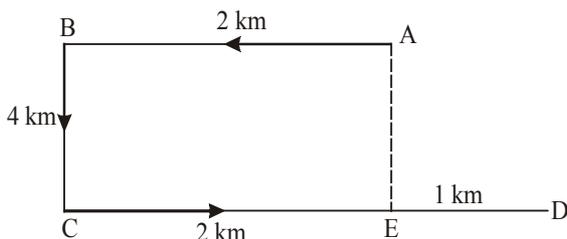
Note : At 12:00 noon there is no shadow because the rays of the sun are vertically downward.

EXAMPLE 1. Raman walked 2 km West from his office and then turned South covering 4 km. Finally, he walked 3 km towards East and again move 1 km West. How far is Raman from his initial position.

- 4 km
- 8 km
- 10 km
- 7 km
- None of these

Sol. Raman starts from his office A, moves 2 km West upto B, then 4 km to the South upto C, 3 km East upto D and finally 1 km West upto E, Thus his distance from the initial position $A = AE = BC = 4$ km.

Hence option (a) is the correct answer.



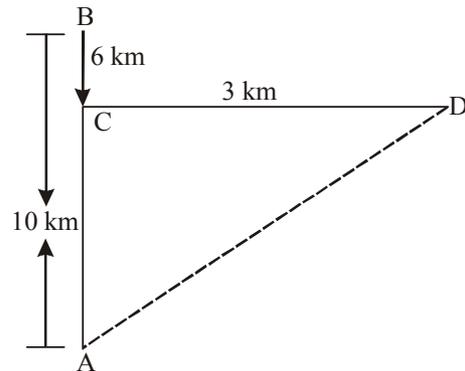
EXAMPLE 2. Rashmi walks 10 km towards North. She walks 6 km towards South then. From here she moves 3 km towards East. How far and in which direction is she with reference to her starting point?

- 6 km West
- 7 km East
- 8 km North
- 5 km North-East.
- None of these.

Sol. It is clear, Rashmi moves from A 10 km Northwards upto B, then moves 6 km Southwards upto C, then turns towards East and walks 3 km upto D.

$$\text{Then, } AC = (AB - BC) = 10 - 6 = 4 \text{ km}$$

$$CD = 3 \text{ km.}$$



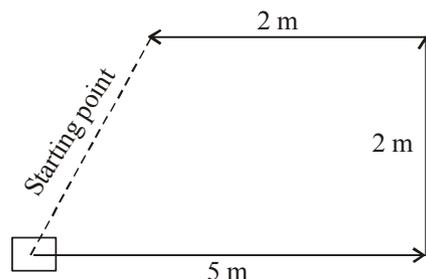
\therefore Rashmi's distance from starting point A

$$= AD = \sqrt{AC^2 + CD^2} = \sqrt{4^2 + 3^2} = \sqrt{16 + 9} = \sqrt{25} = 5 \text{ km.}$$

From figure, D is to the North-East of A, Hence (d) is the correct option

EXAMPLE 3. Early morning after sunrise, Rajesh was standing in front of his house in such a way that his shadow as falling exactly behind him. He starts walking straight and walks 5 m. He turns to his left and walks 3 m and again turning to his left walks 2m. Now in which direction is he from his starting point?

Sol. The shadow of Rajesh was falling exactly behind him. So he was facing towards East. Diagram clearly shows that Rajesh was in North-East with reference to the starting point.



EXERCISE

- Q travels towards East. M travels towards North. S and T travel in opposite directions. T travels towards right of Q. Which of the following is **definitely true**?
 - M and S travel in the opposite directions.
 - S travels towards West.
 - T travels towards North.
 - M and S travel in the same direction.
 - None of these
 - P, Q, R, S and T are sitting around a circular table. R is to the right of P and is second to the left of S. T is not between P and S. Who is second to the left of R?
 - S
 - T
 - Q
 - Data inadequate
 - None of these
 - Of the five villages P, Q, R, S and T situated close to each other, P is to west of Q, R is to the south of P, T is to the north of Q, and S is to the east of T. Then, R is in which direction with respect to S?
 - North-West
 - South-East
 - South-West
 - Data Inadequate
 - None of these
 - M is to the East of D, F is to the South of D and K is to the West of F. M is in which direction with respect to K?
 - South-West
 - North-West
 - North-East
 - South-East
 - None of these
 - After 4 pm on a sunny day when Ramesh was returning from his school, he saw his uncle coming in the opposite direction. His uncle talked to him for some time. Ramesh saw that the shadow of his uncle was to his right side. Which direction was his uncle facing during their talk?
 - North
 - South
 - East
 - Data inadequate
 - None of these
 - A and B are standing at a distance of 20 km from each other on a straight East-West road. A and B start walking simultaneously, eastwards and westwards respectively, and both cover a distance of 5 km. Then A turns to his left and walks 10 km. 'B' turns to his right and walks 10 km and at the same speed. Then both turn to their left and cover a distance of 5 km at the same speed. What will be the distance between them?
 - 10km
 - 5 km
 - 20km
 - 25km
 - None of these
 - Alok walked 30 metres towards east and took a right turn and walked 40 metres. He again took a right turn and walked 50 metres. Towards which direction is he from his starting point?
 - South
 - West
 - South-West
 - South-East
 - None of these
 - Ten boys are standing in a row facing the same direction. Abhijit, who is seventh from the left end of the row, is to the immediate right of Sushant, who is fifth from the right end of the row. Sushant is third to the right of Rupin. How many children are there between Abhijit and Rupin?
 - One
 - Two
 - Three
 - Data inadequate
 - None of these
 - Y is to the East of X, which is to the North of Z. If P is to the South of Z, then P is in which direction with respect to Y?
 - North
 - South
 - South-East
 - North-East
 - None of these
 - One afternoon, Manisha and Madhuri were talking to each other face to face in Bhopal on M.G. Road. If Manisha's shadow was exactly to the left of Madhuri, which direction was Manisha facing?
 - North
 - South
 - East
 - Data inadequate
 - None of these
 - 'X' started walking straight towards South. He walked a distance of 5 metres and then took a left turn and walked a distance of 3 metres. Then he took a right turn and walked a distance of 5 metres again. 'X' is facing which direction now?
 - North-East
 - South
 - North
 - South-West
 - None of these
- Directions (Qs. 12-13) :** Kiran walks 20m North, she turns right and walks 30m, then she turns right and walks 35m, then she turns left and walks 15m, then she again turns left and walks 15m. Once again she turns left and walks 15m.
- How far is Kiran from her starting point ?
 - 25m
 - 15m
 - 45m
 - 30m
 - None of these
 - In which direction is Kiran facing now ?
 - East
 - West
 - North
 - South
 - None of these
 - A boy rode his bicycle northwards, then turned left and rode one km and again turned left and rode 2 km. He found himself exactly one km west of his starting point. How far did he ride northwards initially?
 - 1 km
 - 2km
 - 3 km
 - 5 km
 - None of these
 - Ravi wants to go to the university. He starts from his home which is in the East and come to a crossing. The road to the left ends is a theatre, straight ahead is the hospital. In which direction is the university?
 - North
 - South
 - East
 - West
 - None of these

16. A rat runs 20' towards east and turns to right, runs 10' and turns to right, runs 9' and again turns to left, runs 5' and then to left, runs 12' and finally turns to left and runs 6'. Now, which direction is the rat facing?
 (a) East (b) West
 (c) North (d) South
 (e) None of these
17. If South-east becomes North, North-east becomes West and so on, what will West become?
 (a) North-east (b) North-west
 (c) South-east (d) South-west
 (e) None of these
18. P, Q, R and S are playing a game of carrom. P, R and S, Q are partners. S is to the right of R who is facing west. Then, Q is facing
 (a) North (b) South
 (c) East (d) West
 (e) None of these
19. A and B start walking, from a point, in opposite directions. A covers 3 km and B covers 4 km. Then A turns right and walks 4 km while B turns left and walks 3 km. How far is each from the starting point ?
 (a) 5 km (b) 4 km
 (c) 10 km (d) 8 km
 (e) None of these
20. Anuj started walking positioning his back towards the sun. After sometime, he turned left, then turned right and then towards the left again. In which direction is he going now?
 (a) North or South (b) East or West
 (c) North or West (d) South or West
 (e) None of these
21. From her home, Prerna wishes to go to school. From home, she goes towards North and then turns left and then turns right, and finally she turns left and reaches school. In which direction her school is situated with respect to her home?
 (a) North - East (b) North - West
 (c) South - East (d) South - West
 (e) None of these
22. One day, Ravi left home and cycled 10 km southwards, turned right and cycled 5 km and turned right and cycled 10 km and turned left and cycled 10 km. How many kilometres will he have to cycle to reach his home straight?
 (a) 10 km (b) 15 km
 (c) 20 km (d) 25 km
 (e) None of these
23. Rasik walks 20 m North. Then, he turns right and walks 30 m. Then he turns right and walks 35 m. Then he turns left and walks 15 m. Then he again turns left and walks 15 m. In which direction and how many metres away is he from his original position?
 (a) 15 metres West (b) 30 metres East
 (c) 30 metres West (d) 45 metres East
 (e) None of these
24. From his house, Lokesh went 15 km to the North. Then he turned West and covered 10 km. Then, he turned South and covered 5 km. Finally, turning to East, he covered 10 km. In which direction is he from his house?
 (a) East (b) West
 (c) North (d) South
 (e) None of these
25. Kailash faces towards north. Turnings to his right, he walks 25 metres. He then turns to his left and walks 30 metres. Next, he moves 25 metres to his right. He then turns to the right again and walks 55 metres. Finally, he turns to the right and moves 40 metres. In which direction is he now from his starting point ?
 (a) South-West (b) South
 (c) North-West (d) South-East
 (e) None of these
26. One evening before sunset two friends Sumit and Mohit were talking to each other face to face. If Mohit's shadow was exactly to his right side, which direction was Sumit facing?
 (a) North (b) South
 (c) West (d) Data inadequate
 (e) None of these
27. Rohit walked 25 metres towards South. Then he turned to his left and walked 20 metres. He then turned to his left and walked 25 metres. He again turned to his right and walked 15 metres. At what distance is he from the starting point and in which direction?
 (a) 35 metres East (b) 35 metres North
 (c) 40 metres East (d) 60 metres East
 (e) None of these
28. One morning after sunrise, Reeta and Kavita were talking to each other face to face at Tilak Square. If Kavita's shadow was exactly to the right to Reeta, which direction Kavita was facing?
 (a) North (b) South
 (c) East (d) Data inadequate
 (e) None of these
29. I am facing east. I turn 100° in the clockwise direction and then 145° in the anticlockwise direction. Which direction am I facing now?
 (a) East (b) North-east
 (c) North (d) South-west
 (e) None of these
30. A man is facing north-west. He turns 90° in the clockwise direction, then 180° in the anticlockwise direction and then another 90° in the same direction. Which direction is he facing now?
 (a) South (b) South-west
 (c) West (d) South-east
 (e) None of these
31. A tourist drives 10 km towards East and turns to right side and takes a drive of another 3 km. He, then drives towards West (turning to his right) another 3 km. He, then turns to his left and walks another 2 km afterwards, he turns to his right and travels 7 km. How far is he from his starting point and in which direction ?
 (a) 10 km, East (b) 9 km, North
 (c) 8 km, West (d) 5 km, South
 (e) None of these

Directions (Qs. 32-34) : Study the following information and answer the questions given below.

Seven villages A, B, C, D, E, F and G are situated as follow

E is 2 km to the West of B.

F is 2 km to the North of A.

C is 1 km to the West of A.

D is 2 km to the South of G.

G is 2 km to the East of C.

D is exactly in the middle of B and E.

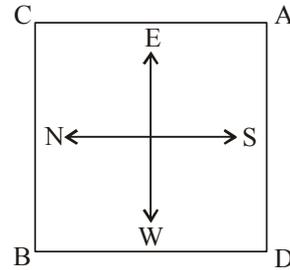
32. Which two villages are the farther from one another?
 (a) F and E (b) G and E
 (c) D and C (d) F and B
 (e) None of these
33. How far is E and F (in km)?
 (a) 5 (b) $\sqrt{26}$
 (c) 4 (d) $\sqrt{20}$
 (e) None of these
34. A is in the middle of
 (a) E and G (b) E and C
 (c) G and C (d) F and G
 (e) None of the above
35. There is a ring road connecting points X, Y, Z and W. The road is in a complete circular form but having several approach roads leading to the centre. Exactly in the centre of the ring road there is a tree which is 20 km from point X on the circular road. You have taken a round of circular road starting from point A and finish at the same point after touching points Y, Z and W. You then drive 20 km interior towards the tree from point X and from there reach somewhere in between Y and Z on the ring road. How much distance you have to travel from the tree to reach the point between Y and Z on the ring road?
 (a) 20km (b) 15km
 (c) 80km (d) 40km
 (e) None of these

Directions (Qs. 36-37) : Study the following information to answer the given questions.

Point A is 9 m towards the East of point B. Point C is 5 m towards the South of point A. Point D is 3 m towards the West of point C. Point E is 5 m towards the North of point D. Point F is 7 m towards the South of point S.

36. If a person walks in a straight line for 8 m towards West from point C, which of the following points would he cross the first?
 (a) F (b) B
 (c) E (d) D
 (e) Cannot be determined
37. Which of the following points are in a straight line?
 (a) A, C, F (b) D, E, B
 (c) A, E, F (d) F, E, C
 (d) D, F, E

Directions (Qs. 38-40) : Answer the following questions on the basis of the information given below :



Four security guards A, B, C and D have been posted at the four corners of a huge cashew plantations farm.

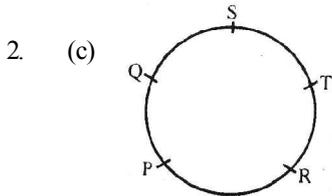
38. Given the condition that none of the corners should be unmanned and both A and C start moving towards diagonally opposite corners, in which direction should D start moving so that he occupies a corner by travelling the minimum possible distance?
 (a) Clockwise (b) Anti-clockwise
 (c) Either (a) or (b) (d) Cannot be determined
 (e) None of the above
39. From the original position, A and B move diagonally to opposite corners and then one side each in the clockwise direction. Which of the corners is unmanned at the movement?
 (a) South-West (b) South-East
 (c) North-East (d) North-West
 (d) None of the above
40. After the movement on above question, who is at the North-West corner?
 I. A II. C III. B
 (a) Only I (b) I and II
 (c) II and III (d) I and III
 (e) None of these
41. From the original position A and B move one arm length clockwise and then cross over to the corner diagonally opposite, C and D move one arm length anti-clockwise and cross over to the corner diagonally opposite. The original setting ADBC has now changed to
 (a) CDAB (b) DCAB
 (c) CBDA (d) None of the above
 (e) Can't determined

ANSWER KEY

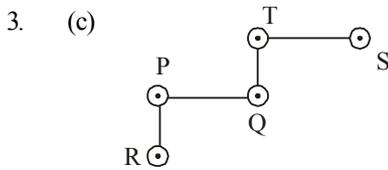
1	(d)	6	(a)	11	(b)	16	(c)	21	(b)	26	(b)	31	(d)	36	(d)	41	(c)
2	(c)	7	(c)	12	(d)	17	(c)	22	(b)	27	(a)	32	(d)	37	(e)		
3	(c)	8	(c)	13	(b)	18	(a)	23	(d)	28	(a)	33	(c)	38	(b)		
4	(c)	9	(e)	14	(b)	19	(a)	24	(c)	29	(b)	34	(c)	39	(b)		
5	(b)	10	(a)	15	(a)	20	(a)	25	(d)	30	(d)	35	(a)	40	(c)		

Hints & Explanations

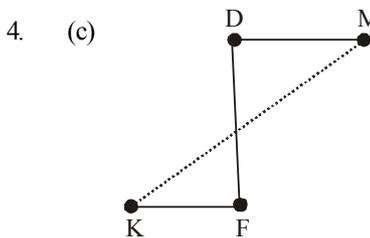
1. (d) We have been given that Q travels towards East and M travels towards North. Now, T travels towards right of Q implies that T travels towards South. Hence, S travels towards North (because S and T travel in opposite directions). Therefore, it is definitely true that M and S travel in the same direction i.e., North.



Q is second to the left of R.

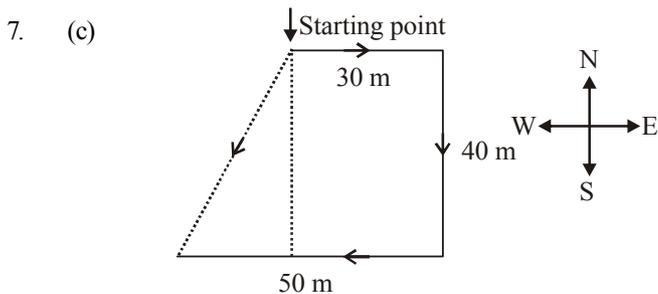
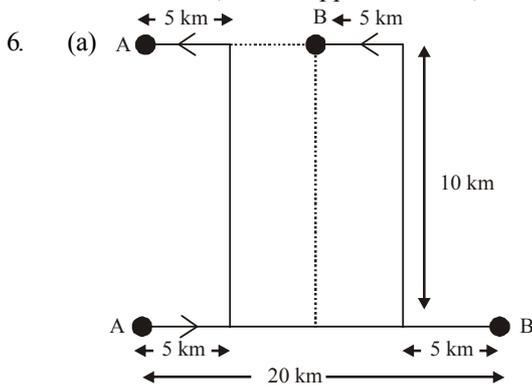


Hence, R is to the South-West with respect to S.

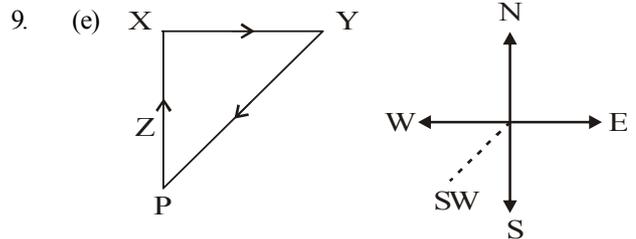


M is to the North-East of K.

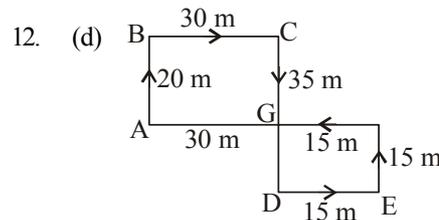
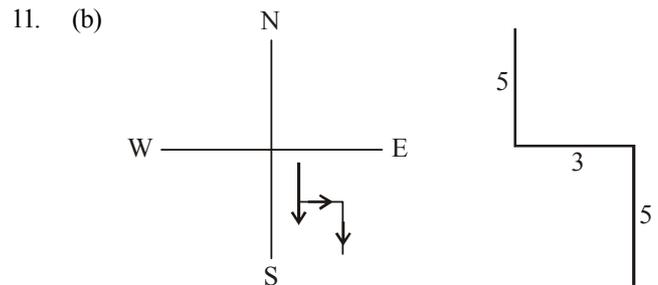
5. (b) After 4 pm the shadow will be towards East. Now, East is to the right of Ramesh. So Ramesh faces North. And his uncle, who is opposite to him, faces South.



8. (c) Only three students

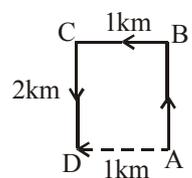


10. (a) In the afternoon the sun is in the west. Hence the shadow is in the east. Now, east is to the left of Madhuri. So, Madhuri is facing south. Therefore, Manisha, who is face to face with Madhuri, is facing north.

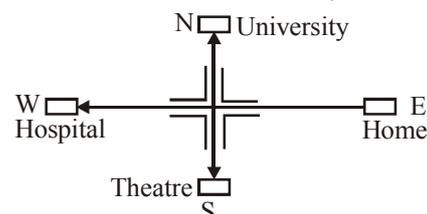


Obviously, $AG = BC = 30\text{ m}$

13. (b) West
14. (b) Clearly, the boy rode from A to B, then to C and finally up to D. Since D lies to the west of A, so required distance = $AB = CD = 2\text{ km}$.

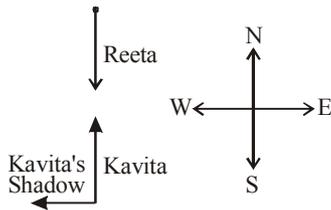


15. (a) Starting from his house in the East, Ravi moves westwards. Then, the theatre, which is to the left, will be in the South. The hospital, which is straight ahead, will be to the West. So, the University will be to the North.

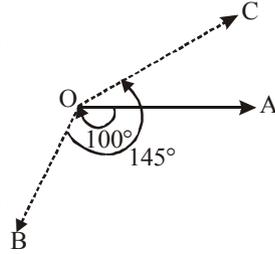


16. (c) The movements of rat are as shown in figure. Clearly, it is finally walking in the direction FG i.e. North.

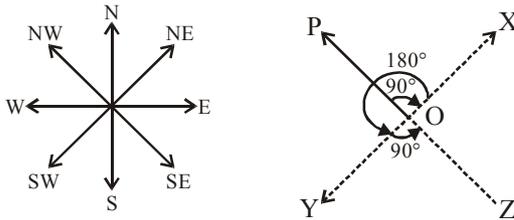
28. (a) In morning, sun rises in the east so shadow of a object falls towards the West. Now, Kavita's shadow falls to the right of Reeta. Hence, Reeta is facing South and Kavita is facing North.



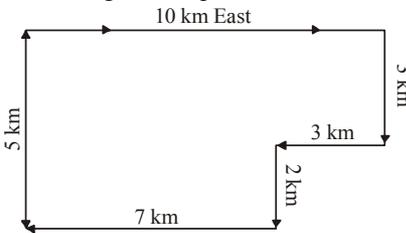
29. (b) As shown in figure, the man initially faces towards east i.e., in the direction OA. On moving 100° clockwise, he faces in the direction OB. On further moving 145° anticlockwise, he faces the direction OC. Clearly, OC makes an angle of $(145^\circ - 100^\circ)$ i.e. 45° with OA and so, the man faces in the direction North-east.



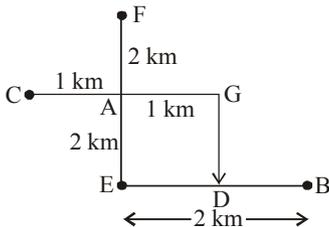
30. (d) As shown in figure, the man initially faces in the direction OP. On moving 90° clockwise, he faces in the direction OX. On further moving 180° anticlockwise, he faces in the direction OY. Finally, on moving 90° anticlockwise, he faces in the direction OZ, which is South-east.



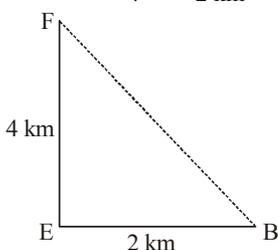
31. (d) According to the question,



A = Starting point
Hence, he is 5 km to the South of his starting point.



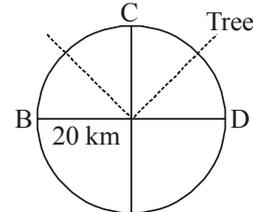
Sol. (32-34) :



32. (d) Required distance $(FB)^2 = (FE)^2 + (EB)^2$
 $= 4^2 + 2^2$
 $= 16 + 4 = \sqrt{20}$
 $= 4.47 \text{ km}$

It is clear from the figure that the village F and B farthest from one another.

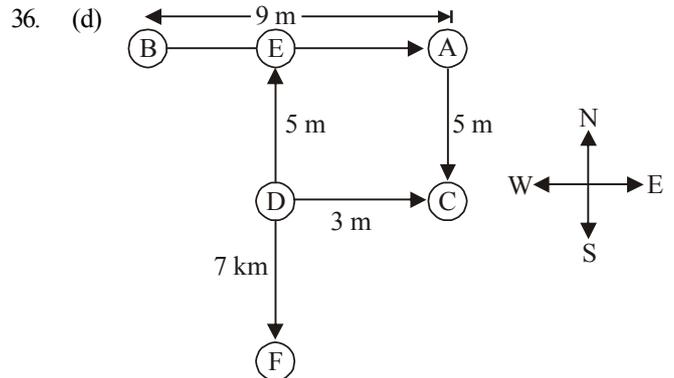
33. (c) It is clear from the figure that distance between E and F = $EA + AF = 2 + 2 = 4 \text{ km}$
 34. (c) It is clear from the figure that A is in the middle of G and C.
 35. (a) According to the question,



A = Starting point +
Ending point

Clearly, 20 km is the distance to reach any of the point on the circle.

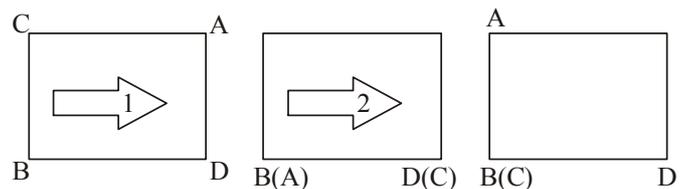
Solutions (Qs. 36 and 37):



If a person walks in a straight line for 8 km towards West from point C, then he would be cross D.

37. (e) D, F, E are in straight line.
 38. (b) When, A and B move diagonally opposite the two top positions become vacant. Hence, in order D should travel minimum distance, he should move anticlockwise to occupy A's position.

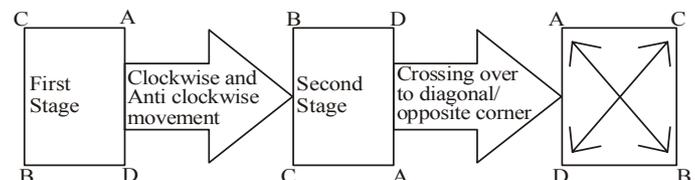
39. (b)



Only one corner is vacant which is South East. You can take help from diagram in the question.

40. (c)

41. (c)



Blood Relation

INTRODUCTION

Problems based on blood relations are very important segment of analytical reasoning. The question papers of almost every competitive exams of objective type include questions based on blood relation. Particularly for getting jobs in banking sectors, one has a good skill of solving such questions. In this chapter, we are giving quicker approach to crack problems based on blood relation.

MEANING OF BLOOD RELATION

Blood relation does mean biological relation. Remember a wife and husband are not biologically related but they are biological parents of their own children. Similarly, brother, sister, paternal grandfather, paternal grandmother, maternal grandfather, maternal grandmother, grandson, granddaughter, niece, cousin etc. are our blood relatives.

Types of Blood Relations

There are mainly two types of blood relatives:

- (i) Blood relation from paternal side
- (ii) Blood relation from maternal side

Now, we will discuss both kind of relations one-by one.

- (i) **Blood relation from paternal side** : This type of blood relation can be further subdivided into three types:
 - (a) **Past generations of father** : Great grandfather, great grandmother, grandfather, grandmother etc.
 - (b) **Parallel generations of father**: Uncles (Brothers of father), aunts (sisters of father) etc.
 - (c) **Future generations of father**: Sons, daughters, grandsons, granddaughters etc.
- (ii) **Blood relation from maternal side**: This type of blood relations can also be subdivided into three types:
 - (a) **Past generations of mother**: Maternal great grandfather, maternal great grandmother, maternal grandfather, maternal grandmother etc.
 - (b) **Parallel generations of mother**: Maternal uncles, maternal aunts etc.
 - (c) **Future generations of mother**: Sons, daughters, grandsons, granddaughters etc.

In the examinations, the questions are given in complicated way. In other words, in the given questions, the easy relationship takes the complicated form and examinees are expected to solve this complication in order to find out the correct answer. How does an examinee get aid of this complication? For this, an examinee sees the given data in the question with a serious eye; then tries to establish relation among elements of given data on the basis of certain logic and finally finds out the required answer. In fact

complications in the asked question occur because of the given indirect relation. It does mean questions are in the form of indirect relation & one has to convert this indirect relation into direct relation. For example “only son of my father” does mean ‘me’ (myself). Here in place of ‘me’ indirect relation has been given in form of “only son of my father”. Similarly, “the only daughter of the parents in laws of the husband of Vandana” does mean ‘Vandana’ herself. In this example also the sentence “the only daughter of the parents in laws of the husband of ‘Vandana’ has been given in the form of indirect relation. Below are given some indirect relation in the form of a list. Examinees are required to learn them by heart. If one keeps this list in one’s mind, he/she will find it very easy to solve problems based on blood relations.

- | | | | |
|-----|--------------------------------|---|-----------------------------|
| 1. | Son of father or mother | : | Brother |
| 2. | Daughter of father or mother | : | Sister |
| 3. | Brother of father | : | Uncle |
| 4. | Brother of mother | : | Maternal uncle |
| 5. | Sister of father | : | Aunt |
| 6. | Sister of mother | : | Aunt |
| 7. | Father of father | : | Grandfather |
| 8. | Father of father of father | : | Great grand father |
| 9. | Father of grandfather | : | Great grandfather |
| 10. | Mother of father | : | Grandmother |
| 11. | Mother of mother of father | : | Great grandmother |
| 12. | Mother of grandmother | : | Great grandmother |
| 13. | Father of mother | : | Maternal grandfather |
| 14. | Father of father of mother | : | Great maternal grand father |
| 15. | Father of maternal grandfather | : | Great maternal grandfather |
| 16. | Mother of mother | : | Maternal grandmother |
| 17. | Mother of mother of mother | : | Great maternal grandmother |
| 18. | Mother of maternal grandmother | : | Great maternal grandmother |
| 19. | Wife of father | : | Mother |
| 20. | Husband of mother | : | Father |
| 21. | Wife of Grandfather | : | Grandmother |
| 22. | Husband of Grandmother | : | Grandfather |
| 23. | Wife of son | : | Daughter-in-law |
| 24. | Husband of daughter | : | Son-in-law |
| 25. | Brother of Husband | : | Brother-in-law |
| 26. | Brother of wife | : | Brother-in-law |
| 27. | Sister of Husband | : | Sister-in-law |
| 28. | Sister of wife | : | Sister-in-law |
| 29. | Son of brother | : | Nephew |
| 30. | Daughter of brother | : | Niece |

- 31. Wife of brother : Sister-in-law
- 32. Husband of sister : Brother-in-law
- 33. Son of sister : Nephew
- 34. Daughter of sister : Niece
- 35. Wife of uncle : Aunt
- 36. Wife of maternal uncle : Aunt
- 37. Son/daughter of uncle/Aunt : Cousin
- 38. Son/daughter of maternal uncle/maternal aunt : Cousin
- 39. Son/daughter of sister of Father : Cousin
- 40. Son/daughter of sister of Mother : Cousin
- 41. Only son of grandfather : Father
- 42. Only daughter of maternal grandfather : Mother
- 43. Daughter of grandfather : Aunt
- 44. Sons of grandfather other than father : Uncle
- 45. Son of maternalgrandfather /maternal grand mother : Maternal Uncle.
- 46. Only daughter in law of grandfather/ grandmother : Mother
- 47. Daughters in law of grandfather/ grandmother : Aunt other than mother
- 48. Daughters-in-law of maternal grandfather/ grandmother : Aunt maternal
- 49. Neither brother nor sister : Self

Note : 1. Any relation of Mother's side is called "Maternal".
 2. Any relation of Father side is called "Pater nal".

Some important information about blood relation

- A.** Without the information of gender, no relationship can be established between two people. For example, If given that R is the child of P & Q, then we can only say that P & Q are the parents of R. But we can not find out:
 - (i) R is the son of P & Q or R is the daughter of P & Q.
 - (ii) Who is mother of R and who is father of R.
 But if we have given that P is a male, Q is a female and R is male, then we can easily say that R is the son of P and Q. Further we can also say that P is father of R and Q is mother of R.
- B.** Gender can not be decided on the basis of name. For example in Sikh community the names like Manjit, Sukhvinder etc. are the names of both male and female. Similarly, in the Hindu Community 'Suman' is the name of both male and female.

Remember: Solution Tips

- (a) While solving blood relation based question, first of all find out that two persons between whom a relationship has to be established.
- (b) Next, try to find out middle relation
- (c) Finally findout the relationship between two persons to be identified for this purpose.

TYPE OF PROBLEMS

- (1) General problems of blood relation
- (2) Blood relation based on family tree
- (3) Coded blood relationship.

Now, we will discuss all the three types of problems one by one

(1) GENERAL PROBLEM OF BLOOD RELATION

EXAMPLE 1. Pointing towards a photograph, Mr. Sharma said, "She is the only daughter of mother of my brother's sister." How is Mr. Sharma related to the lady in the photograph?

- (a) Cousin
- (b) Sister
- (c) Aunt
- (d) Daughter in law
- (e) None of these

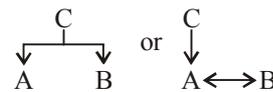
Sol. Here we have to find relationship between Mr. Sharma & the lady in the photograph.
 Mother of my brother's sister does mean my (Mr. Sharma's) mother. Only daughter of Mr. Sharma's mother does mean "sister of Mr. Sharma". Hence option (b) is the correct answer.

(2) BLOOD RELATION BASED ON FAMILY TREE

EXAMPLE 2. Q is the brother of C and C is the sister of Q. R and D are brother and sister. R is the son of A while A and C are wife and husband. How is Q related with D.

For such type of question a family tree is made in which some symbols are used as below:
 '↔' is used for husband & wife.
 '—' or '↔' is used for brother & sister
 ' | ' is used for parents (father or mother). Parents are put on top while children are put at the bottom.
 '-' (minus sign) or 'O' is used for female.
 '+' (plus sign) or '□' is used for male.

- Gender of A is unknown ⇒ A
- A and B are married to each other ⇒ A ↔ B
- A and B are sebling ⇒ A ↔ B or A – B
- A and B are children of C.

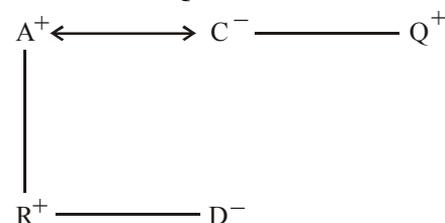


- B is only child of A and A is mother of B.



Now adopting and using the above given symbols we can make a family tree and solve the given problem, let us see the family tree for sample question:

EXAMPLE 3. Q is the brother of C and C is the sister of Q. R and D are brother and sister. R is the son of A while A & C are wife and husband. How is Q related with D.



As per the above example, Q is the brother of C and C is the sister of Q. Hence relation between C & Q has been presented as $(C^- - Q^+)$ where ‘-’ sign above C makes it clear that C is a female and ‘+’ sign above ‘Q’ makes it clear that Q is a male. Similarly for R and D. The presentation $(R^+ - D^-)$ has been made. Further according to the question.

A and C are having a husband and wife relationship and hence this has been presented as $(A^+ \leftrightarrow C^-)$. As it is already given that C is the sister of Q and A and C are wife and husband, this becomes clear that A is the male member of the family and this is the reason A has ‘+’ as its gender sign. Lastly, the vertical line gives father

and son relationship and has been presented as $(\begin{matrix} A^+ \\ | \\ R^+ \end{matrix})$. Now from this family tree it becomes clear that C is the mother of R and D and as Q is the brother of C, then Q will definitely be the maternal uncle of R & D. Hence we can say that Q is the maternal uncle of D and this is the required answer for our example question.

(3) CODED BLOOD RELATIONSHIP

EXAMPLE 4. **Directions:** Read the following informations carefully to give the answers of following questions:

- ‘P × Q’ means P is the brother of Q
- ‘P - Q’ means P is the sister of Q
- ‘P + Q’ means P is the father of Q
- ‘P ÷ Q’ means P is the mother of Q.

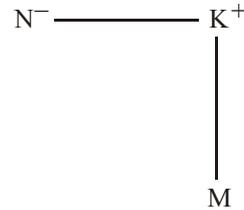
Which of the following option is the presentation of M is the nephew of N?

- (a) $N - K + M$
- (b) $N \times K \div M$
- (c) $N \div K \times M$
- (d) $N - K + M \times T$
- (e) None of these.

Sol. To solve it we will use the symbols of family tree in place of mathematical signs (+, -, × & ÷). Let us make family tree presentation for every option:

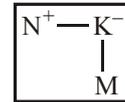
Presentation for option (a) $[N - K + M]$

Here gender of M can not be find out so, this option is rejected, point to be noted that even without making a family tree. You



can find out that this option can not give you the gender of M. For this only a serious look at the option is enough.

Presentation of option (b) $[N \times K \div M]$

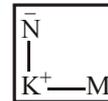


This family tree presentation also does not give the

gender of M. Like option (a) this option gives you a clear indication, only by a serious look, that gender of M can not be find out and for this making family tree is not necessary. Hence option (b) is also rejected.

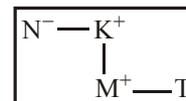
Presentation of option (c) $[N \div K \times M]$

Like option (a) and (b), option (c) is also rejected and only a serious look can make you clear that in this case also the gender of M can not be find out



Presentation of option (d) $[N - K + M \times T]$

This presentation makes it clear that N is the sister of K who is father of M. Here gender of M is clear that M is a male. Hence, M is clearly nephew of N.



Hence for sample question option (d) is the correct answer. Now we have come to the conclusion of this chapter. Readers are advised to practice more and more to crack such questions quick as possible.

EXERCISE

1. Anil, introducing a girl in a party, said, she is the wife of the grandson of my mother. How is Anil related to the girl?
 - (a) Father
 - (b) Grandfather
 - (c) Husband
 - (d) Father-in-law
 - (e) None of these
2. A man said to a woman, “Your mother’s husband’s sister is my aunt.” How is the woman related to the man?
 - (a) Granddaughter
 - (b) Daughter
 - (c) Sister
 - (d) Aunt
 - (e) None of these
3. Introducing Rajesh, Neha said, “His brother’s father is the only son of my grand father”. How Neha is related to Rajesh?
 - (a) Sister
 - (b) Daughter
 - (c) Mother
 - (d) Niece
 - (e) None of these
4. Vinod is the brother of Bhaskar. Manohar is the sister of Vinod. Biswal is the brother of Preetam and Preetam is the daughter of Bhaskar. Who is the uncle of Biswal?
 - (a) Bhaskar
 - (b) Manohar
 - (c) Vinod
 - (d) Insufficient data
 - (e) None of these
5. A man said to a woman, “Your brother’s only sister is my mother.” What is the relation of the woman with the maternal grandmother of that man?
 - (a) Mother
 - (b) Sister
 - (c) Niece
 - (d) Daughter
 - (e) None of these

6. Pointing to a photograph, a man said, "I have no brother or sister but that man's father is my father's son." Whose photograph was it?
 (a) His own (b) His son's
 (c) His father's (d) His nephew's
 (e) None of these
7. Pointing to a photograph, a lady tells Pramod, "I am the only daughter of this lady and her son is your maternal uncle." How is the speaker related to Pramod's father?
 (a) Sister-in-law (b) Wife
 (c) Sister (d) Aunt
 (e) None of these
8. Introducing a man, a woman said, "His wife is the only daughter of my mother." How is the woman related to that man?
 (a) Aunt (b) Wife
 (c) Mother-in-law (d) Maternal Aunt
 (e) None of these
9. Deepak said to Nitin, "That boy playing with the football is the younger of the two brothers of the daughter of my father's wife." How is the boy playing football related to Deepak?
 (a) Son (b) Brother
 (c) Cousin (d) Nephew
 (e) None of these
10. A is the mother of B. C is the father of B and C has 3 children. On the basis of this information, find out which of the following relations is correct :
 (a) C has three daughters.
 (b) C has three sons.
 (c) B is the son.
 (d) B is the daughter
 (e) None of these.
11. A man pointing to a photograph says, "The lady in the photograph is my nephew's maternal grandmother." How is the lady in the photograph related to the man's sister who has no other sister?
 (a) Cousin (b) Sister-in-law
 (c) Mother (d) Mother-in-law
 (e) None of these
12. A is the brother of B. A is the brother of C. To find what is the relation between B and C. What minimum information from the following is necessary?
 (i) Gender of C (ii) Gender of B
 (a) Only (i) (b) Only (ii)
 (c) Either (i) or (ii) (d) both (i) and (ii)
 (e) None of these
13. Pointing to a girl, Abhishek said, "She is daughter of the only child of my father." How is Abhishek's wife related to that girl?
 (a) Daughter (b) Mother
 (c) Aunt (d) Sister
 (e) None of these
14. Introducing Sarita, Meena said, "She is the only daughter of my father's only daughter." How is Meena related to Sarita?
 (a) Niece (b) Cousin
 (c) Aunt (d) Data inadequate
 (e) None of these
15. Kalyani is mother-in-law of Veena who is Sister-in-law of Ashok. Dheeraj is father of Sudeep, the only brother of Ashok. How is Kalyani related to Ashok?
 (a) Mother-in-law (b) Aunt
 (c) Wife (d) Cousin
 (e) None of these
16. If $P \$ Q$ means P is father of Q, $P \# Q$ means P is mother of Q, $P * Q$ means P is sister of Q, then how is Q related to N in $N \# L \$ P * Q$?
 (a) Grandson (b) Granddaughter
 (c) Nephew (d) Data inadequate
 (e) None of these
17. Pointing to a boy in a photograph, Akhil says, "He is the son of my mother's only son." How is Akhil related to that boy?
 (a) Uncle (b) Brother
 (c) Father (d) Cousin
 (e) None of these
18. Pointing to a boy, Namrata says, "He is the son of my grandfather's only child." How is the boy related to Namrata?
 (a) Brother (b) Cousin
 (c) Uncle (d) Data inadequate
 (e) None of these
19. Pointing to Kedar, Veena said, "His mother's brother is the father of my son Nitin." How is Kedar related to Veena?
 (a) Niece (b) Aunt
 (c) Nephew (d) Sister-in-law
 (e) None of these
20. If ' $P \$ Q$ ' means 'P is brother of Q', ' $P \# Q$ ' means 'P is mother of Q' and ' $P * Q$ ' means 'P is daughter of Q', then who is the father in ' $A \# B \$ C * D$ '?
 (a) D (b) B
 (c) C (d) Data inadequate
 (e) None of these
21. Pointing to a boy, Meena says, "He is the son of my grandfather's only son." How is the boy's mother related to Meena?
 (a) Mother (b) Aunt
 (c) Sister (d) Data inadequate
 (e) None of these
22. If ' $A + B$ ' means 'A is brother of B', ' $A - B$ ' means 'A is sister of B', ' $A \times B$ ' means 'A is wife of B', and ' $A \div B$ ' means 'A is father of B', then which of the following indicates 'S is son of P'?
 (a) $P \times Q \div R + S - T$ (b) $P \times Q \div S - R + T$
 (c) $P \times Q \div R - T + S$ (d) $P \times Q \div R - S + T$
 (e) None of these
23. $A + B$ means B is brother of A; $A \times B$ means B is husband of A; $A - B$ means A is mother of B; and $A \div B$ means A is father of B. Then which of the following expressions indicates 'P is grandmother of T'?
 (a) $Q - P + R \div T$ (b) $P \times Q \div R - T$
 (c) $P \times Q \div R + T$ (d) $P + Q \div R - T$
 (e) None of these

Directions (Qs. 24-25) : Read the following information carefully and answer the questions which follow.

- (i) If 'A × B' means 'A is the son of B'.
 (ii) If 'A + B' means 'A is the father of B'.
 (iii) If 'A > B' means 'A is the daughter of B'.
 (iv) If 'A < B' means 'A is the wife of B'.
 24. Which of the following pairs of people represent first cousins with regard to the relations given in the expressions, if it is provided that A is the sister of J : 'L > V < J + P' and 'S × A < D + F < E + K'
 (a) LP (b) SP
 (c) SK (d) SF
 (e) Can't be determined
 25. What will come in the place of the question mark (?), if it is provided that M is the grandmother of F in the expression 'F × R < S' ? M'
 (a) > (b) <
 (c) + (d) ×
 (e) Can't be determined

Directions (Qs. 26-30) : Each of the questions below consists of a question and two or three statements given below it. You have to decide whether the data provided in the statements are sufficient to answer the question.

26. Who is the uncle of L?
 A P, brother of M, is father of L; M is father of S.
 B R is father of L's cousin.
 (a) A alone is sufficient
 (b) B alone is sufficient
 (c) Either A alone or B alone is sufficient
 (d) Both A and B together are not sufficient
 (e) Both A and B together are necessary
 27. How is A related to B?
 A P, the only son of A, has two sisters.
 B A's son is the brother of the only sister of B.
 C B and P are children of A.
 (a) Both A and C are sufficient
 (b) Only B
 (c) Either A or B
 (d) Only C
 (e) None of these
 28. How many daughters does W have?
 A B and D are sisters of M.
 B M's father T is the husband of W.
 C Out of three children which T has, only one is boy.
 (a) Only A and C (b) All A, B and C
 (c) Only B and C (d) Only A and B
 (e) None of these
 29. Is F granddaughter of B?
 A B is father of M. M is the sister of T. T is the mother of F.
 B S is the son of F. V is the daughter of F. R is the brother of T.
 (a) A alone is sufficient
 (b) B alone is sufficient
 (c) Either A alone or B alone is sufficient
 (d) Both A and B are not sufficient
 (e) Both A and B together are necessary.

30. How is P related to J?
 A M is the brother of P and T is the sister of P
 B P's mother is married to J's husband, who has one son and two daughters
 (a) A alone is sufficient
 (b) B alone is sufficient
 (c) Either A alone or B alone is sufficient
 (d) Both A and B are not sufficient
 (e) Both A and B together are necessary.

Directions (Qs. 31-32) : Study the following information carefully and answer the given questions based on it:

- (A) 'P × Q' means 'Q is mother of P'.
 (B) 'P + Q' means 'P is father of Q'.
 (C) 'P - Q' means 'P is brother of Q'.
 (D) 'P ÷ Q' means 'Q is sister of P'.
 31. Which of the following means 'M is niece of T'?
 (a) $M \div D + T \times R$ (b) $T - D + R \div M$
 (c) $T \times D + R \div M$ (d) Cannot be determined
 (e) None of these
 32. Which of the following statements is redundant to answer the question no. 31?
 (a) A only (b) B only
 (c) Either A or B only (d) Either C or D only
 (e) All are required

Directions (Qs. 33-34) : Study the meaning of the given symbols and answer the questions based on it.

- (i) 'P × Q' means 'Q is mother of P'.
 (ii) 'P + Q' means 'P is brother of Q'.
 (iii) 'P - Q' means 'P is sister of Q'.
 (iv) 'P ÷ Q' means 'Q is father of P'.
 33. Which of the following definitely means R is grandson of K?
 (a) $R \times T \div K$ (b) $M + R \times T \div K$
 (c) $M - R \times T \div K$ (d) Cannot be determined
 (e) None of these
 34. Which of the following statements is superfluous to answer the above question?
 (a) None (b) (i) Only
 (c) (ii) Only (d) (iii) Only
 (e) (iv) Only

Directions (Qs. 35-36) : Study the following information and answer the questions given below.

- (a) 'P ÷ Q' means 'Q is father of P'.
 (b) 'P × Q' means 'P is sister of Q'.
 (c) 'P + Q' means 'P is brother of Q'.
 (d) 'P - Q' means 'Q is mother of P'.
 35. Which of the following means R is nephew of T?
 (a) $R + N - Q \times T$ (b) $R - Q \times N \times T$
 (c) $R - N \times T$ (d) $T + M \div R$
 (e) $T - Q \div R$
 36. Which of the following is/are redundant to answer the above question?
 (a) (ii) only
 (b) (i) only
 (c) (i) and (iv) only
 (d) Either (i) and (iii) or (ii) and (iv)
 (e) Either (i) and (ii) or (iii) and (iv)

Directions (Qs. 37-38): Study the following information carefully and answer the given questions following it.

- (i) ' $P \times Q$ ' means ' Q ' is the mother of ' P '.
 (ii) ' $P - Q$ ' means ' P ' is the brother of ' Q '.
 (iii) ' $P + Q$ ' means ' P ' is the father of ' Q '.
 (iv) ' $P \div Q$ ' means ' Q ' is the sister of ' P '.

37. Which of the following means M is the daughter of K ?
 (a) $K + R \div M$ (b) $K \div M + R$
 (c) $K \times R \div M$ (d) $K - R \times M$
 (e) None of these
38. Which of the following statement(s) is redundant to answer the above question?
 (a) Both (i) and (ii) (b) (i) only
 (c) (ii) only (d) Either (i) or (iii) and (ii)
 (e) None of these

Directions (Qs. 39-43): Read the following information carefully and answer the questions given below it.

- (i) There is a group of six persons A, B, C, D, E and F in a family. They are Psychologist, Manager, Lawyer, Jeweller, Doctor and Engineer.
 (ii) The Doctor is the grandfather of F who is a Psychologist.
 (iii) The Manager D is married to A.
 (iv) C, the Jeweller, is married to the Lawyer.
 (v) B is the mother of F and E.
 (vi) There are two married couples in the family.
39. What is the profession of E?
 (a) Doctor (b) Jeweller
 (c) Manager (d) Psychologist
 (e) None of these
40. How is A related to E?
 (a) Brother (b) Uncle
 (c) Father (d) Grandfather
 (e) None of these
41. How many male members are there in the family?
 (a) One (b) Three
 (c) Four (d) Two
 (e) Can't be determined
42. What is the profession of A?
 (a) Doctor (b) Lawyer
 (c) Jeweller (d) Manager
 (e) None of these
43. Which of the following is one of the pairs of couples in the family?
 (a) AB (b) AC
 (c) AD (d) Can't be determined
 (e) None of these

Directions (Qs. 44-48): Read the following information carefully and answer the questions given below it.

P, Q, R, S, T and X are members of a family. There are two married couples. Q is an engineer and the father of T. X is the grandfather of R and is a lawyer. S is the grandmother of T and is a housewife. There is one engineer, one lawyer, one teacher, one housewife and two students in the family.

44. Who is the husband of P?
 (a) R (b) X
 (c) Q (d) S
 (e) T
45. Which of the following are two married couples?
 (a) XS, QP (b) XS, QT
 (c) XS, RP (d) TS, RX
 (e) None of these
46. Which of the following is definitely a group of a male members?
 (a) Q, X, T (b) X, T
 (c) Q, X, P (d) Q, X
 (e) None of these
47. Who is the sister of T?
 (a) R (b) S
 (c) P (d) Data inadequate
 (e) None of these
48. Which of the following can be P's profession?
 (a) Housewife (b) Engineer
 (c) Teacher (d) Engineer or Teacher
 (e) Housewife or Teacher

Directions (Qs. 49 and 50): Read the following information carefully and answer the questions which follow.

- (i) If ' $A \times B$ ' means ' A is father of B '.
 (ii) If ' $A + B$ ' means ' A is wife of B '.
 (iii) If ' $A \div B$ ' means ' A is daughter of B '.
 (iv) If ' $A - B$ ' means ' A is son of B '.
49. What will come in the place of the question mark, to establish that Q is the nephew of T in the expression ' $Q ? R \div S \times T ?$ '?
 (a) + (b) \times
 (c) - (d) \div
 (e) Either - or \div
50. Which of the following relations are true based upon the relations given in the equation ' $A - B \times C + D - E$ '?
 (a) C is mother of A (b) E is wife of B
 (c) D is brother of A (d) E is mother-in-law of C
 (e) None is true

ANSWER KEY

1	(d)	6	(b)	11	(c)	16	(d)	21	(a)	26	(c)	31	(b)	36	(b)	41	(e)	46	(d)
2	(c)	7	(b)	12	(d)	17	(c)	22	(d)	27	(a)	32	(a)	37	(a)	42	(a)	47	(d)
3	(a)	8	(b)	13	(b)	18	(a)	23	(b)	28	(c)	33	(e)	38	(a)	43	(c)	48	(c)
4	(c)	9	(b)	14	(e)	19	(c)	24	(b)	29	(d)	34	(a)	39	(e)	44	(c)	49	(c)
5	(d)	10	(d)	15	(e)	20	(a)	25	(e)	30	(e)	35	(a)	40	(d)	45	(a)	50	(e)

Hints & Explanations

1. (d) Clearly, the grandson of Anil's mother is son of Anil and wife of Anil's son is daughter in-law of Anil. Thus, Anil is the father-in-law of the girl.

2. (c) Woman's Mother's husband

↓
Woman's father

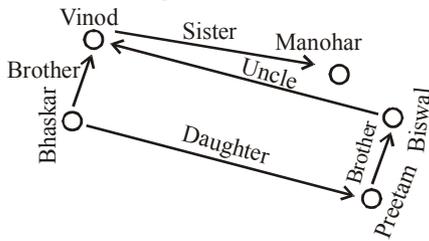
Woman's father's sister → Woman's Aunt.

Since, woman's aunt is man's aunt

∴ woman is sister of man.

3. (a) Father of Rajesh's brother is the father of Rajesh. Rajesh's father is the only son of Neha's grandfather. Hence, Rajesh's father is Neha's father. So, Neha is the sister of Rajesh.

4. (c)



Thus, Vinod will be uncle of Biswal.

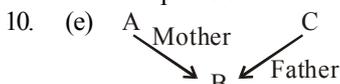
5. (d) The only sister of the brother of the woman will be the woman herself and she is the mother of that man. Thus, the woman is the daughter of the maternal grandmother of that man.

6. (b) Since the narrator has no brother, his father's son is he himself. So, the man who was talking is the father of the man in the photograph, i.e. the man in the photograph is his son.

7. (b) Clearly, the speaker's brother is Pramod's maternal uncle. So, the speaker is Pramod's mother or his father's wife.

8. (b) Clearly, only daughter of her mother is woman herself. So, that woman is the wife of man.

9. (b) Father's wife — Mother; Mother's daughter — Sister; Sister's younger brother — His brother. So, the boy is Deepak's brother.



∴ C has three children but we can't say that he has three daughters or three sons.

So, options (a) and (b) are incorrect.

Also, we don't know that B is a boy or girl.

So, option (c) is also incorrect.

11. (c) Clearly, the lady is the grandmother of man's sister's son i.e., the mother of the mother of man's sister's son i.e., the mother of man's sister.

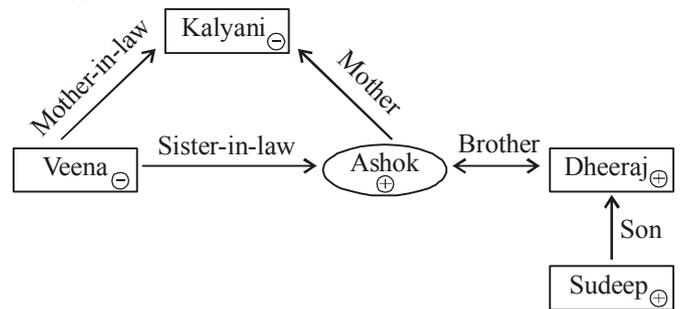
So, the lady is man's mother.

12. (d) Without knowing the gender of C, we can't be determined whether B is sister of C or B is brother of C. Similarly without knowing the gender of B we can't be determined whether C is sister of B or C is brother of B. Therefore, both (i) and (ii) are necessary.

13. (b) Girl is daughter of the only child of Abhishek's father or, Girl is daughter of Abhishek
Hence, girl is daughter of Abhishek's wife.

14. (e)

15. (e)



16. (d)

17. (c) Photograph is the son of Akhil's mother's only son.
or, Photograph is the son of Akhil.

or, Akhil is the father of the boy.

18. (a) Son of Namrata's grandfather's only child is Namrata's brother

19. (c) * * * Veena
(-) - (+) ↔ (-)

↓ ↓
Kedar(+) Nitin

Hence, Kedar is Veena's nephew.

20. (a) Clearly, B and C are siblings. While A and D are parents. Now, A is the mother., Hence, D must be the father.

21. (a) One's grandfather's only son ⇒ one's father. And the son of one's father ⇒ One's brother or oneself. Hence, the mother of the boy is Meena's mother.

22. (d) As 'S' is a female in options (a) and (b), they can be rejected directly. The gender of 'S' in option (c) is not known, hence, it can also be eliminated. Now, check option (d).

(-) P ↔ Q (+)

↓
R (-) - S (+) - T

[Clearly, S is son of P.]

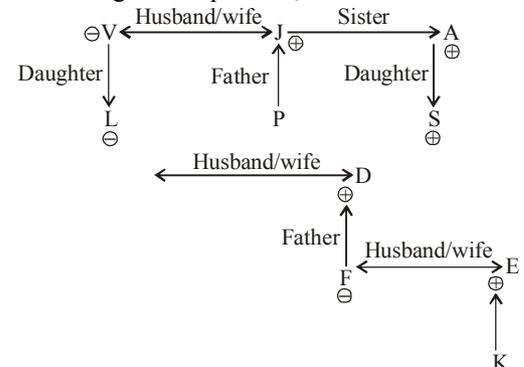
23. (b) (c) is ruled out because we need two generation-change signs (- and ÷) between P and T. Same is the case with (a). Again, (d) is ruled out because P + Q does not give the sex of P. Now, check (b)

P (-) ↔ Q (+)

↓
R (-)

↓
T

24. (b) According to the question,



Here, S and P are first cousins.

NUMBER TEST

In such test, generally you are given a long series of numbers. The candidate is required to find out how many times a number satisfying the conditions specified in the question occurs.

EXAMPLE 4. How many 8s are there in the following number sequence which are immediately preceded by 5 but not immediately followed by 3?

3 8 5 8 4 5 8 3 9 8 8 5 8 8 8 9 3

- (a) One
- (b) 4
- (c) 3
- (d) 2
- (e) None of these

Sol. Let us see the following :

3 8 8 4 5 8 3 9 8 8 5 8 8 8 9 3

Clearly, two such 8s are there.

∴ Option (b) is correct.

EXAMPLE 5. What will be last digit of the 3rd number from top when the numbers given below are arranged in descending order after reversing the position of the digits within each number?

517 325 639 841 792

- (a) 2
- (b) 5
- (c) 7
- (d) 3
- (e) None of these

Sol. The given numbers are :

517 325 639 841 792

After reversing, the numbers become as follows :

715 523 936 148 297

When arranged in descending order the numbers become as follows :

936 715 523 297 148

Now, the third number from top is 523. Hence, the last digit of 523 is 3.

∴ Option (d) is correct.

RANKING TEST

In such problems, the ranks of a person both from the top and from the bottom are given and on the basis of this the total number of persons is asked. Sometimes question is twisted also and position of a particular person is asked.

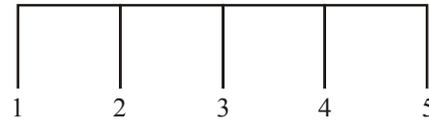
Shortcut Approach

Formulas to determine the positioning of a person

- (1) Left + Right = Total + 1
- (2) Left = Total + 1 - Right
- (3) Right = 1 + 1 - left
- (4) Total = left + Right

Note : The above formulas are only for a single person's position

E.g.



Shortcut Approach

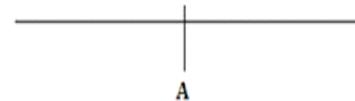
Same for vertical & Horizontal

- (1) Total + 1 = top + Bottom
- (2) Top = Total + 1 - Bottom
- (3) Bottom = Total + 1 - Top
- (4) Total = Top + Bottom

EXAMPLE 6. In a row of 40 students, A is 13th from the left end, find the rank from right end.

- (a) 27
- (b) 28
- (c) 29
- (d) 30
- (e) None of these

Sol. (b) Total = 40



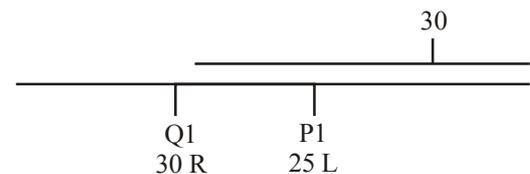
$$\begin{aligned} \text{A's rank from right side} &= \text{Total} + 1 - \text{left} \\ &= 40 - 13 + 1 \\ &= 27 + 1 \\ &= 28 \end{aligned}$$

EXAMPLE 7: In a row 'P' is 25th from left end, Q is 30th from right end. Find the total number of students in all.

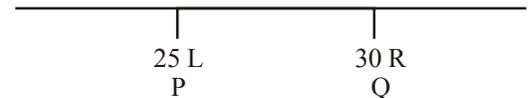
- (a) 25
- (b) 30
- (c) 45
- (d) Cannot be determined
- (e) None of these

Sol. (d) Can't be Determined as there are more than 1 possibilities

Case 1



Case 2



Note : When total is not given and 2 persons positions from left and right are given, then answer is Cannot be determined.

EXAMPLE 8 : In a row of some children, S is 25th from left, T is 60th from right. If they interchanged their positions, then T becomes 70th from right end

EXERCISE

- Mohan and Suresh study in the same class. Mohan has secured more marks than Suresh in the terminal examination. Suresh's rank is seventh from top among all the students in the class. Which of the following is **definitely true**?
 - Mohan stood first in the terminal examination.
 - There is at least one student between Mohan and Suresh in the rank list.
 - There are at the most five students between Mohan and Suresh in the rank list.
 - Suresh is five ranks lower than Mohan in the rank list.
 - None of these
- Fifteen children are standing in a row facing north. Ravi is to the immediate left of Prabha and is eighth from the left end. Arjun is second from the right end. Which of the following statements is not true?
 - Prabha is 7th from right end.
 - There are four children between Prabha and Arjun.
 - There are five children between Ravi and Arjun.
 - Arjun is 13th from the left end.
 - Ravi is exactly in the middle.
- Rajnish is older than Rajesh and Raman. Ramesh is older than Rajesh but younger than Rajeev. Raman is older than Rajeev. Who among them is oldest?
 - Rajeev
 - Rajesh
 - Rajnish
 - Ramesh
 - None of these
- If every second Saturday and all Sundays are holidays in a 30 days month beginning on Saturday, then how many working days are there in that month? (Month starts from Saturday)
 - 20
 - 21
 - 22
 - 23
 - 24
- If the positions of the first and the fifth digits of the number 83721569 are interchanged, similarly, the positions of the second and the sixth digits are interchanged, and so on, which of the following will be the third from the right end after the rearrangement?
 - 6
 - 3
 - 2
 - 7
 - None of these
- The train for Lucknow leaves every two and half hours from New Delhi railway station. An announcement was made at the station that the train for Lucknow had left 40 minutes ago and the next train will leave at 18.00 hrs. At what time was the announcement made?
 - 15.30 hrs
 - 17.10 hrs
 - 16.00 hrs
 - 15.50 hrs
 - None of these
- If the positions of the first and the sixth digits of the group of digits 5904627813 are interchanged, similarly, the positions of the second and the seventh are interchanged, and so on, which of the following will be the fourth from the right end after the rearrangement?
 - 4
 - 9
 - 1
 - 0
 - None of these
- In a row of boys Akash is fifth from the left and Nikhil is eleventh from the right. If Akash is twenty-fifth from the right then how many boys are there between Akash and Nikhil?
 - 14
 - 13
 - 15
 - 12
 - None of these
- The positions of the first and the sixth digits in the number 3597280164 are interchanged. Similarly, the positions of the second and the seventh digits are interchanged, and so on. Which of the following will be the fourth digit from the right end after the rearrangement?
 - 5
 - 3
 - 9
 - 4
 - None of these
- In a shop, there were 4 dolls of different heights M, N, O and P. 'P' is neither as tall as 'M' nor as short as 'O'. 'N' is shorter than 'P' but taller than 'O'. If Anvi wants to purchase the tallest doll, which one should she purchase?
 - Either M or P
 - Either P or N
 - Only P
 - Only M
 - None of these
- Ketan takes casual leave only on first working day of every month. The office has weekly offs on Saturday and Sunday. In a month of 30 days, the first working day happened to be Tuesday. What will be the day for his next casual leave?
 - Wednesday
 - Thursday
 - Friday
 - Monday
 - None of these
- Abhay gave an application for a new ration card to the clerk on Monday afternoon. Next day was a holiday. So the clerk cleared the papers on the next working day on resumption of duty. The senior clerk checked it on the same day but forwarded it to the head clerk on next day. The head clerk decided to dispose the case on the subsequent day. On which of the following days was the case put up to the head clerk by the senior clerk?
 - Wednesday
 - Thursday
 - Friday
 - Saturday
 - None of these
- "Jayant could not reach Pune from Mumbai on last Saturday day because of non-availability of tickets". Which of the following, if true, would support and strengthen this statement?
 - Last Friday evening, he had booked a luxury car for 3 days for going to a picnic spot near Vasal for his boss.

- (ii) He was seen at railway reservation counter requesting for a ticket for Pune on Saturday morning.
- (iii) His secretary had contacted several travel agents to get a seat for Jayant on last Thursday, Friday and even Saturday morning.
- (iv) Jayant attended a dinner party last Saturday evening.
- (v) Jayant's wife was reluctant to go to Pune last week.
- (a) Only (i), (ii) and (v) (b) Only (ii) and (iii)
- (c) Only (iv) and (v) (d) Only (i), (iii) and (iv)
- (e) None of these
14. In a class of 180, when girls are twice the number of boys, Rupesh (a boy) ranked 34th from top. If there are 18 girls ahead of Rupesh, how many boys are after him in rank ?
- (a) 45 (b) 44
- (c) 60 (d) Cannot be determined
- (e) None of these
15. If it is possible to make a number which is perfect square of a two-digit odd number with the second, the sixth and ninth digits of the number 187642539. which of the following is the digit in the unit's place of that two-digit odd number ?
- (a) 1
- (b) 7
- (c) 9
- (d) No such number can be made
- (e) More than one such number can be made
16. A, B, C, D and E, when arranged in descending order of their weight from top, A becomes third, E is between D and A, C and D are not at the top. Who among them is the second?
- (a) C (b) B
- (c) E (d) Data inadequate
- (e) None of these
17. Mohini went to the movies nine days ago. She goes to the movies only Thursday. What day of the week today?
- (a) Thursday (b) Saturday
- (c) Sunday (d) Tuesday
- (e) None of these
18. Nitin was counting down from 32. Sumit was counting upwards the numbers starting from 1 and he was calling out only the odd numbers. What common number will they call out at the same time if they were calling out at the same speed?
- (a) 19
- (b) 21
- (c) 22
- (d) They will not call out the same number
- (e) None of these
19. Count 9 in the numbers sequence which is followed by 7 and preceded by either 4 or 5. How many 9 are there in the sequence ?
- 1 2 3 7 8 9 1 4 9 7 3 6 9 8 1 5 3 5 9 7
- (a) 1 (b) 2
- (c) 3 (d) 4
- (e) None of these
20. Find out how many times 2, 3 and 7 have present together, and always 3 in middle and 2 and 7 places either side of 3 ?
- 1 1 1 1 3 3 2 2 2 3 7 7 3 3 3 6 6 4 7 3 2 4 9 8 7 7 3 2 3 3 3 4 4 2 3 7
- (a) 1 (b) 2
- (c) 3 (d) 4
- (e) None of these
21. Some boys are sitting in a line. Mahendra is on 17th place from left and Surendra is on 18th place from right. There are 8 boys in between them. How many boys are there in the line?
- (a) 43 (b) 42
- (c) 41 (d) 44
- (e) None of these
22. In a line of boys, Ganesh is 12th from the left and Rajan is 15th from the right. They interchange their positions. Now, Rajan is 20th from the right. What is the total no. of boys in the class?
- (a) 30 (b) 29
- (c) 32 (d) 31
- (e) None of these
23. In a queue, Vijay is fourteenth from the front and Jack is seventeenth from the end, while Mary is in between Vijay and Jack. If Vijay be ahead of Jack and there be 48 persons in the queue, how many persons are there between Vijay and Mary?
- (a) 8 (b) 7
- (c) 6 (d) 5
- (e) None of these
24. Malay Pratap is on 13th position from the starting and on 17th position from the end in his class. He is on 8th position from the starting and on 13th position from the end among the students who passed. How many students failed?
- (a) 7 (b) 8
- (c) 9 (d) Can not be determined
- (e) None of these
25. In a row of students, Ramesh is 9th from the left and Suman is 6th from the right. When they both interchange their positions then Ramesh will be 15th from the left. What will be the position of Suman from the right?
- (a) 12th (b) 13th
- (c) 15th (d) 6th
- (e) None of these
26. In a row of children, Bhusan is seventh from the left and Motilal is fourth from the right. When Bhusan and Motilal exchange positions, Bhusan will be fifteenth from the left. Which will be Motilal's position from the right ?
- (a) Eighth (b) Fourth
- (c) Eleventh (d) Twelfth
- (e) None of these
27. In a line of students Madhukar is on 15th position from right and Dhirendra is on 18th position from left. When they both interchange their positions then Madhukar is on 20th position from right. What will be the position of Dhirendra from left?
- (a) 18th (b) 24th
- (c) 23rd (d) 20th
- (e) None of these
28. In a class of 45 students, among those students who passed, Anmol secured 11th position from upwards and 15th from downwards. How many students failed?
- (a) 19 (b) 20
- (c) 15 (d) 18
- (e) None of these

29. In a row at a bus stop, A is 7th from the left and B is 9th from the right. Both of them interchange their positions and thus A becomes 11th from the left. How many people are there in that row?
 (a) 18 (b) 19
 (c) 20 (d) 21
 (e) None of these
30. In a row of boys facing the North, A is sixteenth from the left end and C is sixteenth from the right end. B, who is fourth to the right of A, is fifth to the left of C in the row. How many boys are there in the row?
 (a) 39 (b) 40
 (c) 41 (d) 42
 (e) None of these
31. In a class of 60, where girls are twice that of boys, kamal ranked seventeenth from the top. If there are 9 girls ahead of kamal, how many boys are after him in rank?
 (a) 3 (b) 7
 (c) 12 (d) 23
 (e) None of these
32. Ravi is 7 ranks ahead of Sumit in a class of 39. If Sumit's rank is seventeenth from the last, what is Ravi's rank from the start?
 (a) 14th (b) 15th
 (c) 16th (d) 17th
 (e) None of these
33. In a queue, A is eighteenth from the front while B is sixteenth from the back. If C is twentieth from the front and is exactly in the middle of A and B, then how many persons are there in the queue?
 (a) 45 (b) 46
 (c) 47 (d) 48
 (e) None of these
34. In a row of 21 girls, when Monika was shifted by four place towards the right, she became 12th from the left end. What was her earlier position from the right end of the row?
 (a) 9th (b) 10th
 (c) 11th (d) 14th
 (e) None of these
35. In a row of girls, Rita and Monika occupy the ninth place from the right end and tenth place from the left end respectively. If they interchange their places, then Rita and Monika occupy seventh place from the right and eighteenth place from the left respectively. How many girls are there in the row?
 (a) 25 (b) 26
 (c) 27 (d) Data inadequate
 (e) None of these
36. How many 3s are there in the following list in which followed by 9 and preceded by 2, 3 or 4?
 1 1 2 3 9 4 4 5 5 5 5 3 3 9 8 7 7 7 8 8 8 5 5 4 3 9 6 6 6 6
 (a) 1 (b) 2
 (c) 3 (d) 4
 (e) None of these
37. Adi remembers that his sister Ana's date of birth falls after 20th September but before 23rd September, while his father remembers that Ana's birthday falls after 21st and before 24th September. What is the correct date of birth of Ana?
 (a) 21st September (b) 22nd September
 (c) 23rd September (d) 24th September
 (e) None of these
38. Outside of an assembly house Jatin was told by a person that each meeting takes place after 3hr 15min. Last meeting has been over just before 45 minutes and next meeting will take place at 2 pm. At what time did Jatin receive this information?
 (a) 10.20 am (b) 11.45 am
 (c) 12.30 am (d) 11.30 am
 (e) None of these
39. Meeta correctly remembers that her father's birthday is after 8th July but before 12th July. Her brother correctly remembers that their father's birthday is after 10th July but before 15th July. On which day of July was definitely their father's birthday?
 (a) 10th (b) 11th
 (c) 10th or 11th (d) Can't be determined
 (e) None of these
40. Abha correctly remembers that her mother's birthday is before Friday but after Monday. Her brother Abhay correctly remembers that their mother's birthday is after Wednesday but before Saturday. On which of the following days does their mother's birthday definitely fall?
 (a) Tuesday (b) Wednesday
 (c) Thursday (d) Friday
 (e) Can't be determined

ANSWER KEY

1	(c)	5	(b)	9	(a)	13	(b)	17	(b)	21	(a)	25	(a)	29	(b)	33	(c)	37	(b)
2	(d)	6	(e)	10	(d)	14	(b)	18	(d)	22	(d)	26	(d)	30	(b)	34	(d)	38	(d)
3	(c)	7	(b)	11	(b)	15	(b)	19	(b)	23	(b)	27	(c)	31	(c)	35	(b)	39	(b)
4	(d)	8	(b)	12	(b)	16	(a)	20	(d)	24	(c)	28	(b)	32	(c)	36	(c)	40	(c)

Hints & Explanations

2. (d) 8th, 9th, 14th
Ravi Prabha Arjun
3. (c) Rajnish > Rajesh, Raman... (i)
Rajeev > Ramesh > Rajesh ... (ii)
Raman > Rajeev ... (iii)
Combining all, we get
Rajnish > Raman > Rajeev > Ramesh > Rajesh
4. (d) As month begins on Saturday, so 2nd, 9th, 16th, 23rd, 30th days will be Sundays. While 8th and 22nd days are second Saturdays. Thus, there are 7 holidays in all. Hence, no. of working days = $30 - 7 = 23$
5. (b) New arrangement of numbers is as follows: 15698372
Hence, third number from right end is 3.
6. (e) Clearly, the last train left two and half hours before 18.00 hrs i.e., at 15.30 hrs. But this happened 40 minutes before the announcement made. So, the announcement made at 16.10 hrs.
7. (b) In the original group of digits '7' is fourth from the right, which is interchanged with '9'. The new series is 2781359046.
8. (b) There are $(25 - 11 - 1) = 13$ boys between Akash and Nikhil.
9. (a) After interchanging the number becomes as follows: 8 0 1 6 4 3 5 9 7 2
Hence, the fourth digit from the right end is 5.
10. (d) The correct order of dolls according to descending order of their heights are:
 $M > P > N > O$
Therefore, Anvi will purchase the doll M.
11. (b) If the first working day happened to be Tuesday then 8th, 15th, 22nd and 29th of the month will be Tuesday. Hence, the last day of the month will be Wednesday (since, number of days in the month is 30). Thus, the next casual leave will be on Thursday.
12. (b) (i) Submitted application form : Monday
(ii) Holiday : Tuesday
(iii) Clearance from clerk : Wednesday
(iv) Clearance from senior clerk : Wednesday
(v) Submitted to the head clerk : Thursday
13. (b) Here (i) weakens the statement whereas (ii) and (iii) support and strengthen the statement. But (iv) and (v) neither weaken nor strengthen the statement.
In order to decide whether a statement strengthens (or weakens) an argument, follow these steps.
- Step I:** Break up the argument mentally. See what is the supporting premise, what is the assumption and what is the conclusion.
- Step II:** If a suggested statement supports any of the three it would be a strengthening statement. If it contradicts any of the three it would be a weakening statement.
- In order to decide which statement strengthens (or weakens) an argument the most, follow an additional step:
- Step III:** If a suggested statement supports (or weakens) the basic assumption of an argument, it would be the most strengthening (weakening) argument.
- Or**
- If a suggested statement provides a very strong proof (or contradictory proof) in favour of (or in contradiction to) the conclusion of the argument, it would be the most strengthening (or weakening) statement.
14. (b) No. of boys upto 34th rank = $34 - 18 = 16$
Total number of boys = $\frac{180}{2+1} \times 1 = 60$
Number of boys after the rank of Rupesh = $60 - 16 = 44$
15. (b) The specified digits are 8, 2 and 9. Now, we know a perfect square number does not have 8 and 2 at unit's place. Therefore, we can make only two three-digit numbers from it, i.e., 829 and 289. Among these two numbers, 289 is a perfect square number, i.e., square of 17. Thus, unit's digit is 7 and ten's digit is 1.
16. (a) ----
---A---
DEA - - [It is not possible as D is not at the top.]
--AED
BCAED
Hence, C is second among them.
17. (b) Clearly, nine days ago, it was Thursday.
Today is Saturday.
18. (d) Nitin : 32 31 30 29 28 27 26 25 24 23 22 21 20...
Sumit : 1 3 5 7 9 11 13 15 17 19 21 23 25...
Clearly, both will never call out the same number.
19. (b) Two 9 are present which is followed by 7 and preceded by either 4 or 5.
1 2 3 7 8 1 [4 9 7] 3 6 9 8 1 5 3 [5 9 7] 1 1 2 7
20. (d) Four times 3 present together with 2 and 7, where 2 and 7 present either side of 3.
1 1 1 1 3 3 2 2 [2 3 7] 7 3 3 3 6 6 4 [7 3 2] 4 9 8 7 [7 3 2] 3 3 3 4 4 [2 3 7]

21. (a) Total boys

$$= \left[\begin{array}{c} \text{Mahendra's} \\ \text{place} \\ \text{from left} \end{array} + \begin{array}{c} \text{Surendra's} \\ \text{place} \\ \text{from right} \end{array} \right] + \left[\begin{array}{c} \text{Boys between} \\ \text{them} \end{array} \right]$$

$$= [17 + 18] + 8 = 43$$
22. (d) Total students

$$= [\text{First position of Ganesh} + \text{Second position of Rajan}] - 1$$

$$= [12 + 20] - 1 = 31$$
23. (b) Number of persons between Vijay and Jack

$$= 48 - (14 + 17) = 17$$
 Now, Mary lies in middle of these 17 persons i.e., at the eighth position.
 So, number of persons between Vijay and Mary = 7.
24. (c) Total boys

$$= [\text{Malay's place from starting} + \text{Malay's place from end}] - 1$$

$$= [13 + 17] - 1 = 29$$
 Number of passed students

$$= [\text{Malay's place from starting} + \text{Malay's place from end}] - 1$$

$$= [8 + 13] - 1 = 20$$

$$\therefore \text{Number of failed students} = 29 - 20 = 9$$
25. (a) Position of Suman from right

$$= \left[\begin{array}{c} \text{Difference of} \\ \text{Ramesh's position} \end{array} + \begin{array}{c} \text{First position} \\ \text{of Suman} \end{array} \right]$$

$$= [(15 - 9) + 6] = 12\text{th}$$
26. (d) After exchanging positions, Bhusan becomes fifteenth instead of seventh from the left, it means there are 7 students between them. So Motilal's position from the right will become twelfth. [i.e., $(15 - 7) + 4 = 12$]
27. (c) Second place of Dhirendra from left

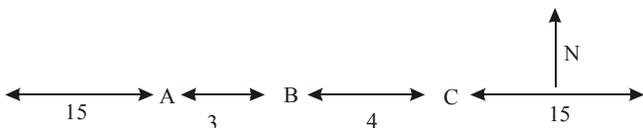
$$= \left[\begin{array}{c} \text{Difference of} \\ \text{places of} \\ \text{Madhukar} \end{array} + \begin{array}{c} \text{First place} \\ \text{of Dhirendra} \end{array} \right]$$

$$= [(20 - 15) + 18] = 23\text{rd}$$
28. (b) Failed Students

$$= [\text{Total students}] - [(\text{Anmol's position from upwards}) + (\text{Anmol's position from downwards}) - 1]$$

$$= 45 - [(11 + 15) - 1] = 20$$
29. (b) After interchanging their positions, position of A from left = 11
 Then positions of A from right = 9.

$$\therefore \text{The total no. of people in the row} = (9 + 11) - 1 = 19.$$
30. (b)

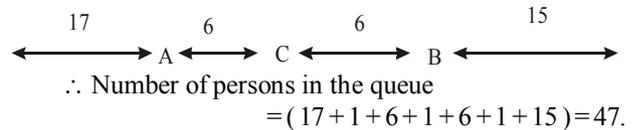


Clearly, according to the given conditions, there are 15 boys to the left of A, as well as to the right of C. Also, B lies between A and C such that there are 3 boys between A and B and 4 boys between B and C. So, number of boys in the row = $(15 + 1 + 3 + 1 + 4 + 1 + 15) = 40$.

31. (c) Let the number of boys be x.
 Then, number of girls = 2x.

$$\therefore x + 2x = 60 \text{ or } 3x = 60 \text{ or } x = 20.$$
 So, number of boys = 20 and number of girls = 40.
 Number of students behind Kamal in rank $(60 - 17) = 43$.
 Number of girls ahead of Kamal in rank = 9.
 Number of girls behind Kamal in rank = $(40 - 9) = 31$

$$\therefore \text{Number of boys behind Kamal in rank} = (43 - 31) = 12.$$
32. (c) Sumit is 17th from the last and Ravi is 7 ranks ahead of sumit. So, Ravi is 24th from the last.
 Number of students ahead of Ravi in rank = $(39 - 24) = 15$.
 So, Ravi is 16th from the start.
33. (c) A is 18th from front and C is 24th
 Number of persons between A and C = 6.
 Since C is exactly in middle of A and B, so number of persons between C and B = 6.



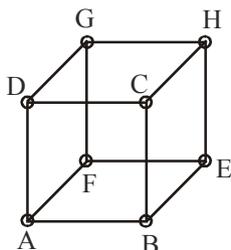
34. (d) The change of place by Monika can be shown as under.
- | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|----|----|---|----|----|----|----|----|----|----|----|----|--|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | M | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | |
- Clearly, Monika's earlier position was 8th from the left and 14th from the right end.
35. (b) Since Rita and Monika exchange places, so Rita's new position is the same as Monika's earlier positions. This position is 17th from the right and 10th from the left

$$\therefore \text{Number of girls in the row} = (16 + 1 + 9) = 26.$$
36. (c) Three numbers in which followed by 9 and preceded 2, 3 or 4
 1 1 [239] 4 4 5 5 5 5 [339] 8 7 7 7 8 8 8 5 5 [439] 6 6 6 6
37. (b) The possible date of birth of Ana according to Adi are 21st and 22nd September. But according to his father Ana's date of birth should be 22nd and 23rd September. Now after both conclusion there is 22nd September common date, so answer is that (b).
38. (d) 2pm = 14.00 so, $(14.00 - 3.15) + 0.45 = 11.30$ am is answer.
39. (b) Look at Meeta's father's and brother's statement carefully. According to their statement it is clear that Meeta's father's birthday is after 10th July but before 12th July. Thus, we can conclude that the birthday was on 11th July.
40. (c) According to the given statement it is clear that Abha's mother's birthday was after Wednesday but before Friday. Hence, we conclude that birthday was on Thursday.

Cube & Dice

CUBE

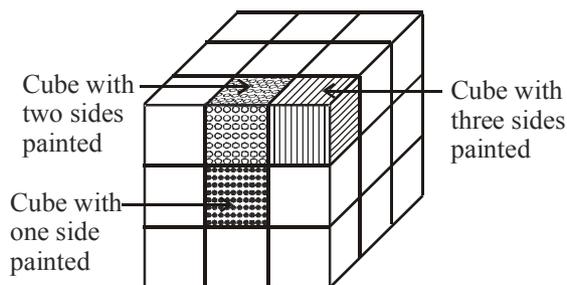
A cube is three dimensional figure whose length, breadth and height are equal and any two adjacent faces are inclined to each other at 90° . It has 6 faces, 8 corners and 12 edges.



- Corners of the cube are A, B, C, D, E, F, G and H.
- Edges of the cube are AB, BE, EF, AF, AD, CD, BC, EH, CH, GH, DG and FG.
- Faces of the cube are ABCD, EFGH, CDGH, BCHE, ABEF and ADFG.

When a cube is painted on all of its faces with any colour and further divided into various smaller cubes of equal size, we get following results :

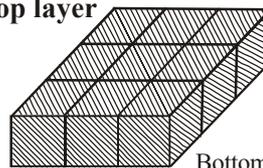
- Smaller cubes with no face painted will present inside faces of the undivided cube.
- Smaller cubes with one face painted will present on the faces of the undivided cube.
- Smaller cubes with two faces painted will present on the edges of undivided cube.
- Smaller cubes with three faces painted will present on the corners of the undivided cube.



The above figure may be analysed by dividing it into three horizontal layers :

Layer I or top layer : The central cube has only one face coloured, four cubes at the corner have three faces coloured and the remaining 4 cubes have two faces coloured.

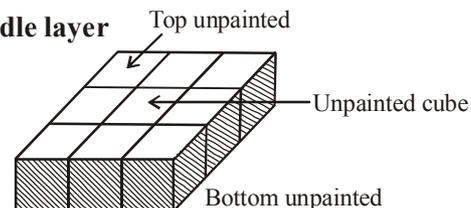
Top layer



Bottom unpainted

Layer II or middle layer : The central cube has no face coloured, the four cubes at the corner have two faces coloured and the remaining 4 cubes have only face coloured.

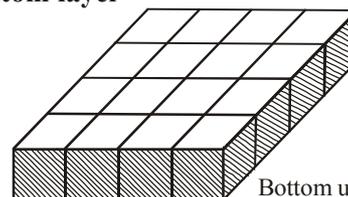
Middle layer



Bottom unpainted

Layer III or bottom layer : The central cube has only one face coloured, four cubes at the corner have three faces coloured and the remaining 4 cubes have two faces coloured.

Bottom layer



Bottom unpainted

Also, if n = no. of divisions on the faces of cube

$$= \frac{\text{Length of the edge of undivided cube}}{\text{Length of the edge of one smaller cube}}$$

Shortcut Approach

- Number of smaller cubes with no face painted = $(n-2)^3$
- Number of smaller cubes with one face painted = $(n-2)^3 \times 6$
- Number of smaller cubes with two faces painted = $(n-2) \times 12$
- Number of smaller cubes with three faces painted = 8

EXAMPLE 1. A cube is painted blue on all faces is cut into 125 cubes of equal size. Now, answer the following questions :

- How many cubes are not painted on any face?
 - 8
 - 16
 - 18
 - 27
 - None of these

(ii) How many cubes are painted on one face only?

- (a) 8 (b) 16
 (c) 36 (d) 54
 (e) None of these

Sol. Since there are 125 smaller cubes of equal size, therefore,
 $n = \text{no. of divisions on the face of undivided cube} = 5$.

- (i) (d) Number of cubes with no face painted $= (n-2)^3$
 $= (5-2)^3 = 27$
 (ii) (d) Number of cubes with one face painted $= (n-2)^2 \times 6$
 $= (5-2)^2 \times 6$
 $= 54$

EXAMPLE 2. A cube of side 4 cm is painted black on the pair of one opposite surfaces, blue on the pair of another opposite surfaces and red on remaining pair of opposite surfaces. The cube is now divided into smaller cubes of equal side of 1 cm each. Then,

I. Find the number of smaller cubes with three surfaces painted.

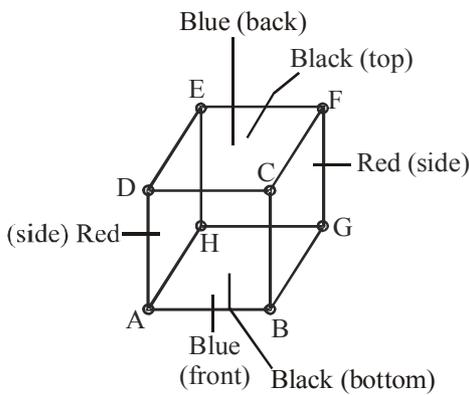
II. Find the number of smaller cubes with two surfaces painted. And out of this

- (i) Find the number of cubes with two surfaces painted with black and blue colour.
 (ii) Find the number of cubes with two surfaces painted with blue and red colour.
 (iii) Find the number of cubes with two surfaces painted with black and red colour.

III. Find the number of smaller cubes with one surface painted. And out of this

- (i) Find the number of cubes with one surface painted with black colour.
 (ii) Find the number of cubes with one surface painted with blue colour.
 (iii) Find the number of cubes with one surface painted with red colour.

Sol.



Here, $n = \frac{4}{1} = 4$

I. Number of smaller cubes with three surfaces painted = 8
 (All three surfaces painted with different colours black, blue and red)

II. Number of smaller cubes with two surfaces painted $= (4-2) \times 12 = 24$

Now, let faces ABCD and EFGH are painted with Blue. Faces BCFG and ADEH are painted with Red. Faces ABGH and CDEF are painted with Black. Therefore,

(i) Number of cubes with two surfaces painted with black and blue colour $= 2(\text{cubes along with edge AB}) + 2(\text{cubes along with edge CD}) + 2(\text{cubes along with edge GH}) + 2(\text{cubes along with edge EF}) = 8$

(ii) Number of cubes with two surfaces painted with blue and red colour $= 2(\text{cubes along with edge AD}) + 2(\text{cubes along with edge BC}) + 2(\text{cubes along with edge FG}) + 2(\text{cubes along with edge EH}) = 8$

(iii) Number of cubes with two surfaces painted with black and red colour $= 2(\text{cubes along with edge DE}) + 2(\text{cubes along with edge CF}) + 2(\text{cubes along with edge BG}) + 2(\text{cubes along with edge AH}) = 8$

III. Number of smaller cubes with one surfaces painted $= (4-2)^2 \times 6 = 24$

(i) Number of cubes with one surface painted with black colour $= 4(\text{cubes on face ABGH}) + 4(\text{cubes on face CDEF}) = 8$

(ii) Number of cubes with one surface painted with blue colour $= 4(\text{cubes on edge face ABCD}) + 4(\text{cubes on face EFGH}) = 8$

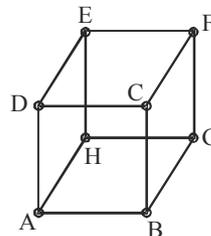
(iii) Number of cubes with one surface painted with red colour $= 4(\text{cubes on edge face ADEH}) + 4(\text{cubes on face BCFG}) = 8$

EXAMPLE 3. A cube is painted red on two adjacent faces and on one opposite face, yellow on two opposite faces and green on the remaining face. It is then cut into 64 equal cubes.

How many cubes have only one red coloured face?

- (a) 4 (b) 8
 (c) 12 (d) 16

Sol. (c)



Let faces ABCD, ABGH and CDEF are painted with red colour.

Faces BCFG and ADEH are painted with yellow and EFGH is painted with green colour.

Clearly the cubes which have only one red coloured face and all other faces uncoloured are the four central cubes at each of the three faces ABCD, ABGH and CDEF. Thus, there are $4 \times 3 = 12$ such cubes.

Directions (for Examples 4 to 7) : Read the information given below to answer the questions that follow.

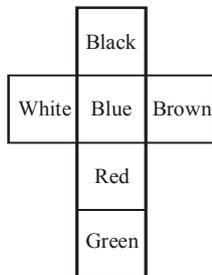
- I.** A cube has six sides, each of which has a different colour : black, blue, brown, green, red and white.
II. The red side is opposite to the black.
III. The green side is between the red and the black.

- IV. The blue side is adjacent to the white.
- V. The brown side is adjacent to the blue.
- VI. The red side is the bottom face.

EXAMPLE 4. The four colours adjacent to green are :

- (a) black, blue, brown, red
- (b) black, blue, brown, white
- (c) black, blue, red, white
- (d) black, brown, red, white

Sol. (d) When the cube is unfolded, it will look like as



The four colours adjacent to green are black, brown, red and white.

EXAMPLE 5. Which of the following can be deduced from the statements I, II and VI ?

- (a) Black is on the top
- (b) Blue is on the top
- (c) Brown is on the top
- (d) Brown is opposite to black

Sol. (a) The red side is opposite to the black. Therefore, if red is at the bottom, black will be at the top.

EXAMPLE 6. Which of the following statements given above adds no information ?

- (a) II
- (b) III
- (c) V
- (d) VI

Sol. (d) VI does not add to the information provided by I – V.

EXAMPLE 7. If the red side is exchanged for the green side and the blue is swapped for black, then which of the following is false ?

- (a) Red is opposite to black.
- (b) White is adjacent to brown.
- (c) Green is opposite to blue.
- (d) White is adjacent to blue.

Sol. (b) Adjacent to white, we have brown.

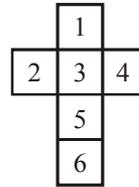
DICE

A dice is three-dimensional figure with 6 surfaces. It may be in the form of a cube or a cuboid. After observing these figures, we have to find the different side (opposite or adjacent sides) of the dice.

Dice Formation

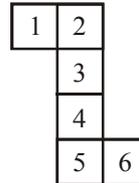
A Dice is formed by folding a sheet of paper. These forms may be

Form 1:



Number 1 is opposite to 5.
Number 2 is opposite to 4.
Number 3 is opposite to 6.

Form 2:



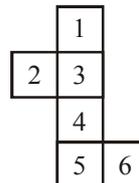
Number 1 is opposite to 6.
Number 2 is opposite to 4.
Number 3 is opposite to 5.

Form 3:



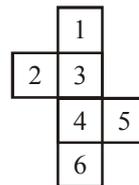
Number 1 is opposite to 3.
Number 2 is opposite to 5.
Number 4 is opposite to 6.

Form 4:



Number 1 is opposite to 4.
Number 2 is opposite to 6.
Number 3 is opposite to 5.

Form 5:

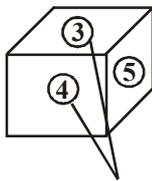


Number 1 is opposite to 4.
Number 2 is opposite to 5.
Number 3 is opposite to 6.

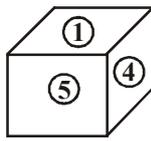
Types of Dice

There are two types of Dice.

1. **Ordinary Dice :** In this type of dice, the sum of opposite sides is not 7 but the sum of two adjacent sides are seven.
2. **Standard Dice:** In such type of dice, the sum of opposite sides is 7 or sum of adjacent side is not 7.



Ordinary Dice
 $4+3 = 7$



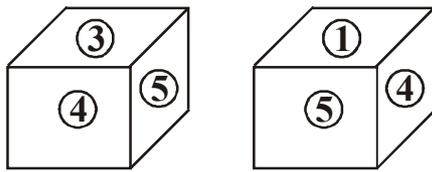
Standard Dice
Opposite of 16 (since $1+6 = 7$)
Opposite of 52 (since $5+2 = 7$)
Opposite of 34 (since $3+4 = 7$)

Here,
 $1+4 = 5$
 $4+5 = 9$
 $1+5 = 6$

DIFFERENT RULES FOR SOLVING QUESTIONS RELATED TO DICE

Rule- 1 :

If two sides of cubes are common(has same numbers or symbols), then the remaining two will be opposites of each other.

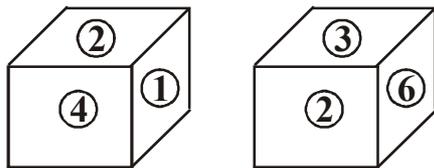


In above shown two dice, number 4 and 5 are common in both dice, hence, 3 and 1 will be opposite to each other.

Rule 2:

If one side of Dices is common

If one side of given dices are common then list these sides (numbers on them) either in clock-wise or anti-clockwise. Comparing the numbers obtained from both dices will give you the opposite numbers. See below given figure:



In this figure, number 2 is common in both dices. Now, writing the remaining no, in clock-wise direction, we get:

- 2.....1.....4 (dice 1)
- 2.....3.....6 (dice 2)

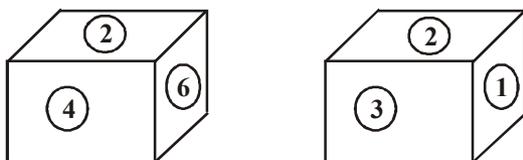
Through the above observed data, we can say that:

- 1 is opposite to 3
- 4 is opposite to 6
- 2 is opposite to 5

Rule 3:

If one side is common and it's place is same in both dices.

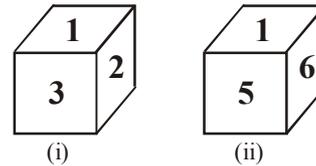
If one side is common in both cubes and it's place is same in both of these dices, then the remaining two sides of respective dices which appear in figure will be the opposite of each other. See figure for understanding this rule.



As you can see, number 2 is common in both of these dices and it appears in the same face in both these dices. In such case, the remaining two sides in both dices will be opposite to each other. In this figure, the opposite sides are :

4 is opposite to 3 (as the position of 4 and 3 are same on two dices)
6 is opposite to 1 (as the position of 6 and 1 are same on two dices)
2 is opposite to 5 (we already know the position of 1, 6, 3, 4 and 2. The only one remaining is 5)

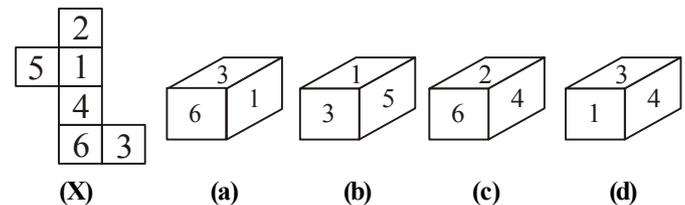
EXAMPLE 8. Two positions of a dice are shown, when 4 is at the bottom, what number will be on the top?



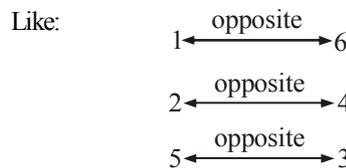
- (a) 1
- (b) 2
- (c) 5
- (d) 6

Sol. (a) From the two figures it is clear that the numbers 2, 3, 5 and 6 cannot appear opposite 1. So, 4 appears opposite 1. Therefore, when 4 is at the bottom, 1 will be on the top.

EXAMPLE 9. Sometimes we are provided with an explanatory diagram and after folding it in a proper manner it forms a dice. Which of the following dice will be formed from the explanatory diagram given?



Sol. From the given figure, first we will find numbers on opposite faces.



To find out opposite faces, take alternate numbers vertically. i.e. Take 2, then leave its adjacent face (i.e. 1) and then take 4. So, 2 is opposite to 4, similarly 1 is opposite to 6 and remaining numbers 5 and 3 are opposite to each other.

In dice I, we can see 1 and 6 which cannot be possible as two opposite faces cannot be seen at the adjacent side, Hence this dice cannot be obtained by folding the explanatory diagram.

In dice II, we can see 5 and 3 which cannot be possible as two opposite faces cannot be seen at the adjacent side. Hence this dice cannot be obtained by folding the explanatory diagram.

In dice III, we can see 2 and 4 which cannot be possible as two opposite faces cannot be seen at the adjacent side. Hence this dice cannot be obtained by folding the explanatory diagram.

In dice IV, 6, 5 and 2 cannot be seen which are the opposite faces of 1, 3 and 4 respectively. Hence our dice is dice IV.

EXERCISE

Directions (Qs. 1-4) : Read the following informations and answer the questions based on it.

- I.** The length, breadth and height of a rectangular piece of wood are 5 cm, 3 cm and 4 cm respectively.
- II.** Opposite sides of 5 cm \times 4 cm piece are coloured in red.
- III.** Opposite sides of 4 cm \times 3 cm are coloured in blue.
- IV.** Rest sides of 5 cm \times 3 cm are coloured on green in both sides.
- V.** Now the piece of wood is cut in such a way that cubes of 1 cm \times 1 cm \times 1 cm will be made.
- How many cubes shall have all the three colours?
(a) 8 (b) 10
(c) 12 (d) 14
(e) None of these
 - How many cubes shall not have any colour?
(a) No any (b) 2
(c) 4 (d) 6
(e) None of these
 - How many cubes shall have only two colours red and green on their two sides?
(a) 8 (b) 12
(c) 16 (d) 20
(e) None of these
 - How many cubes shall have only one colour?
(a) 12 (b) 16
(c) 22 (d) 28
(e) None of these

Directions (Qs. 5-8) : A cube is coloured red on all faces. It is cut into 64 smaller cubes of equal size. Now, answer the following questions based on this statement :

- How many cubes have no face coloured?
(a) 24 (b) 16
(c) 8 (d) 0
(e) None of these
- How many cubes are there which have only one face coloured?
(a) 4 (b) 8
(c) 16 (d) 24
(e) None of these
- How many cubes have two red opposite faces?
(a) 0 (b) 8
(c) 16 (d) 24
(e) None of these
- How many cubes have three faces coloured?
(a) 24 (b) 16
(c) 8 (d) 4
(e) None of these

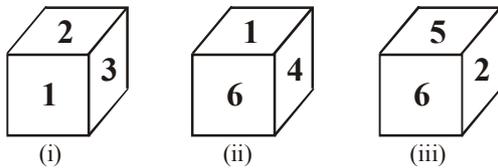
Directions (Qs. 9-13) : Read the following information and answer the questions given below :

- Two wooden cubes 'A' and 'B' are placed adjacent to each other in front of you in such a way that 'A' is to your left and 'B' to your right.
 - One pair of opposite faces of cube 'A' is painted by the same colour i.e. Red colour. Another pair of opposite faces is painted by Blue and one of the remaining faces of Yellow and other one is Violet.
 - Only two opposite faces of cube 'B' are painted by Blue colour. Remaining pairs of opposite faces are painted in such a way that opposite face of Brown colour is Green and one of the other two opposite faces is Black and the other is White.
- If Red surface of 'A' and Blue of 'B' are touching the table and Yellow of 'A' and Black of 'B' are facing you, then which coloured side of 'B' is facing Blue side of A?
(a) Brown (b) Green
(c) White (d) Either Brown or Green
(e) None of these
 - If Black surface of 'B' is kept on the top of Red surface of 'A' which coloured side of 'B' will face the sky?
(a) White (b) Blue
(c) Brown (d) Data inadequate
(e) None of these
 - If the cube are rearranged one above the other in such a way that White face of 'B' is facing sky and Yellow face of 'A' is kept above it, then which coloured surface of 'A' will be facing you?
(a) Violet
(b) Blue
(c) Either Blue or Red
(d) Either Blue or Violet
(e) Data inadequate
 - If 'B' is kept to your left with Green coloured surface facing you and 'A' kept at your right with Blue surface facing you then which of the following pairs of colours of 'A' and 'B' will be facing each other?
(a) Yellow-Black (b) Yellow-White
(c) Black-Violet (d) Violet-White
(e) Data inadequate
 - If block 'B' is kept behind block 'A' in such a way that Brown coloured surface 'B' is facing Yellow coloured face of 'A' which colour of block 'B' will be to your right?
(a) Blue (b) Black
(c) Brown (d) Data inadequate
(e) None of these

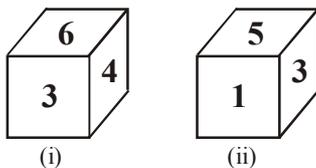
Directions (Qs. 14-16) : Three adjacent faces of a cube are coloured blue. The cube is then cut (once horizontally and once vertically) to form four cuboids of equal size, each of these cuboids is coloured pink on all the uncoloured faces and is then cut (as before) into four cuboids of equal size.

14. How many cuboids have two faces coloured pink?
(a) 1 (b) 3 (c) 4 (d) 6
(e) None of these
15. How many cuboids have three faces coloured pink?
(a) 9 (b) 7 (c) 5 (d) 3
(e) None of these
16. How many cuboids have three faces coloured blue?
(a) 4 (b) 2 (c) 1 (d) 0
(e) None of these

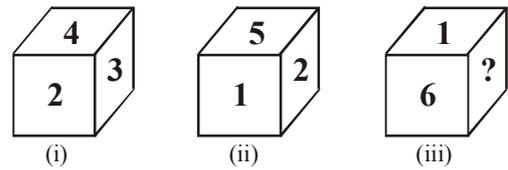
Directions (Qs. 17-21) : Following questions are based on the figures given below which represent different positions of the same dice.



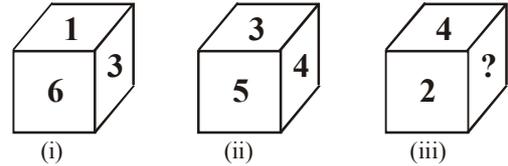
17. Which number lies at the bottom face of the dice (i)?
(a) 4 (b) 2
(c) 1 (d) 3
(e) None of these
18. Which number lies at the bottom face of the dice (iii)?
(a) 1 (b) 2
(c) 6 (d) 4
(e) None of these
19. Which number lies opposite 6?
(a) 2 (b) 5
(c) 3 (d) 1
(e) None of these
20. Which of the following combinations shows the numbers at the adjacent surfaces of the number 4?
(a) 3, 2 (b) 6, 2
(c) 2, 3 (d) 6, 3
(e) None of these
21. Which of the following numbers does not appear on any one of the adjacent surfaces of the number 3?
(a) 2 (b) 6
(c) 4 (d) 1
(e) None of these
22. On the basis of two positions of dice, find what number will be on the opposite face of number 5 ?



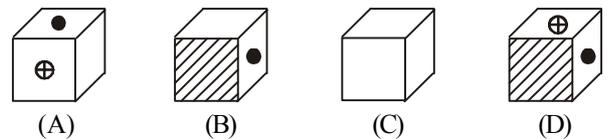
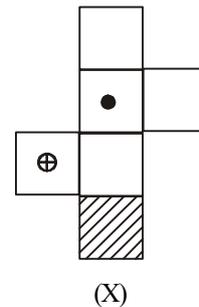
- (a) 1 (b) 3
(c) 4 (d) 5
(e) None of these
23. From the following positions of dice, find which number will come in place of '?'.



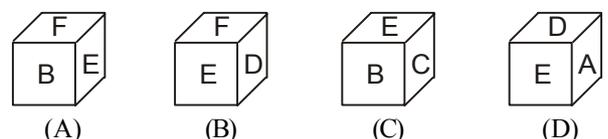
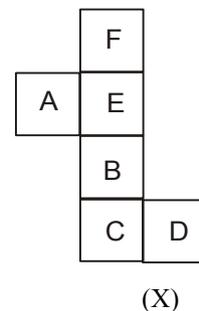
- (a) 4 (b) 5 (c) 2 (d) 3
(e) None of these
24. Three positions of the same dice are given below. Observe the figures carefully and find which number will come in place of '?'.



- (a) 1 (b) 6 (c) 3 (d) 5
(e) None of these
25. Select from the alternative, the box that can be formed by folding the sheet shown in figure (X) :

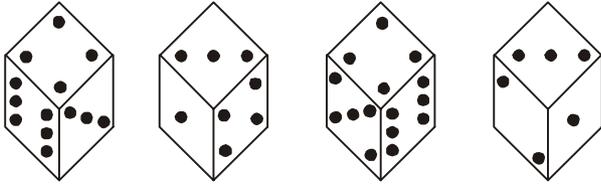


- (a) A only (b) A and C only
(c) A, C and D only (d) A, B, C and D
(e) None of these
26. Select from the alternative, the box that can be formed by folding the sheet shown in figure (X) :



- (a) A only (b) B only
(c) A and C only (d) A, B, C and D
(e) None of these

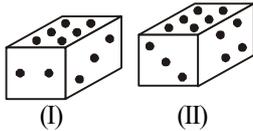
27. How many dots are there on the dice which face opposite the one with three dots ?



- (a) 2 (b) 4 (c) 5 (d) 6
(e) None of these

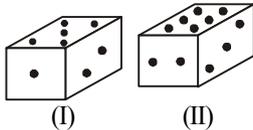
Directions (Qs. 28-30) : In the pictures given below two positions of a single dice is shown. Each side of the dice has dots (.) printed on it, which vary from one to six. Study the positions and answer the following questions accordingly.

28. If there are three dots at the bottom, then how many dots will be on top?



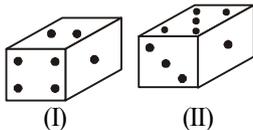
- (a) 1 or 5 (b) 2 (c) 4 (d) 5
(e) None of these

29. If the number of dots is three on top then how many will be at bottom?



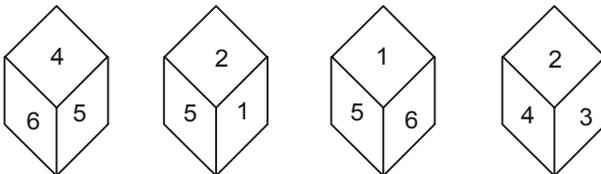
- (a) 1 (b) 4 (c) 5 (d) 6
(e) None of these

30. If 4 dots are at bottom then what will be the number of dots on top?



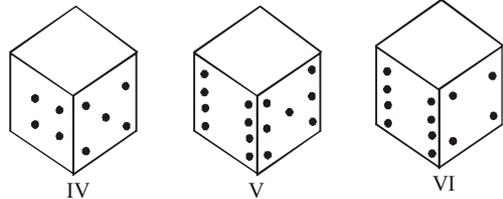
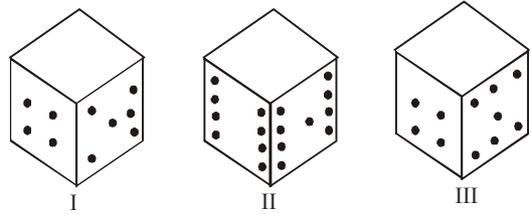
- (a) 3 (b) 2 (c) 5 (d) 6
(e) None of these

31. Which number is on the face 4, if the four different positions of a dice are as shown in the figures given below.



- (i) (ii) (iii) (iv)
(a) 5 (b) 3 (c) 2 (d) 1
(e) None of these

Directions (Qs. 32-34) : Six dice with their top faces erased have been given. The opposite faces of the dice have dots which add up to thirteen. Work out the number of dots on the top faces, according to the question and spot your answer from amongst the given alternatives.



32. If the odd numbered dice have even number of dots at their bottom faces, what would be the total number of dots?

- (a) 20 (b) 22
(c) 24 (d) 18
(e) None of these

33. If even numbered dice have odd number of dots at their top faces, what would be the total number of dots ?

- (a) 19 (b) 18
(c) 17 (d) 16
(e) None of these

34. If dice II, V and VI have even number of dots at their bottom faces, what would be the total number of dots –

- (a) 18 (b) 20
(c) 16 (d) 24
(e) None of these

35. A cube is cut in two equal parts along a plane parallel to one of its faces. One piece is then coloured red on the two larger faces and green on the remaining, while the other is coloured green on two smaller adjacent faces and red on the remaining. Each is then cut into 32 cubes of same size and mixed up.

How many cubes have only one coloured face each?

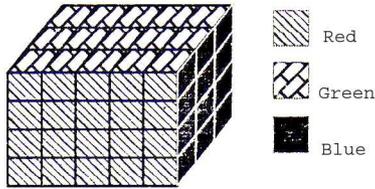
- (a) 32 (b) 8
(c) 16 (d) 2
(e) None of these

ANSWER KEY

1	(a) 5	(c) 9	(d) 13	(d) 17	(a) 21	(b) 25	(a) 29	(c) 33	(e)
2	(d) 6	(d) 10	(a) 14	(d) 18	(a) 22	(c) 26	(b) 30	(a) 34	(c)
3	(b) 7	(a) 11	(c) 15	(a) 19	(c) 23	(d) 27	(c) 31	(d) 35	(c)
4	(c) 8	(c) 12	(e) 16	(c) 20	(d) 24	(a) 28	(a) 32	(a)	

Hints & Explanations

(1-4):



1. (a) The cubes with 3 surfaces coloured are 8.
2. (d) No. surface coloured = $(l-2)(b-2)(h-2)$
 $= 3 \times 1 \times 2 = 6$
3. (b) There are three cubes on each red-green interface (barring corner cubes). So, $4 \times 3 = 12$ cubes.
4. (c) One surface coloured
 $= 2(1-2)(b-2) + 2(1-2)(h-2) + 2(b-2)(h-2)$
 $= 2\{3 \times 1 + 3 \times 2 + 1 \times 2\} = 22$

(5-8) : Since, there are 64 smaller cubes of equal size, therefore,
 $n =$ no. of divisions on the face of undivided cube = 4

5. (c) no. of cubes with no face coloured = $(n-2)^3$
 $= (4-2)^3 = 8$
6. (d) no. of cubes with one face painted = $(n-2)^2 \times 6$
 $= (4-2)^2 \times 6 = 24$
7. (a) no. of cubes with two red opposite faces = 0
 (none of the cubes can have its opposite faces coloured)
8. (c) Number of cubes with three faces coloured
 $= 4(\text{cubes at top corners}) + 4(\text{cubes at bottom corners})$
 $= 8$
9. (d) (1) Top – Bottom (1) Top – Bottom
 Red – Red Blue – Blue
 (2) Front – Back (2) Front – Back
 Yellow – Violet Black – White
 (3) two opposite sides (3) Two opposite sides
 Two Blue – Blue Green – Brown
 'A' 'B'

Hence, Either Brown or Green is facing blue sides of A.

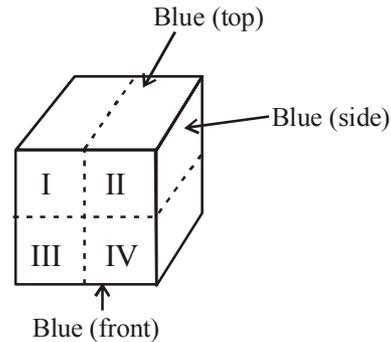
10. (a) $\frac{\text{Black} - \text{B(Top)}}{\text{Red} - \text{A(Bottom)}}$

It Black surface of B is kept on the top surface of A then white of B will face the sky.

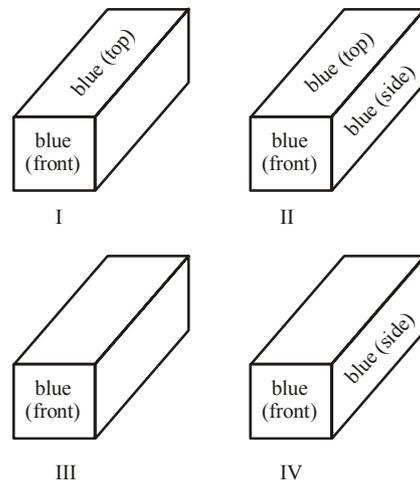
11. (c) If the cube are rearranged one above the other in such a way that white face of B is facing sky and Yellow face of A is kept above it then the violet face of A will face Yellow face of A. Then either Red or Blue will facing me.
12. (e) Date Inadequate we cannot find out any combination from given data.

13. (d)

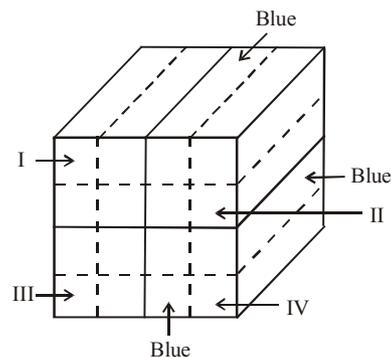
(14-16) : The adjoining figure shows the cube coloured and cut into four cuboids as stated in the question.



Four cuboids are obtained as shown below :



Now, all uncoloured faces of each cuboid are coloured with pink and then again cut each cuboid into four cuboids.



In set I and IV : 2 cuboids have 2 faces blue, 2 faces pink and 2 faces uncoloured each. 2 cuboids have 1 face blue, 3 faces pink and 2 faces uncoloured each.

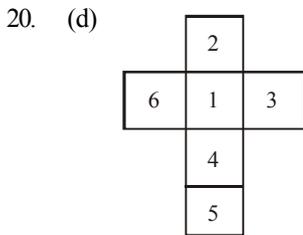
In set II : 2 cuboids have 2 faces blue, 2 faces pink and 2 faces uncoloured each.

1 cuboid has 3 faces blue, 1 face pink and 2 faces uncoloured each.

1 cuboid has 1 face blue, 3 faces pink and 2 faces uncoloured each.

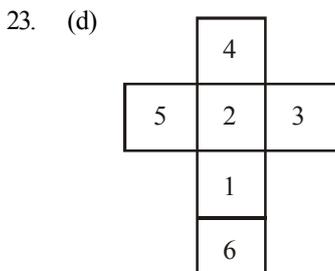
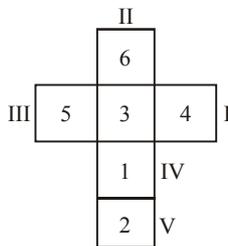
In set III : All the four cuboids have 1 face blue, 3 faces pink and 2 faces uncoloured each.

14. (d) There are 2 cuboids in set I, 2 cuboids in set II and 2 cuboids in set IV having 2 faces pink in each. Thus, there are $2 + 2 + 2 = 6$ such cubes.
15. (a) There are 2 cuboids in set I, 1 cuboid in set II, 4 cuboids in set III and 2 cuboids in set IV having 3 faces pink each. Thus, there are 9 such cuboids.
16. (c) There is only one cuboid having three faces blue. This cuboid lies in set II.
17. (a) Since 1, 3, 5 and 6 are adjacent to 2. Therefore, 4 lies opposite 2 i.e. at the bottom face of dice (i).
18. (a) Since 2, 3, 6 and 4 are adjacent to 1. Therefore, 5 lies opposite 1. Hence, 1 lies at the bottom face of dice (iii).
19. (c) Since 1, 4, 2 and 5 are adjacent to 6. Therefore, 3 lies opposite 6.



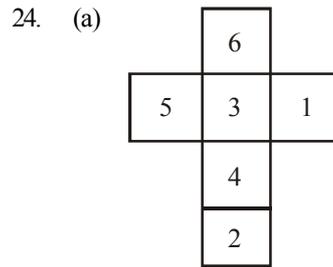
Hence, 1, 5, 3 and 6 are adjacent to 4.

21. (b) From the figure in previous solution, 6 is not adjacent to 3.
22. (c) Common number i.e. 3 to both the dice is placed on the central position of the figure. Now place the numbers in the anticlockwise direction in block I, II, III and IV respectively. Remaining number i.e. 2 will come in the block V. Hence number 4 is opposite to number 5.



Hence, the numbers that are adjacent to 1 are 5, 2, 6 and 3.

\therefore 3 will come in place of ‘?’.

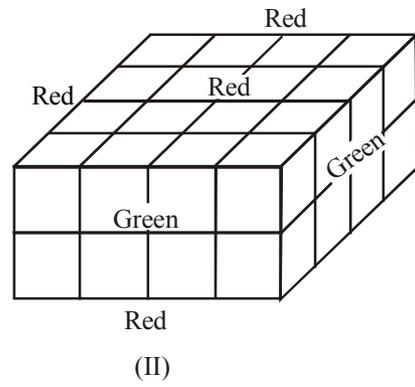
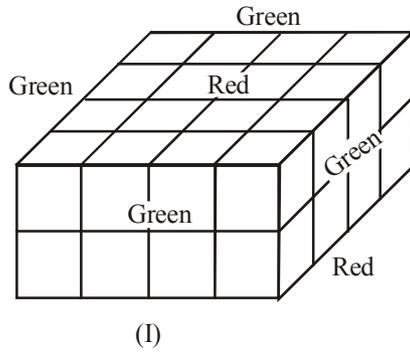


Since 2, 3, 5 and 1 are adjacent to 4. Therefore, 1 will come in place of ‘?’.

25. (a) When the sheet shown in fig. (X) is folded to form a cube, then the face bearing the dot lies opposite to the shaded face, the face bearing a circle (With ‘+’ sign inside it) lies opposite to a blank face and the remaining two blank faces lie opposite to each other. Clearly, the cubes shown in figures (B) and (D) cannot be formed since they have the shaded face adjacent to the face bearing a dot and the cube shown in fig. (C) cannot be formed since it shows all the three blank face adjacent to each other. Hence, only the cube shown in fig. (A) can be formed.
26. (b) When the sheet in fig. (X) is folded to form a cube, then ‘F’ appears opposite ‘C’ and ‘A’ appears opposite ‘D’. Therefore, the cube in fig. (A) which shows ‘F’ adjacent to ‘B’, the cube in fig. (C) which shows ‘E’ adjacent to ‘C’ and the cube in fig. (D) which shows ‘A’ adjacent to ‘D’ cannot be formed.
27. (c) From figure (i) (ii) and (iv), we conclude that 6, 4, 1 and 2 dots appear adjacent to 3 dots. Clearly, there will be 5 dots on the face opposite the face with 3 dots.
28. (a) Look at the two positions of the dice carefully. The adjacent surfaces of three dots surface are two, four and six dots surfaces. Therefore, these three surfaces can't be opposite to the surface having three dots. Thus, the surface opposite to three dots surface is either one dot surface or five dots surface.
29. (c) Here, 2 is common surface,
 $2 - 1 - 5$
 $2 - 6 - 3$
 Obviously, 5 is opposite to 3. 1 is opposite to 6, whereas 2 is opposite to 4.
30. (a) Here, 1 is common surface.
 $1 - 4 - 2$
 $1 - 3 - 5$
 Obviously, 4 is opposite to 3, 2 is opposite to 5, whereas 1 is opposite to 6.
31. (d) From figures (i) and (iv) we conclude that 6, 5, 2 and 3 lie adjacent to 4. It follows that 1 lies opposite 4.

32. (a) The number of dots at the bottom faces of I, III and V dices are 8, 8 and 4 respectively.
 33. (e) The number of dots at the top faces of II, IV and VI dices are 7, 7 and 7 respectively.
 34. (c) The number of dots at the bottom faces of II, V and VI dices are 6, 4 and 6 respectively.

35. (c)



8 from (I) and 8 from (II)
 Therefore 8 from each.



Problem Solving

INTRODUCTION

In this chapter you will see some typical problems in which you would be given a series of interlinked information and on the basis of those informations you would be expected to reach certain conclusions. Such questions are the essential part of certain examinations.

TYPES OF INFORMATIONS IN A GIVEN PROBLEM

1. Basic informations

(Useful secondary informations): It is given in first couple of sentences of given data are such that they give you some basic information that is essential to give you general idea of the situation.

2. Actual informations

Whatever remains after the basic informations are known as actual information.

While trying to solve a problem one should begin with actual information and useful secondary information should be solve by mind.

3. Negative informations

Actual informations having negative sentences are called negative information. A negative information does not inform us anything exactly but it gives a chance to eliminate a possibility.

For example, A is not the brother C.

TYPES OF PROBLEMS

- Simple problems (based on categorisation)
 - Problems based on arrangement (Linear, circular, rectangular/square).
 - Problems based on comparison.
 - Problems based on blood relations.
 - Blood relations and profession based problems.
 - Problems based on conditional selection.
 - Miscellaneous problems.
- Now, we will discuss all the types of problems one by one

1. Simple Problems (Based on Categorisation)

Tips to Solve Problems

These type of problems can easily be solved by construction of table.

EXAMPLE 1. (Qs.1-5): Read the following information carefully and answer the questions that follows:

- There are six cities L, M, N, O, P and Q.
- L is not a hill station
- M and P are not historical places
- O is not an industrial city
- L and O are not historical cities
- L and M are not alike

- Which two cities are industrial centers?
 - L and M
 - P and Q
 - N and O
 - M and Q
 - L and O
- Which two cities are historical places?
 - L and M
 - M and Q
 - N and Q
 - M and P
 - L and O
- Which two cities are hill stations?
 - L and M
 - N and L
 - M and O
 - L and Q
 - None of these
- Which city is a hill station and an industrial centre but not a historical place?
 - P
 - Q
 - L
 - M
 - N
- Which two cities are neither historical place nor industrial centre?
 - L and M
 - O and P
 - Q and N
 - M and O
 - None of these

Ex. 1 (Problem format) is such type of problem and it can be solved by preparing a table in the manner given below.

	L	M	N	O	P	Q
Historical place						
Industrial city						
Hill station						

(2), (3), (4), (5) are negative informations. Therefore as per such informations. We put 'X' (not) mark wherever applicable. As a result the table looks like the one below.

	L	M	N	O	P	Q
Historical place	×	×		×	×	
Industrial city				×		
Hill station	×					

As above table gives definite informations about L, O. L is neither a historical place nor a hill station. So, it must be an industrial city. In the same manner O is neither a historical nor an industrial city. So, O must be a hill station. Hence, we put '✓' mark at the appropriate place which give the table following look:-

	L	M	N	O	P	Q
Historical place	×	×		×	×	
Industrial city	✓			×		
Hill station	×			✓		

Now, as per the condition (6) (L and M are not alike), M can not be an Industrial city. Also M is not a historical place either. Therefore, it is very obvious that M is a hill station. Again, in the given problem there is no negative information about N. Hence, we can assume that N is a hill station as well as a historical place and an industrial city. Combining if these aspects, the following table will be prepared finally.

	L	M	N	O	P	Q
Historical place	×	×	✓	×	×	✓
Industrial city	✓	×	✓	×	✓	✓
Hill station	×	✓	✓	✓	✓	✓

Now, after analysing the given questions we get the following answer:-

- Q. (1) (b) Q. (2) (c) Q. (3) (c) Q. (4) (a)
 Q. (5) (d)

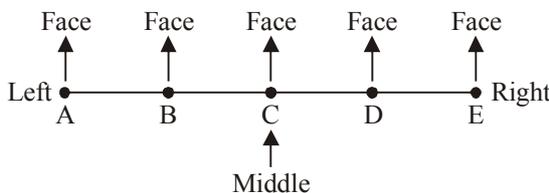
2. Problems Based On Arrangement

In such problems a group of people, objects, etc, may have to be arranged in a row, or in a circle or any other way. Let us see the example given below:-

LINEAR ARRANGEMENT

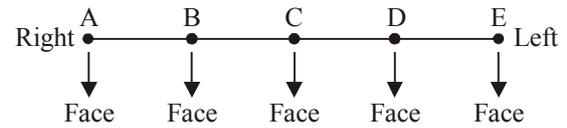
One Row Sequence

(A) When direction of face is not clear, then we take ourself as base and then the diagram will be as follows



From the above diagram, it is clear that

- (i) B, C, D, E are **right** of A but **only** B is the **immediate right** of A.
 - (ii) D, C, B, A are **left** of E but **only** D is the **immediate left** of E.
- (B) When direction of face is towards you, then the diagram will be as follows

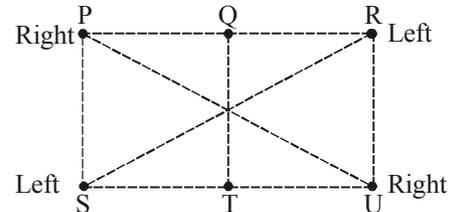


From the above diagram, it is clear that

- (iii) B is **immediate left** of A, C is **immediate left** of B; D is **immediate left** of C and E is **immediate left** of D.
- (iv) D is **immediate right** of E; C is **immediate right** of D; B is **immediate right** of C; and A is **immediate right** of B.

Two Rows Sequence

Let us see 6 persons seating in two rows



From the above diagram, it is clear that

- (i) P is sitting **opposite** S.
- (ii) Q is sitting **opposite** T.
- (iii) R is sitting **opposite** U.
- (iv) P and U are sitting at **diagonally opposite** positions.
- (v) S and R are sitting **diagonally opposite** positions.

EXAMPLE 2. Directions (Questions 1 to 5): Just read the following informations carefully to answer the questions given below it:

Five friends P, Q, R, S, and T are sitting on a bench.

- (1) P is sitting next to Q.
- (2) R is sitting next to S.
- (3) S is not sitting with T.
- (4) T is on the last end of the bench.
- (5) R is on the 2nd position from the right.
- (6) P is on the right of Q and T.
- (7) P and R are sitting together.

1. All what position is P sitting?
 - (a) Between S and R
 - (b) Between S and R
 - (c) Between T and S
 - (d) Between S and T
 - (e) Between Q and R
2. Who is sitting in the centre?
 - (a) P
 - (b) Q
 - (c) R
 - (d) S
 - (e) T
3. R is sitting between.....
 - (a) Q and S
 - (b) P and T
 - (c) S and T
 - (d) P and S
 - (e) P and Q
4. What is the position of S?
 - (a) Extreme left
 - (b) Extreme right
 - (c) Third from left
 - (d) Second from left
 - (e) None of these
5. What is the position of Q?
 - (a) 2nd from right
 - (b) Centre
 - (c) Extreme left
 - (d) 2nd from left
 - (e) None of these

Now, point to be noted that in arrangement problems the actual information can be classified into 2 categories:-

(a) Definite information

A definite information is one when the place of object/man is definitely mentioned.

(b) Comparative information

In such information the place of object/man is not mentioned definitely but only a comparative position is given. In other words the positions of objects/men are given in comparison to another objects/men.

Now, to solve the problem go as per the following steps:-

Step I Sketch a diagram of empty places

Step II. Fill up as many empty places as possible using all the definite informations.

Step III. With the help of comparative information consider all possibilities and select the possibilities which does not violate any condition.

Now, we can solve the above example :

Here 4th and 5th sentences constitute definite information: Comparative informations are: 1st, 2nd, 6th and 7th sentences while 3rd is a negative information.

Now, start with definite information, sketch the following arrangement:-

T ___ R ___

Now, this is the time to look for the comparative informations that tell about T and R. Such informations are 2nd, 6th and 7th sentences. Take the 7th and the 1st sentence. If P and R are together and also Q and P are together, then P must be between Q and R. Now the arrangement take the form as:-

T Q P R ___

By the virtue of the 2nd sentence:

T Q P R S

Now, look at the given questions and check that you get the following answer:-

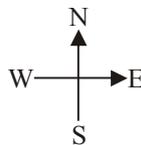
Q. (1) (e) Q. (2) (a) Q. (3) (d) Q. (4) (b) Q. (5) (d)

CIRCULAR ARRANGEMENT

Circle is the most important case from the exam point of view. Most of the times Circle kind of statements are there in exams. From the exam point of view, in most cases they give 8 persons sitting in the circle.

But before solving the important thing is their ' Sitting Position '.

Step 1. Knowing NEWS! N= North , E= East , W=West , S= South

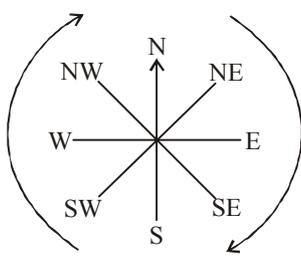


To remember this just remember combination ' North - South ' & ' West - East ' which comes together to each other respectively.

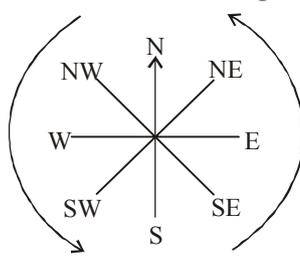
Step 2 : Picking Left & Right .

- Facing Center

Clock wise = Left



Anti - Clock wise = Right



- Facing Outside

If it is mention in the statement that all is facing outside then just do opposite of above like this:

Clock wise = Right & Anti- clock wise = Left

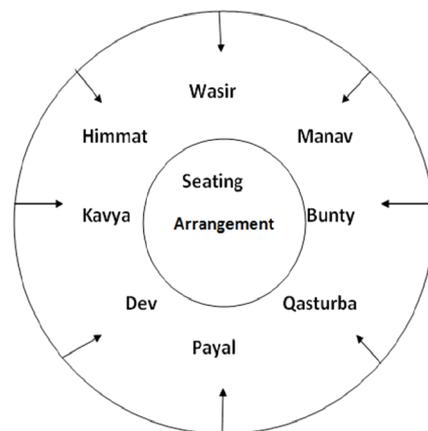
Step 3 : Solving step wise the statement or Following the statement.

EXAMPLE **3. Directions (Qs. 1-5) Study the following information carefully and answer the questions given below.**

Bunty, Dev, Manav, Kavya, Payal, Qasturba, Wasir and Himmat are sitting around a circle facing at the centre. Manav is to the immediate right of Bunty who is 4th to the right of Kavya. Payal is 2nd to the left of Bunty and is 4th to the right of Wasir. Qasturba is 2nd to the right of Dev who is 2nd to the right of Himmat.

- Who is 3rd to the right of Bunty?
(a) Wasir (b) Manav
(c) Kavya (d) Himmat
(e) None of these
- Which of the following represents the immediate neighbours of D?
(a) Payal and Qasturba (b) Kavya and Himmat
(c) Payal and Himmat (d) Kavya and Qasturba
(e) Payal and Kavya
- Who is 3rd to the right of Wasir?
(a) Payal (b) Dev
(c) Kavya (d) Qasturba
(e) Data inadequate
- Who is 2nd to the left of Payal?
(a) Dev (b) Himmat
(c) Kavya (d) Data inadequate
(e) None of these
- Who is to the immediate left of Bunty?
(a) Qasturba (b) Payal
(c) Wasir (d) Data inadequate
(e) None of these

Sol.



1. (d) 2. (e) 3. (b) 4. (c) 5. (a)

3. Problems Based On Comparison

In such problems comparison of different objects or persons has to be made. Such comparisons are done on the basis of marks, ages heights, etc.

Let us see the following examples:-

EXAMPLE 4. Directions (Qs. 1-5) : Read the informations given below to answer the given questions:

- (1) 7 students A, B, C, D, E, F and G take a series of tests.
 (2) No two students obtain the same marks.
 (3) G always scores more than A.
 (4) A always scores more than B.
 (5) Each time either C scores the highest and E gets the least, or alternatively D scores the highest and F or B scores the least.
- If D is ranked 6th and B is ranked 5th, which of the following can be true?
 - G is ranked 1st or 4th
 - C is ranked 2nd or 3rd
 - A is ranked 2nd or 5th
 - F is ranked 3rd or 4th
 - E is ranked 4th or 5th.
 - If C gets most, G should be ranked not lower than -----
 - 2nd
 - 3rd
 - 4th
 - 5th
 - 6th.
 - If C is ranked 2nd and B is ranked 5th, which of the following must be true?
 - D is ranked 3rd
 - E is ranked 6th
 - A is ranked 6th
 - G is ranked 4th
 - F is ranked 6th.
 - If D is ranked 2nd, which of the following can be true?
 - F gets more than G
 - G gets more than D
 - A gets more than C
 - A gets more than G
 - E gets more than B
 - If G is ranked 5th, which of the following must be true?
 - D scores the highest
 - C is ranked 2nd
 - E is ranked 3rd
 - B is ranked 4th
 - F scores the least

Method to Solve

If you give a serious look to the problem you will find that such problems are as same as the arrangement problems. Therefore, we have to go like arrangement problem while solving problems based on comparison.

Solution (Ex. 3)

In this case, we see there is no definite information. Sentence 5 gives a definite information but it is conditional. Still, we draw all the possibilities based on sentence 5.

- (1) C _____ E
 or, (2) D _____ F
 or, (3) D _____ B

We see that the two additional informations (3) and (4) are inadequate to reach a definite conclusion. Hence, keeping these in mind. We move on to the given questions.

- D is ranked 6th and B is 5th. This does mean that possibilities (2) and (3) are violated. Hence, possibility (1) must be true. Thus, we have:
 C _____ B D E
 Also by virtue of (3) and (4) we can have only one arrangement for G, A and B which is GAB. Accordingly, there are two possibilities:
 C G F A B D E
 or, C G A F B D E
 ∴ Correct answer: (d).

- Just see the analysis of Q (1)
 ∴ Correct answer: (c).
- C is ranked 2nd does mean possibility (1) is false. Therefore, possibilities (2) and (3) remain. Now, B is ranked 5th does mean possibility (3) is false.
 Hence, possibility (2) remains:
 D C _____ B _____ F
 Now, by virtue of (3) and (4), we must have G and A before B in that order. Consequently the 6th place would go to the only letter remaining that is E.
 Hence, D C G A B E F
 ∴ Correct answer: (b).
- D is ranked 2nd does mean possibilities (2) and (3) are false. Hence possibility (1) is true. Now look at the analysis of Question (1) and you will get the correct answer as: (a).
- If G is ranked 5th, we can not definitely say which among the three possibilities (1), (2) and (3) are true or false. But sentences (3) and (4) definitely imply that the position of A will be 6th and that of B seventh. Now if B is 7th, it does mean that possibility (3) is true. Hence, we have
 D ? ? ? G A B.
 ∴ Correct answer (a).

4. Problems Based On Blood Relation

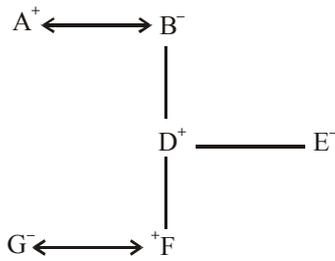
Such problems involves analysis of certain blood relations. Let us see the problems given below:-

EXAMPLE 5. (Directions Qs. 1-5) : Read the following information carefully and answer the questions given below:

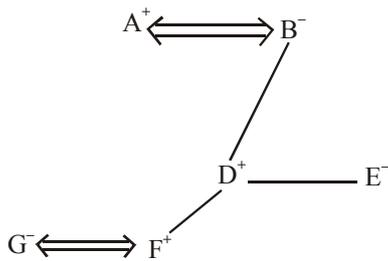
There are 6 members in a family. They are M, N, O, P, Q, R are travelling together. N is the son of O but O is not the mother of N. M and O are a married couple. Q is the brother O. P is the daughter of M. R is the brother of N.

- How many male members are there in the family?
 - 1
 - 3
 - 2
 - 4
 - 5
 - Who is the mother of N?
 - P
 - R
 - Q
 - M
 - None of these
 - How many children does M have?
 - 1
 - 2
 - 3
 - 4
 - None of these
 - Who is the wife of Q?
 - M
 - R
 - N
 - Can't be determined
 - None of these
 - Which of the following is a pair of females?
 - MQ
 - NP
 - PR
 - MP
 - None of these
 - How is Q related to P?
 - Father
 - Brother
 - Uncle
 - Can't be determined
 - None of these
- To solve such questions, remember the following point:-
 Draw a family tree using
- Vertical/diagonal lines to represent parent-child relationships
 - Single/double horizontal line like (\leftrightarrow / \Leftrightarrow) to represent marriages

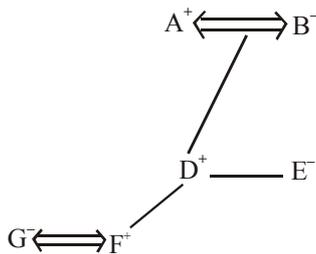
- (iii) a dashed line (—) for brother and sister relationship
 - (iv) '+' sign for male and '-' sign for female
- For example.



or



or



The above diagrams tells us:-

- (a) A and B are couple; A is the husband while B is the wife.
- (b) D is son of A and B while E is daughter of A and B.
- (c) D is the brother of E and E is the sister of D.
- (d) D has a son F
- (e) F and G are couple; F is the husband and G is the wife.
- (f) F is the grandson of A and B.
- (g) G is the daughter in law of D.
- (h) E is the aunt (Bua) of F
- (i) There are 3 males (A, D and F) and 3 females (B, E, G)

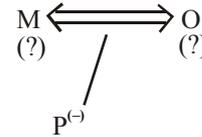
Now that you have learnt how to make a family tree. Let us see the actual method of solving the problem.

Solution

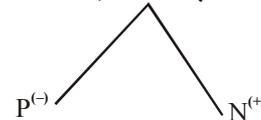
Here all the sentences are actual information except the first out of these the 2nd and the fifth sentences give information on parent child relationship. We can begin with either of the two. Let us begin with the 6th sentence. Our diagram will be as



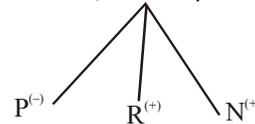
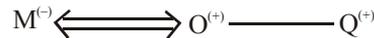
As we do not want to make many diagrams and instead we would prefer to only add to the existing diagrams. Therefore we should look for sentences that talk of M or P. The 3rd sentence talks about M. Hence, we add this information, that M and O are married couple in our diagram.



Now the 2nd sentence talks about O. It says that N is the son of O but O is not the mother of N. Obviously, O must be the father of N. This means O is a male and hence M must be a female. Now our diagram takes the form as following:-



Now, we add the two sentences 'Q is the brother of O' and 'R is the brother of N' and we get the final diagram as below:-



Now, you can read the questions to check your answer:-

- Q. (1) d Q. (2) d Q. (3) c Q. (4) d
- Q. (5) d Q. (6) c

5. Problems Based On Blood Relations and Profession:

Such problems are very much similar to the problems related to blood relation. What makes it different is the addition of new data:- the professions of family members. You will get the more clear idea about this type of problem. Let us see the example given below:-

EXAMPLE 6. Directions (Qs. 1-5): Read the following information carefully and answer the questions given below it:

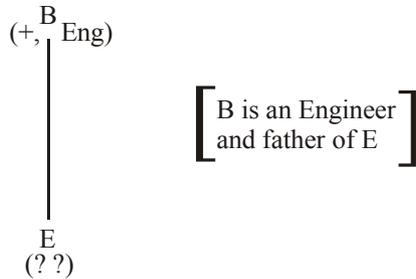
- (1) A, B, C, D, E and P are members of a family.
- (2) There are two married couples.
- (3) B is an engineer and the father of E
- (4) P is the grandfather of C and is a lawyer.
- (5) D is the grandmother of E and is a housewife.
- (6) There is one engineer, one lawyer, one teacher, one housewife and two students in the family.

1. Who is the husband of A?
 - (a) C (b) E (c) B
 - (d) D (e) None of these
2. Which of the following are two married couple?
 - (a) PD, BA (b) PD, BE
 - (c) PD, CA (d) ED, CP
 - (e) None of these
3. Which of the following is definitely a group of male members?
 - (a) B, P, E (b) P, E
 - (c) B, P, A (d) B, P
 - (e) None of these

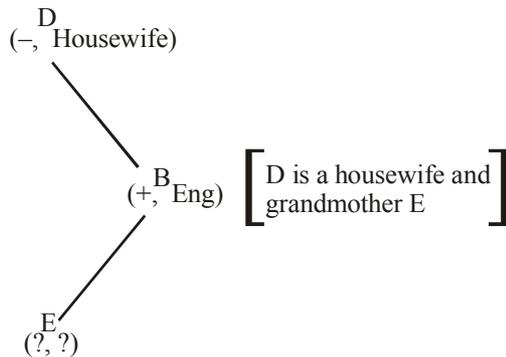
4. Who is the sister of E?
 (a) C (b) D
 (c) A (d) Data inadequate
 (e) None of these
5. What is the profession of A?
 (a) Housewife (b) Engineer
 (c) Teacher (d) Engineer or Teacher
 (e) Housewife or Teacher

Solution

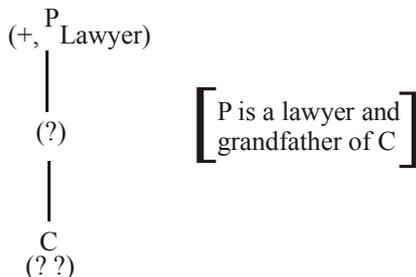
Here, (1), (2), and (6) are useful secondary informations. While (3), (4) and (5) are the actual informations. We start with the 3rd sentence because it mentions a parent. Child relationship its diagram can be made as the following:-



Now, we move on to another sentence that involves either B or E. You see that the 5th sentence gives some information about E. It says that D is the grandmother E. Point to be noted that if D is the grandmother of E, then the son of D must be father of E and hence B is the son of D. Now, the diagram takes the following form.

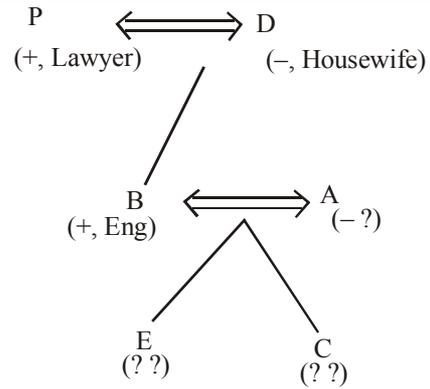


Now, the 4th sentence has the remaining information and diagram for it is given below:-



Now, we see that we have ended up with two different component. Then how to resolve this deadlock? The answer is simple: - to resolve it we make use of the given useful secondary information (USI).

“There are two married couple in the family.” Clearly, the two possible pairs are of grandfather, grandmother and father, mother. Therefore, we combine the two diagrams into the following way.



Point to be noted that the professions of A, E and C are yet unknown. However, with reasonable justification, we may assume that the mother (A) should be the teacher and the two children E and C should be students. But this conclusion can be challenged and has no reason at all.

Apart from that the sexes of E and C can not be determined. Now, read the question and check your answer one by one:-

- Q. (1) c Q. (2) a Q. (3) d
 Q. (4) d Q. (5) c

6. Problems Based On Conditional Selection:

In this type of problems, a group of objects/persons has to be selected from a given larger group, as per the given restrictions. You will get the better idea of such type of problem from the problem given below:-

EXAMPLE 7. Directions (Qs. 1-5) : Study the following

information carefully and answer the questions given below:- From, amongst 6 boys J, K, L, M, N, and O and 5 girls P, Q, R, S and T, a team of 6 is to be selected under the following conditions:-

- (i) J and M have to be together.
- (ii) L can not go with S.
- (iii) S and T have to be together.
- (iv) K can not be teamed with N.
- (v) M cannot go with P.
- (vi) K and R have to be together.
- (vii) L and Q have to be together.

1. If there be 5 boys in the team, the lone girl member is -----
 (a) P (b) Q (c) R
 (d) S (e) None of these
2. If including R, the team has three girls, the members other than R are -----
 (a) K L O P Q (b) JMNST
 (c) JMKST (d) KORST
 (e) None of these
3. If, the team including L consists of 4 boys the members of the team other than L are -----
 (a) JMNPQ (b) JKMQR
 (c) MNOJQ (d) KNORQ
 (e) None of these
4. If 4 members including N, have to be boys, the members other than N are -----
 (a) JKLQR (b) JMOST
 (c) KLOQR (d) JLMOQ
 (e) None of these.

5. If 4 members have to go, the members of the team are ----
 (a) KLPQRS (b) KOPRST
 (c) KLQRST (d) KLPQRT
 (e) None of these

Solution

Solving problems like example 7 is very easy. Make the group of all the pairs that have to be together on one side and the pairs that must not be together on the other side. Next, read each of the questions and treat that as an additional information. Finally analyse the possibilities and choose the possibilities that satisfies all the conditions. Let us see the process below:-

1stly, we can summarise the conditions in the following way:-

J, M	S, T	
(+)(+)	(-)(-)	
K, R	L, Q	→ Group 'must be together'.
(+)(-1)	(+)(-)	

L, S,	K, N,	M, P	
(+)(-)	(+)(+)	(+)(-1)	→ Group never be together'

Now we move on to questions one by one.

- Here, number of boys are 5. We see that K and N can never be together. Therefore, there are only two ways of selecting 5 boys:- JKLMO and JNLMO. But the possibility is not possible because if K would go then R should also go, and if L goes then Q should also go. Hence, JNLMO is the only possibility in which L's friend Q would be the lone girl member.
 ∴ Correct answer choice is (b).
- There are three girls including P. P is there, so M must not be there. If M is not there, J would not be there. So two boys J and M are eliminated. Since, the team should have only 6 members, hence there should be three boys. Two boys J and M are eliminated. Therefore, the possibilities of selecting three boys are :- KLN, KLO, KNO, LNO. But K and N can't be together. Hence the remaining possibilities are KLO and LNO. Now, K must be with R and L must be with Q. Therefore, we have PKRLQO and PLQNO. To the 2nd possibility we need to add a girl. We can't add R since R can't go without K. We can't add T since T can't go withouts. Conversely, we can't add S either. Hence, this possibility is also eliminated. This, the only possible choice remains PKRLQO.
 ∴ Correct answer choice is (a).

Quicker method:

Start with the answer choices. Choice (b) and choice (c) have M in them. M can't go as P is there. Choice (d) is not correct as it has more than three girls including P. Hence, the correct answer choice must be either (a) or (c). But on verifying we see that a is indeed the correct choice as it does not violate any restriction.

∴ Correct answer choice is (a).

- There are 4 boys including L. So there must be two girls. Now if L is present, S can't go and if S can't go, T won't go. Hence, three girls remain:- P, Q and R out of these, two can be selected in the ways given below:- PQ, PR, and QR.

Now, if P is selected, M can't go and if M can't go, J will not go. In such case the team would have to include K and N as 4 boys hence to be selected. But K and N can't be together. This means that P should not be selected. Therefore, the only possibility of selecting two girls is QR. But R means the necessary inclusion of K, which in turn means necessary inclusion of N. Hence, the possible combination is LKQR. To this we should add two boys out of J, M and O. The only possibility is adding J and M as neither of these would go without the other. Hence, the team is JMLKQR.

∴ Correct answer choice is (b).

Quicker method

Choice (a) is incorrect as it has M and P together. Choice (c) is incorrect as it has only one girl. Choice (d) is incorrect as it has K and N together. Hence, two choices (b) and (e) remain. On verifying we see that (b) is the correct answer choice.

- Inclusion of N ⇒ Exclusion of k ⇒ Exclusion R. Four boys does mean there should be two girls. How do you select 2 girls out of P, Q, S and T if S and T have always to be together? The only two possible way are:- P, Q, and S, T. If we choose P we can't select M, and hence we can't select J either. This means the exclusion of J and M in addition to that of K. Since, this is not possible in order to have four boys, we must not select P. Hence, we select S.T. Now, selecting S means excluding L. Hence, K and L are excluded. The team would be: - JMNOST
 ∴ Correct answer choice is (b).

EXERCISE

Directions (Qs. 1-5): Study the following information carefully and answer the questions given below:

A, B, C, D, E, F and G are seven persons who travel to office everyday by a particular train which stops at five stations I, II, III, IV and V respectively after it leaves base station.

- (1) Three among them get in the train at the base station.
- (2) D gets down at the next station at which F gets down.
- (3) B does not get down either with A or E.
- (4) G alone gets in at station III and gets down with C after having passed one station.
- (5) A travels between only two stations and gets down at station V.
- (6) None of them gets in at station II.
- (7) C gets in with F but does not get in with either B or D.
- (8) E gets in with two others and gets down alone after D.
- (9) B and D work in the same office and they get down together at station III.
- (10) None of them gets down at station I.

1. At which station does E get down?
 - (a) # II
 - (b) # III
 - (c) # IV
 - (d) Data inadequate
 - (e) None of these
2. At which station do C and F get in?
 - (a) # I
 - (b) # II
 - (c) # III
 - (d) Data inadequate
 - (e) None of these
3. At which of the following stations do B and D get in?
 - (a) # I
 - (b) Base station
 - (c) # III
 - (d) Data inadequate
 - (e) None of these
4. After how many stations does E get down?
 - (a) One
 - (b) Two
 - (c) Three
 - (d) Four
 - (e) Five
5. E gets down after how many stations at which F gets down?
 - (a) Next station
 - (b) Two
 - (c) Three
 - (d) Four
 - (e) None of these

Directions (Qs. 6-10): Study the following information carefully and answer the questions given below:

P, Q, R, S, T, V and W are travelling in three different vehicles. There are at least two passengers in each vehicle— I, II & III and only one of them is a male. There are two engineers, two doctors and three teachers among them.

- (i) R is a lady doctor and she does not travel with the pair of sisters, P and V.
- (ii) Q, a male engineer, travels with only W, a teacher in vehicle I.
- (iii) S is a male doctor.
- (iv) Two persons belonging to the same profession do not travel in the same vehicle.
- (v) P is no an engineer and travels in vehicle II.

6. What is V's profession?
 - (a) Engineer
 - (b) Teacher
 - (c) Doctor
 - (d) Data inadequate
 - (e) None of these
7. In which vehicle does R travel?
 - (a) I
 - (b) II
 - (c) III
 - (d) II or III
 - (e) None of these
8. Which of the following represents the three teachers?
 - (a) WTV
 - (b) WTP
 - (c) WTV or WTP
 - (d) Data inadequate
 - (e) None of these
9. Which of the following is not correct?
 - (a) T-Male-Teacher
 - (b) Q-Male-Engineer
 - (c) P-Female-Teacher
 - (d) V-Female-Teacher
 - (e) W-Female-Teacher
10. How many lady members are there among them?
 - (a) Three
 - (b) Four
 - (c) Three or Four
 - (d) Data inadequate
 - (e) None of these

Directions (Qs. 11-15): Study the following information and answer these questions :

- (A) P, Q, R, S, T, U and V are sitting in a circle facing the centre.
- (B) S, who is second to the right of R, is not to the immediate right of V.
- (C) U is not between V and T.
- (D) P is between R and Q.
11. Which of the following is **wrong**?
 - (I) T is to the immediate left of R.
 - (II) Q is to the immediate left of U.
 - (III) U, S and T are in a sequence, one after the other.
 - (a) Only I
 - (b) Only II
 - (c) Only III
 - (d) Only I and II
 - (e) All I, II and III
12. Which of the following are the two pairs of adjacent members?
 - (a) VS and TR
 - (b) SU and PQ
 - (c) PR and TQ
 - (d) VU and QR
 - (e) None of these
13. What is the position of T?
 - (a) To the immediate left of R
 - (b) Second to the left of P
 - (c) Fourth to the left of U
 - (d) Second to the left of V
 - (e) None of these
14. Which of the following is **correct**?
 - (I) V is third to the left of R.
 - (II) U is between S and V
 - (III) Q is to the immediate left of P.
 - (a) Only I
 - (b) Only II
 - (c) Only III
 - (d) Only II and III
 - (e) None of these

15. If Q and R interchange places so as T and V, then
 (a) S is third to the right of R
 (b) T is second to the left of R
 (c) Q is fourth to the right of T
 (d) V is third to the right of U
 (e) None of these

Directions (Qs. 16-20): Study the following information carefully and answer the questions given below :

Ten persons A, B, C, D, E, F, G, H, I and J, are sitting in two rows with five persons in each row in such a way that one person in the first row sits exactly opposite and facing a person in the second row. Members of the first row are facing North.

B sits in the first row to the immediate right of H who sits exactly opposite of D. C is at the extreme end of second row and is second to the left of D. A is to the immediate right of D and exactly opposite to F. G sits exactly opposite to E who is at one of the ends of the second row. J does not sit at the end.

16. Who is second to the left of B ?
 (a) I (b) G
 (c) H (d) F
 (e) None of these
17. Which of the following pairs of persons are sitting at the two ends of the first row ?
 (a) GJ (b) EI
 (c) GI (d) EJ
 (e) None of these
18. Who sits exactly opposite to B ?
 (a) J (b) I
 (c) G (d) A
 (e) None of these
19. Who is third to the left of E ?
 (a) D (b) I
 (c) H (d) C
 (e) None of these
20. A sits between which of the following persons ?
 (a) DJ (b) ED
 (c) FB (d) BI
 (e) None of these

Directions (Qs. 21-25) : Studay the following information and answer the questions given below.

Eight people E, F, G, H, J, K, L and M are sitting around a circular table facing the centre, Each of them is of a different profession Chartered Accountant, Columnist, Doctor, Enginneer, Financial Analyst, Lawyer, Professor and Scientist but not necessarily in the same order. F is sitting second to the left of K. The Scientist is an immediate neighbour of K. There are only three people between the Scientist and E. Only one person sits between the Engineer and E. The Columnist is to the immediate right of the Engineer. M is second to the right of K. H is the Scientist. G and J are immediate neighbours of each other. Neither G nor J is an Engineer. The Financial Analyst is to the immediate left of F. The Lawyer is second to the right of the Columnist. The Professor is an immediate neighbour of the Engineer. G is second to the right of the Chartered Accountant.

21. Who is sitting second to the right of E ?
 (a) The Lawyer (b) G
 (c) The Engineer (d) F
 (e) K

22. Who amongst the following is the Professor ?
 (a) F (b) L
 (c) M (d) K
 (e) J
23. Four of the following five are alike in a certain way based on the given arrangement and hence froma group. Which of the following does not belong to that group ?
 (a) Chartered Accountant-H
 (b) M-Doctor
 (c) J-Engineer
 (d) Financial Analyst-L
 (e) Lawyer-K
24. What is the position of L with respect to the Scientist ?
 (a) Third to the left (b) Second to the right
 (c) Second to the left (d) Third to the right
 (e) Immediate right
25. Which of the following statements is true according to the given arrangement ?
 (a) The Lawyer is second to the left of the Doctor
 (b) E is an immediate neighbour of the Financial Analyst
 (c) H sits exactly between F and the Financial Analyst
 (d) Only four people sit between the Columnist and F
 (e) All of the given statements are true.

Directions (Qs. 26- 30): Each of these questions are based on the information given other.

1. 8 persons E, F, G, H, I, J, K and L are seated around a square table - two on each side.
2. There are 3 ladies who are not seated next to each other.
3. J is between L and F.
4. G is between I and F.
5. H, a lady member is second to the left of J.
6. F, a male member is seated opposite to E, a lady member.
7. There is a lady member between F and I
26. Who among the following is to the immediate left of F ?
 (a) G (b) I
 (c) J (d) H
 (e) None of these
27. What is true about J and K ?
 (a) J is male, K is female (b) J is female, K is male
 (c) Both are female (d) Both are male
 (e) None of these
28. How many persons are seated between K and F ?
 (a) 1 (b) 2
 (c) 3 (d) 4
 (e) None of these
29. Who among the following are three lady members ?
 (a) E, H and J (b) E, F and G
 (c) E, H and G (d) C, H and J
 (e) None of these
30. Who among the following is seated between E and H ?
 (a) F (b) I
 (c) K (d) Cannot be determined
 (e) None of these

Directions (Qs. 31-35) : Study the following information carefully and answer the questions given below:

- (i) Six students P, Q, R, S, T and U are in different branches of Engineering, viz. civil, mechanical M chemical, electrical, metallurgy and electronics but not necessarily in the same order.
- (ii) Each of them is a resident of a different city viz Mumbai, Calcutta, Chennai, Delhi, Hyderabad and Bangalore. R is the resident of Delhi but he is not in chemical or electrical. T , who is in mechanical, is not the resident of Mumbai or Hyderabad. Q is from Calcutta and he is in electrical. The student from Chennai is in electronics and S is from Mumbai. P is in metallurgy.
31. Which of the following is not the correct combination of student and subject?
- (a) P-metallurgy (b) Q-electrical
(c) U-electronics (d) S-civil
(e) All are correct
32. Which student is from Chennai?
- (a) R (b) U
(c) S (d) T
(e) None of these
33. P is from which city?
- (a) Chennai (b) Calcutta
(c) Hyderabad (d) Data inadequate
(e) None of these
34. Which student is from Bangalore'?
- (a) T (b) Q
(c) S (d) T or P
(e) None of these
35. R is studying which subject?
- (a) Electronics (b) Mechanical
(c) Metallurgy (d) Data inadequate
(e) None of these

Directions (Qs. 36-40): Study the following information carefully and answer the questions given below:

- (i) M, N, P, Q, S and T are six members of a group in which there are three female members. Females work in three departments—Accounts, Administration and Personnel—and sit on three different floors—Ist, IInd and IIIrd. Persons working in the same department are not on the same floor. On each floor two persons work.
- (ii) No two females work in the same department or on the same floor. N and S work in the same department but not in Personnel. Q works in administration. S and M are on the Ist and IIIrd floors respectively and work in the same department. Q , a female, does not work on IInd floor. P , a male, work on Ist floor.
36. Which of the following groups of persons are females?
- (a) SQT (b) QMT
(c) QPT (d) Data inadequate
(e) None of these
37. Which of the following pairs of persons work in Administration?
- (a) QP (b) QN
(c) SP (d) Data inadequate
(e) None of these

38. T works in which department?
- (a) Accounts (b) Administration
(c) Personnel (d) Accounts or Personnel
(e) None of these
39. Which of the following pairs works on IInd floor?
- (a) PT (b) SM
(c) QN (d) QT
(e) None of these
40. If T is transferred to Accounts and S is transferred to Administration, who is to be transferred to Personnel to maintain the original distribution of females on each floor?
- (a) P (b) Q
(c) N (d) Data inadequate
(e) None of these

Directions (Qs. 41-45) : Study the following information carefully and answer the questions given below:

Seven specialist doctors B, M, K, P, D, F and H visit a polyclinic on four days—Tuesday, Wednesday, Friday and Saturday—in a week. At least one doctor but not more than two doctors visits the polyclinic on each of these days. Each of them is specialist in different fields—ENT, Orthopaedics, Paediatrics, Neurology, Ophthalmology, Radiology and Oncology.

- (i) P visits on Friday with Radiologist.
- (ii) The Paediatrician does not visit on Saturday nor with D and H .
- (iii) The Oncologist F visits alone on Tuesday.
- (iv) M visits on Wednesday and he is not Paediatrician.
- (v) K visits on Wednesday. H is not Radiologist.
- (vi) The Paediatrician visits with the ENT specialist.
- (vii) The Neurologist visits on Friday.
- (viii) B is neither Orthopaedician nor Radiologist.
41. What is the speciality of B ?
- (a) Ophthalmology (b) ENT
(c) Paediatrics (d) Data inadequate
(e) None of these
42. On which day of the week does D visit?
- (a) Wednesday (b) Saturday
(c) Wednesday or Saturday (d) Friday
(e) None of these
43. Who among them visits the polyclinic along with B ?
- (a) None (b) H
(c) D (d) P
(e) Either H or P
44. On which of the following days do the specialists in Orthopaedics and Ophthalmology visit?
- (a) Wednesday (b) Friday
(c) Saturday (d) Data inadequate
(e) None of these
45. What is P 's profession?
- (a) Paediatrician (b) ENT
(c) Ophthalmologist (d) Data inadequate
(e) None of these

Directions (Qs. 46-49): Read the following information carefully and answer the questions given below :

- (a) An examination board has organised examination for ten subjects viz A, B, C, D, E, F, G, H, I and J on six days of the week with a holiday on Sunday, not having more than two papers on any of the days.
 - (b) Exam begins on Wednesday with subject F.
 - (c) D is accompanied by some other subject but not on Thursday. A and G are on the same day immediately after holiday.
 - (d) There is only one paper on last day and Saturday. B is immediately followed by H, which is immediately followed by I.
 - (e) C is on Saturday. H is not on the same day as J.
46. Examination for which of the following pairs of subjects is on Thursday?
- (a) HE
 - (b) DB
 - (c) FD
 - (d) Data inadequate
 - (e) None of these
47. Examination for which of the following subjects is on the next day of D?
- (a) B
 - (b) C
 - (c) I
 - (d) H
 - (e) None of these
48. Examination for which of the following subjects is on the last day?
- (a) B
 - (b) E
 - (c) J
 - (d) Data inadequate
 - (e) None of these
49. Examination for subject F is on the same day as which of the following subjects?
- (a) E
 - (b) D
 - (c) I
 - (d) B
 - (e) None of these

Directions (Qs. 50-53): Read the following information carefully and answer the questions given below.

A, B, C, D, E, F and G are seven students in a class. They are sitting on three benches I, II and III in such way that there is at least two of them on each bench and there is at least one girl on each bench. C, a girl student, does not sit with A, E and D. F, a boy student, sits with only B. A sits with his best friend on bench I. G sits on bench III. E is brother of C.

50. How many girl students are there?
- (a) 3
 - (b) 4
 - (c) 3 or 4
 - (d) Data inadequate
 - (e) None of these
51. Who sits with C?
- (a) B
 - (b) G
 - (c) D
 - (d) E
 - (e) None of these
52. Which of the following is a group of girls?
- (a) BAC
 - (b) BFC
 - (c) CDF
 - (d) BCD
 - (e) None of these
53. On which bench do three students sit?
- (a) II
 - (b) III
 - (c) I
 - (d) I or II
 - (e) None of these

Directions (Qs. 54-56): Read the following information carefully and answer the questions given below:

Six persons *A, B, C, D, E* and *F* took up a job with a firm in a week from Monday to Saturday. Each of them joined for different posts on different days. The post were of – Clerk, Officer, Technician, Manager, Supervisor, and Sales Executive, though not respectively.

F joined as a Manager on the first day. *B* joined as a Supervisor but neither on Wednesday nor Friday. *D* joined as a Technician on Thursday. Officer joined the firm on Wednesday. *E* joined as a Clerk on Tuesday. *A* joined as a Sales Executive.

54. Who joined the firm on Wednesday?
- (a) B
 - (b) C
 - (c) B or C
 - (d) Data inadequate
 - (e) None of these
55. Who was the last person to join the firm?
- (a) E
 - (b) F
 - (c) A
 - (d) B
 - (e) None of these
56. On which of the following days did the Sales Executive join?
- (a) Tuesday
 - (b) Thursday
 - (c) Saturday
 - (d) Wednesday
 - (e) None of these

Directions (Qs. 57-60): Read the following information carefully to answer the questions given below:

- (i) There are six different books on different subjects *P, Q, R, S, T* and *U*. These books are kept one above the other on a shelf. These books belong to six different persons - *A, B, C, D, E* and *F*. It is not necessary that the orders of these books and persons are the same.
- (ii) Only book of subject *Q* is kept between the books of subject *P* and *T* and only book of subject *S* is kept between books of subject *P* and *U*. The book of subject *R* is immediately above the book of subject *T*.
- (iii) *C*'s book is kept on the top. *A* does not have books on subjects *T* and *S*. The book on subject *P* belongs to *F*. The book on subject *U* belongs neither to *B* nor to *A*. *D*'s book is kept at the bottom.

57. The book on which of the following subjects belongs to *A*?
- (a) Q
 - (b) S
 - (c) P
 - (d) T
 - (e) None of these
58. Who among the following possesses the book on subject *T*?
- (a) B
 - (b) E
 - (c) C or E
 - (d) B or E
 - (e) None of these
59. Who owns the book on subject *U*?
- (a) B
 - (b) E
 - (c) D
 - (d) C
 - (e) None of these
60. The book on which of the following subjects is kept on the top?
- (a) T
 - (b) R
 - (c) U
 - (d) Data inadequate
 - (e) None of these

Directions (Qs. 61-63): Read the following information carefully and answer the questions given below:

- (I) Maths, Physics, Chemistry, Botany, Zoology and Statistics are six subjects on which a series of lectures are to be organised on a day, though their order is not necessarily the same.
- (II) The lectures on Zoology and Chemistry are to be organised either in the beginning or at the end:
- (III) The lecture on Physics is to be organised immediately before that on Botany. The lecture on Statistics is to be organised immediately after that on Botany:
- (IV) There will be a small break after the lecture on Physics and each lecture will be of 45 minutes' duration.
- (V) There will be only two lectures before Physics and the lecture on Chemistry is to be organised immediately before that on Maths.
61. In the series of lectures, the lecture on which of the following subjects is to be organised immediately before the last lecture?
- (a) Botany
(b) Zoology
(c) Either Zoology or Botany
(d) Data inadequate
(e) None of these
62. Which of the above given statements is not necessary to answer the questions?
- (a) V (b) IV
(c) III (d) II
(e) None of these
63. Which of the lectures is to be organised immediately before the physics lecture?
- (a) Maths (b) Zoology
(c) Chemistry (d) Data inadequate
(e) None of these

Directions (Qs. 64-66): Read the following information carefully and answer the questions given below.

- (i) Five students Sujit, Randhir, Neena, Mihir and Vinay have total five books on subjects Physics, Chemistry, Maths, Biology and English written by authors Gupta, Khanna, Harish, D'Souza and Edwin. Each student has only one book on one of the five subjects.
- (ii) Gupta is the author of Physics book, which is not owned by Vinay or Sujit.
- (iii) Mihir owns the book written by Edwin.
- (iv) Neena owns Maths book. Vinay has English book, which is not written by Khanna. Biology book is written by D'Souza.
64. Which of the following is the correct combination of subject, student and author?
- (a) Maths-Neena-Harish (b) Physics-Mihir-Gupta
(c) English-Vinay-Edwin (d) Biology-Sujit-D'Souza
(e) None of these
65. Who is the author of Chemistry book?
- (a) Harish only (b) Edwin only
(c) Khanna or Harish (d) Edwin or Khanna
(e) Data inadequate
66. Who is the owner of the book written by Harish?
- (a) Vinay (b) Sujit
(c) Randhir (d) Data inadequate
(e) None of these

Directions (Qs. 67-70): Read the following information carefully to answer these questions.

- (i) In a family of six members A, B, C, D, E and F each one plays one game out of the six games Chess, Carrom, Table tennis, Badminton, Bridge and Cricket.
- (ii) Two are married couples.
- (iii) B, who plays Carrom, is daughter-in-law of E.
- (iv) A is father of D, the Table-tennis player, and D is father of C, who plays Cricket
- (v) F is brother of C.
- (vi) Chess is not played by a female member.
- (vii) E's husband plays Badminton.
67. Who among them plays Bridge?
- (a) E (b) F
(c) A (d) Data inadequate
(e) None of these
68. How is F related to A?
- (a) Granddaughter (b) Grandson
(c) Son (d) Daughter
(e) None of these
69. Who is husband of B?
- (a) Data inadequate (b) A
(c) C (d) D
(e) F
70. How many male members are there in the family?
- (a) Two only (b) Three only
(c) Four only (d) Data inadequate
(e) None of these

Directions (Qs. 71 - 74): Read the following information carefully and answer the questions given below :

- (i) There are five types of cards viz. A, B, C, D and E. There are three cards of each type. These are to be inserted in envelopes of three colours- red, yellow and brown. There are five envelopes of each colour.
- (ii) B, D and E type cards are to be inserted in red envelopes; A, B and C type cards are to be inserted in yellow envelopes; and C, D and E type cards are to be inserted in brown envelopes.
- (iii) Two cards each of B and D type are inserted in red envelopes.
71. How many cards of E type are inserted in brown envelopes?
- (a) Nil (b) One
(c) Two (d) Three
(e) Data inadequate
72. Which of the following combinations of the type of cards and the number of cards is **definitely correct** in respect of yellow-coloured envelopes?
- (a) A-2, B-1, C-2 (b) B-1, C-2, D-2
(c) A-2, E-1, D-2 (d) A-3, B-1, C-1
(e) None of these
73. Which of the following combinations of types of cards and the number of cards and colour of envelope is **definitely correct**?
- (a) C-2, D-1, E-2, Brown (b) C-1, D-2, E-2, Brown
(c) B-2, D-2, A-1, Red (d) A-2, B-2, C-1, Yellow
(e) None of these

74. Which of the following combinations of colour of the envelope and the number of cards is **definitely correct** in respect of E type cards?
- (a) Red-2, Brown-1 (b) Red-1, Yellow-2
 (c) Red-2, Yellow-1 (d) Yellow-1, Brown-2
 (e) None of these

Directions (Qs. 75-78): Study the following information and answer the questions given below:

- (i) 6 picture cards A, B, C, D, E and F are printed in six different-coloured inks / blue, red, green, grey, yellow and brown / and are arranged from left to right (not necessarily in the same order and colour as given).
- (ii) The pictures were of King, Princess, Queen, Palace, Joker and Prince.
- (iii) The picture of palace was in blue colour but it was not printed on card D.
- (iv) Card 'A', which was bearing Queen's picture printed in brown ink, was at the extreme right.
- (v) The picture of princess was neither on card D nor E and was not printed in either green or yellow ink card 'C' had picture of King printed in 'grey' ink and it was fifth from right and next to card B having picture of prince.
75. If the Princess's card is between the cards of the palace and prince, then at what number the Joker's card is placed from left?
- (a) First (b) Fourth
 (c) Fifth (d) Second
 (e) None of these
76. Which of the following combinations of card and colour is TRUE for picture of princess?
- (a) E-Yellow (b) F-Red
 (c) B-Green (d) Data inadequate
 (e) None of these
77. In which colour was the picture of Joker printed?
- (a) Data inadequate (b) Yellow
 (c) Red (d) Green
 (e) None of these
78. Picture of palace was printed on which of the following cards?
- (a) E (b) F
 (c) D (d) Either D or E
 (e) None of these

Directions (Qs. 79-80): After a cricket series, a panel judged 5 players / Pervez, Jatin, Robin, Dinkar and Rahul and gave them ranking for batting and bowling. The ranking was in descending order. Rahul, who was ranked first in batting, was last in bowling. Robin had same ranking in both and was just above Rahul in bowling. In batting, Pervez was just above Dinkar but in bowling he was in the middle after Jatin.

79. Who was ranked first as bowler?
- (a) Jatin (b) Rahul
 (c) Robin (d) Data inadequate
 (e) None of these
80. Who was ranked fifth in batting?
- (a) Dinkar (b) Jatin
 (c) Robin (d) Data inadequate
 (e) None of these

Directions (Qs. 81 - 84): Read the following information and answer the given questions :

- (i) Six friends Ramesh, Dinesh, Lokesh, Nilesh, Shailesh and Hitesh work in different companies, namely 'P', 'Q', 'R', 'S', 'T' and 'U', and each one wears company-sponsored different coloured tie, i.e. Blue, Green, Pink, Yellow, Purple and Red, though not necessarily in the same order.
- (ii) The one wearing Blue tie works in Company 'S' and the one wearing Green tie works in Company 'P'.
- (iii) Hitesh does not work in Company 'R' or 'T'.
- (iv) Ramesh wears Pink tie and works in Company 'Q'.
- (v) Nilesh does not work in Company 'T' and purple colour tie is not sponsored by Company 'R'.
- (vi) Shailesh works in company 'U' and neither Nilesh nor Dinesh works in company 'S'.
- (vii) Company 'T' does not sponsor Purple or Yellow coloured tie and Lokesh works in company P.
81. Which colour tie is sponsored by Company 'R'?
- (a) It can not be ascertained
 (b) Blue (c) Green
 (d) Pink (e) None of these
82. Which of the following "colour of tie-company-person" combinations is correct?
- (a) Green-R-Nilesh (b) Blue-S-Lokesh
 (c) Red-T-Dinesh (d) Yellow-R-Shailesh
 (e) None of these
83. Which of the following is true?
- (a) Company 'U' sponsors Green tie.
 (b) Shailesh wears Red tie.
 (c) Nilesh works in Company 'T'.
 (d) Red colour is sponsored by Company 'T'.
 (e) None of these
84. Which of the following sequence of companies represents Ramesh, Dinesh, Lokesh, Nilesh, Shailesh and Hitesh in the same order?
- (a) Q, P, T, R, U, S (b) Q, T, P, R, U, S
 (c) Q, P, T, S, U, R (d) Q, T, S, U, R, P
 (e) None of these

Directions (Qs. 85-87): Read the following information carefully and answer the questions given below:

- (i) A, B, C, D, E, F, G and H are standing in a row facing North.
- (ii) B is not neighbour of G.
- (iii) F is to the immediate right of G and neighbour of E.
- (iv) G is not at the extreme end.
- (v) A is sixth to the left of E.
- (vi) H is sixth to the right of C.
85. Who among the following are neighbours?
- (a) AB (b) CG (c) FH (d) CA
 (e) None of these
86. Which one among the following defines the position of D?
- (a) Fourth to the right of H (b) Third to the right of A
 (c) Neighbour of B and F (d) To the immediate left of B
 (e) None of these
87. Which of the following is true?
- (a) C is to the immediate left of A
 (b) D is neighbour of B and F
 (c) G is to the immediate right of D
 (d) A and E are at the extreme ends
 (e) None of these

Directions (Qs. 88-90): Study the following information carefully and answer the questions given below:

- (i) Five courses A, B, C, D and E each of one month duration are to be taught from January to May one after the other though not necessarily in the same order by lecturers P, Q, R, S and T.
- (ii) 'P' teaches course 'B' but not in the month of April or May.
- (iii) 'Q' teaches course 'A' in the month of March.
- (iv) 'R' teaches in the month of January but does not teach course 'C' or 'D'.
88. Which course is taught by 'S'?
- (a) C (b) E
(c) Either C or D (d) D
(e) None of these
89. Which lecturer's course immediately follows after course 'B'?
- (a) Q (b) P
(c) S (d) T
(e) None of these
90. Which course is taught in the month of January?
- (a) C (b) D
(c) E (d) Data inadequate
(e) None of these

Directions (Qs. 91-93): Read the following information carefully to answer the questions given below:

The annual gathering of a school was organised on a day in the morning hours. Six different items, viz. drama, singing, mimicry, speech, story-telling and dance, are to be performed by six children A, B, C, D, E and F not necessarily in the same order. The programme begins with song not sung by B and ends with dance. C performs mimicry immediately after speech. E performs drama just before dance. D or F is not available for the last performance. Speech is not given by A. An interval of 30 minutes is given immediately after mimicry with three more items remaining to be performed. D performs immediately after interval.

91. Which item is performed by F?
- (a) Drama (b) Song
(c) Speech (d) Story-telling
(e) None of these
92. Who performed dance?
- (a) A (b) B
(c) F (d) Data inadequate
(e) None of these
93. Who was the first performer?
- (a) A (b) B
(c) C (d) Data inadequate
(e) None of these

Directions (Qs. 94-98): Study the following information to answer the given questions :

- (a) Six plays are to be organized from Monday to Sunday - One play each day with one day when there is no play. 'No play' day is not Monday or Sunday.
- (b) The plays are held in sets of 3 plays each in such a way that plays are held without any break i.e. 3 plays are held in such a way, that there is no 'No play' day between them but immediately before this set or immediately after this set it is 'No play' day.
- (c) Play Z is held on 26th and play X was held on 31st of the same month.

- (d) Play B was not held immediately after play A (but was held after A, not necessarily immediately before Q).
- (e) All the six plays were held in the same month.
94. Which play was organized on Monday ?
- (a) Z (b) M
(c) Q (d) Can't be determined
(e) None of these
95. Which day was play Z organized ?
- (a) Tuesday (b) Monday
(c) Wednesday (d) Can't be determined
(e) None of these
96. Which date was a 'No play' day ?
- (a) 26th (b) 28th
(c) 29th (d) Can't be determined
(e) None of these
97. Which of the following is true ?
- (a) Play M was organized on Thursday
(b) Play Q was organized in the Middle of the week
(c) There was a gap after 2 plays and then 4 plays were organized
(d) First play was organized on the 25th
(e) Play B was held on Friday
98. Which day was play Q organized ?
- (a) Friday (b) Wednesday
(c) Saturday (d) Can't be determined
(e) None of these

Directions (Qs. 99-105): Each of these questions are based on the information given below:

P, Q, R, S, W, X, Y, Z are sitting around a circle facing centre but not necessarily in the same order. The husband of Z is sitting second to the right of Q who is sitting between two males. X sits second to the left of the daughter of S. X is the sister of Y. X is not an immediate neighbour of Z's husband. Only one person sits between P and X. P is the father of Y. S who is brother of Z sits to the immediate left of his mother. Only one person sits between Z's mother and W. Only one person sits between Z and Y. Y is mother of R. Y is not an immediate neighbour of W.

99. Which of following is true with respect to the given seating arrangement?
- (a) R is the cousin of W
(b) Z and Z's husband are immediate neighbour of each other.
(c) No female is an immediate neighbour of R.
(d) Z sits third to the left of her daughter.
(e) Q is the mother of Z.
100. What is the position of P with respect to his grandchild?
- (a) immediate right (b) third to the right
(c) third to the left (d) Second to the right
(e) fourth to the right
101. Four of the following five are alike in a certain way. Which one does not belong to that group?
- (a) X (b) R
(c) W (d) Z
(e) Y
102. What is position of P with respect to his mother-in-law?
- (a) Immediate right (b) third to the right
(c) third to the left (d) second to the right
(e) None of these

103. How many people sits between Y and her uncle?
 (a) One (b) Two
 (c) Three (d) Four
 (e) Five
104. Who amongst the following is S's daughter?
 (a) Q (b) R
 (c) W (d) Y
 (e) Z
105. Who sits to the immediate left of R?
 (a) X's grandmother (b) Y's son
 (c) S's mother-in-law (d) P
 (e) Y

Directions (Qs. 106-112) : Study the following information and answer the questions given below:

Eight friends-A, B, C, D, E, F, G and H-are sitting around a circular table not necessarily in the same order. Three of them are facing outward while five are facing towards the centre. There are equal number of males and females in the group. C is facing the centre. E is sitting third to the right of C. F is sitting third to the left of E. Three persons are sitting between F and B. The immediate neighbours of B are females. G is sitting third to the right of F. D is sitting third to the right of A. A is not an immediate neighbour of E. The immediate neighbours of E are males and are facing the centre. The immediate neighbours of D are females and face outside. The one sitting third to the left of B is a male. No female is an immediate neighbour of G.

106. Who is sitting second to the right of E?
 (a) C (b) B
 (c) G (d) H
 (e) None of these

107. How many persons are sitting between H and C when counted from the left side of H?
 (a) One (b) Two
 (c) Three (d) Four
 (e) More than four
108. Which of the following statements is true regarding H?
 (a) The one who is second to the right of H is a female.
 (b) H is facing the centre.
 (c) H is a male.
 (d) The immediate neighbours of H are facing outside.
 (e) None is true
109. What is D's position with respect to G?
 (a) Third to the left (b) Third to the right
 (c) Second to the left (d) Second to the right
 (e) None of these

Directions (Qs. 110-112): Four of the following five are alike in a certain way based on their seating positions in the above arrangement and hence form a group.

110. Which of the following does not belong to the group?
 (a) BE (b) CG
 (c) GA (d) DH
 (e) AF
111. Which of the following does not belong to the group?
 (a) B (b) F
 (c) G (d) A
 (e) D
112. If all the friends are asked to sit in an alphabetical order starting from A in an anti-clockwise direction, the positions of how many will remain unchanged (excluding A)?
 (a) Four (b) Three
 (c) Two (d) One
 (e) None

ANSWER KEY

1	(c)	14	(c)	27	(d)	40	(b)	53	(c)	66	(a)	79	(e)	92	(d)	105	(a)
2	(d)	15	(e)	28	(c)	41	(a)	54	(b)	67	(a)	80	(b)	93	(d)	106	(c)
3	(d)	16	(d)	29	(c)	42	(d)	55	(d)	68	(b)	81	(e)	94	(e)	107	(b)
4	(c)	17	(c)	30	(c)	43	(b)	56	(e)	69	(d)	82	(c)	95	(a)	108	(a)
5	(b)	18	(a)	31	(d)	44	(c)	57	(a)	70	(d)	83	(d)	96	(b)	109	(b)
6	(a)	19	(e)	32	(b)	45	(e)	58	(d)	71	(c)	84	(b)	97	(d)	110	(C)
7	(c)	20	(b)	33	(c)	46	(a)	59	(c)	72	(d)	85	(d)	98	(c)	111	(d)
8	(b)	21	(b)	34	(a)	47	(b)	60	(b)	73	(a)	86	(b)	99	(e)	112	(d)
9	(d)	22	(d)	35	(e)	48	(c)	61	(e)	74	(e)	87	(c)	100	(a)		
10	(b)	23	(c)	36	(a)	49	(d)	62	(b)	75	(a)	88	(c)	101	(a)		
11	(d)	24	(b)	37	(d)	50	(c)	63	(a)	76	(b)	89	(a)	102	(d)		
12	(e)	25	(a)	38	(c)	51	(b)	64	(d)	77	(a)	90	(c)	103	(c)		
13	(e)	26	(c)	39	(e)	52	(d)	65	(b)	78	(a)	91	(e)	104	(c)		

Hints & Explanations

1-5: Here, the persons who travel are: A, B, C, D, E, F, and G. Stations are: Base station, #I, #II, #III, #IV, and #V. Let us proceed with the following information: (1), (4), (5), (6), (9), (8), and (10).

These information give us the following table:

Station	Get in	Getdown
Base station	---	xxx
# I		xxx
# II	xxx	
# III	Only G	B, D
# IV	A	Only E
# V	xxx	A, G, C

Now, from clue (2), F gets down at # II. And he got in either at base station or at # I.

Now, since F got down at #II and he had got in with C, it implies that both C and F got in either at base station or at # I.

Again, since B and D get down at # III this implies that they too got in either at base station or at # I.

It is given that E got in with two other persons i.e., in a group of three persons. Obviously, **E got in at base station.**

Hence, once again the above information can be summarised as :

Station	Get in	Getdown
Base station	E and (C, F) or (B, D)	xxx
# I	(C,F) or (B, D)	xxx
# II	xxx	Only F
# III	Only G	B, D
# IV	A	Only E
# V	xxx	A, G, C

1. (c) 2. (d) 3. (d) 4. (c) 5. (b)

6-10: Here the persons are P, Q, R, S, T, V and W and the vehicles are I, II and III. If there are at least two passengers in each vehicle and one of them is a male then, in the group there are at least three males.

Among them **R is a female** and she is a doctor. **P and V are also females.** From clue (ii) we get W is a teacher. And Q is a male and he is an engineer. He travels with only W. This implies **W is a female.** And both of them travel in vehicle I. From clue (iii), **S is a male** and he is a doctor. From clue (v), P is not an engineer (and she can't be a doctor because there are only two doctors R and S). Hence, P is a teacher and she travels in vehicle II.

Now, see the bold parts. It says that there are four females R, P, V and W. Hence the remaining persons must be males because in each vehicle there is at least one male. Hence, **T is a male.** This implies that S and T will occupy seats in two different vehicles (II and III) because in vehicle I. Q travels with only W.

Again since, R can travel neither with S (see clue iv) nor with P and V (see clue i). Thus, we get their sitting arrangement as follows:

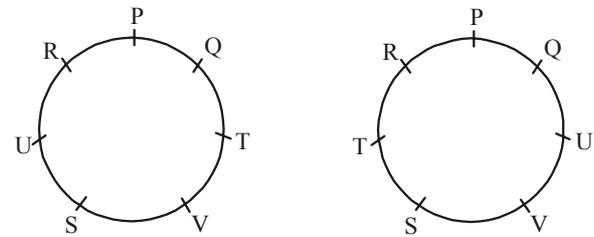
Vehicle	Person
I.	Q, W
II.	P, S, V
III.	T, R

Thus the obtained information can be summarised as below:

Person	Profession	Vehicle	Sex
Q	Engineer	I	Male
W	Teacher	I	Female
P	Teacher	II	Female
S	Doctor	II	Male
V	Engineer	II	Female
T	Teacher	III	Male
R	Doctor	III	Female

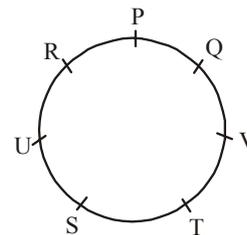
6. (a) 7. (c) 8. (b) 9. (d) 10. (b)

11-15: These are the probable cases of the sitting arrangements of P, Q, R, S, T, U and V:

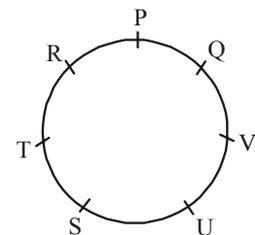


Case:I

Case:II



Case:III

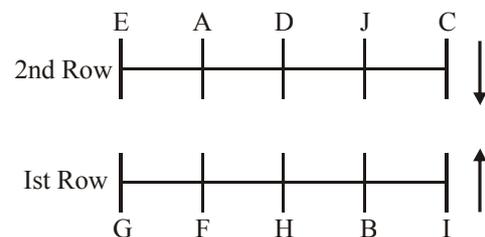


Case:IV

11. (d) We can't say (iii) to be wrong because case III (as mentioned above) makes the statement true. While case I and case II makes the statement wrong. Since, we are not certain about the positions of U, V and T. Thus, only (i) and (ii) are wrong.

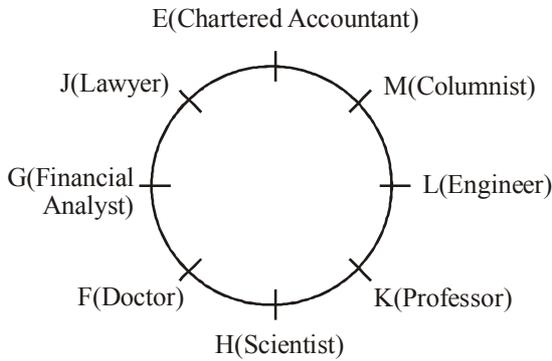
12. (e) 13. (e) 14. (c) 15. (e)

(16-20):

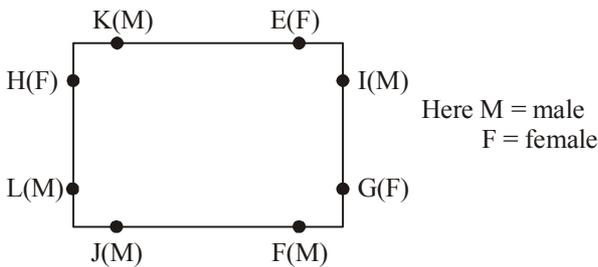


16. (d) 17. (c) 18. (a) 19. (e) 20. (b)

(21-25):



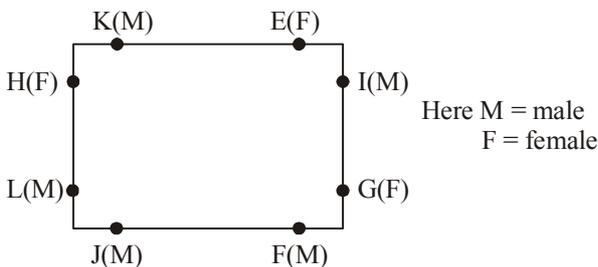
21. (b) 22. (d) 23. (c) 24. (b) 25. (a)
26. (c)



Here M = male
F = female

J is to the immediate left of F.

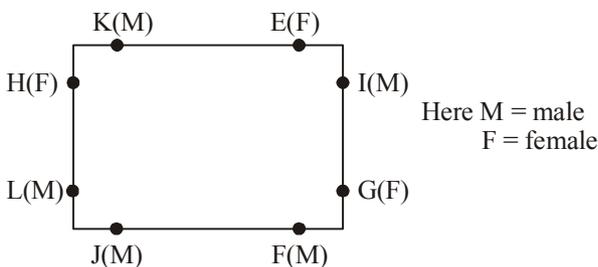
27. (d)



Here M = male
F = female

Both are male.

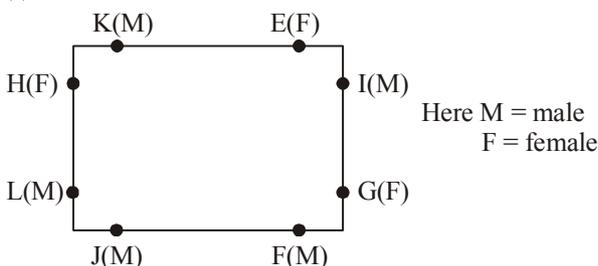
28. (c)



Here M = male
F = female

Three persons are seated between K and F (H, L and J) or E, I and G.

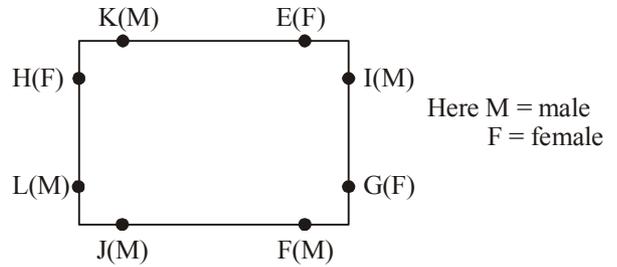
29. (c)



Here M = male
F = female

The three lady members are E, H and G.

30. (c)



Here M = male
F = female

K is seated between E and H.

(31-35)

Student	State	Branch
R	Delhi	Chem, Electrical (×)
T	Mumbai, Hyder (×)	Mech
Q	Calcutta	Electrical
	Chennai	Electronics
S	Mumbai	
P		Metallurgy

The following bold letters can be filled easily with the given information.

R	Delhi	Civil
T	Bangalore	Mechanical
Q	Calcutta	Electrical
U	Chennai	Electronics
S	Mumbai	Chemical
P	Hyderabad	Metallurgy

31. (d) 32. (b) 33. (c) 34. (a) 35. (e)

(36-40):

N, S — Account/Administration ... (i)

Q(–) — Administration – I/III ... (ii)

S works on Ist floor.

M works on IIIrd floor.

S and M work in the same department ... (iii)

P(+) – Ist floor

As only two persons work on each floor, Q and M work on IIIrd floor. And N and T work on IInd floor. As not two females work on the same floor, M is a male. Similarly, S is a female. From (i) and (iii), it is clear that N, S and M work in the same department. And as no two females work in the same department, N is a male and T is a female.

As Q works in Administration, S works in Accounts with N and M.

Now, it is clear that T works in personnel. Now, the table will look as:

Person	Sex	Floor	Department
P	Male	I	Personnel/ Administration
S	Female	I	Accounts
N	Male	II	Accounts
T	Female	II	Personnel
Q	Female	III	Administration
M	Male	III	Accounts

36. (a) 37. (d) 38. (c) 39. (e) N and T

40. (b)

41-45: Let us proceed with the following chart:

Days	Person	Specialisation
Tuesday	—	—
Wednesday	—	—
Friday	—	—
Saturday	—	—

From clue (i), we get that the two persons who visit on Friday are P and the person who is Radiologist. Fill the above information in the chart.

Now, from clue (iii), we get that F is Oncologist and he visits alone on Tuesday.

Again, from clue (vii), we get that Neurologist visits on Friday. This implies that **P is Neurologist**.

Now, from clues (iv) and (v), we get M and K visit on Wednesday. Again, from clue (vi), we get Paediatrician visits with ENT specialist. This implies that they visit either on Wednesday or on Saturday. Again, from clue (ii), the Paediatrician does not visit on Saturday.

Therefore, Paediatrician and ENT specialist visit on Wednesday.

Now, using clue (iv), we get that **M is ENT specialist** whereas **K is the Paediatrician**. Again, from clue (v), we get that H is not Radiologist. This implies H does not visit on Friday. Hence, **H visits on Saturday**. Similarly, from clue (viii), we get that **B also visits on Saturday**.

Now, look at the chart. What do you observe? the only person left is D. Obviously, **D is the Radiologist**. Now, use clue (viii). *Since* B is not in Orthopaedics, **H is in Orthopaedics and B is Ophthalmologist**.

Thus the whole information can be summarised as:

Tuesday:	F(Oncologist)
Wednesday:	M(ENT Specialist), K(Paediatrician)
Friday:	P(Neurologist), D(Radiologist)
Saturday:	H(Orthopaedician), B(Ophthalmologist)

41. (a) 42. (d) 43. (b) 44. (c)
45. (e) Neurology

(46-49):

Wednesday	Thursday	Friday	Saturday	Sunday	Monday	Tuesday
F, B	H, E	I, D	C	Holiday	A, G	J

46. (a) 47. (b) 48. (c) 49. (d)

50-53: We have been given that A and G sit on bench I and III respectively.

Now, since F is a boy and sits with only B, this implies B is a female (because there is at least one girl on each bench). F and B sit on bench II.

On the basis of above information we get

Bench I. A —
Bench II. F(+) B(—)
Bench III. G —
(+) indicates male; (—) indicates female.

Now, since C (a girl student) does not sit with A, E and D, it implies that C sits on bench III (because on bench II only two persons sit). By elimination E and D sit on bench I.

Now, See the clue, "A sits with his best friend". The pronoun 'his' implies that A is a male. Again E is the brother of C implies that E is a male. By elimination D is a female. But sex of G is still not known.

Thus the information obtained above can be summarised as follows.

Bench I: A(+) D(—) E(+)

Bench II: F(+) B(—)

Bench III: G C(—)

(+) indicates male; (—) indicate female.

50. (c) D, B, C are girls. Possibility of fourth girl still exists because sex of G is not known.

51. (b) 52. (d) 53. (c)

(54-56):

Person	Posts	Days
F	Manager	Monday
B	Supervisor	Saturday
D	Technician	Thursday
C	Officer	Wednesday
E	Clerk	Tuesday
A	Sales executive	Friday

54. (b) 55. (d) 56. (e)

(57-60): From (ii):

P	T
Q	Q
T	P
P	U
S	S
U	P

From the last sentence of (ii), only one possibility remains:

R
T
Q
P
S
U

Now, using (iii) and the above derived result:

R C
T E/B
Q A
P F
S B/E
U D

57. (a) 58. (d) 59. (c) 60. (b)

(61-63): **Subject**

From (ii): Zoology

From (iii): Physics

From (v): X=3

Sl. No.

1/6

Chemistry 1/6

X

Botany X+1

Chemistry Y

Maths Y+1

Now, it is clear that the lecture of Chemistry is not to be organised at the end. Hence, from (II), Chemistry-1 and Zoology-6. Hence, the arrangement will be: Chemistry-1, Maths-2, Physics-3, (break), Botany-4, Statistics-5, Zoology-6.

AC -- GFEH... (viii)

Now, from (ii) and (viii), we get

ACB - GFEH... (ix)

Now, the blank can be filled by 'D', hence the arrangement will be ACBDGFEH

85. (d) 86. (b) 87. (c)

(88-90): Lecturers Courses Month

P	B	Jan/Feb/Mar ... (ii)
Q	A	Mar (iii)
R	A/B/E	Jan (iv)

Now, from the table it is clear that P will teach in February and 'R' will definitely teach the course E. Hence the table can be made as,

Lecturers	Course	Month
P	B	Feb
Q	A	Mar
R	E	Jan
S	C/D	Apr/May
T	D/C	May/Apr

88. (c) 89. (a) 90. (c)

(91-93): Programme	its order	Performer
song 1	B(x) (i)
dance	6 (ii)
mimicry	$x = 3$	C..... (iii)
speech	$(x - 1) = 2$	A(x)..... (iv)
drama	5	E..... (v)

[order can be determined with the help of II]

6	D/F(x) (vi)
4	D.....	(vii)

'x = 3' is known by the secondlast line of the given information:

story telling	4	D
drama	5	E
mimicry	3	C
speech	2	B/F
song	1	A/F
dance	6	A/B

91. (e) 92. (d) 93. (d)

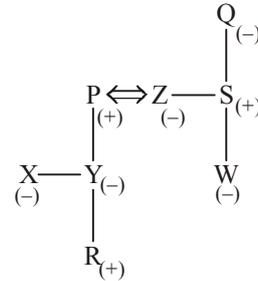
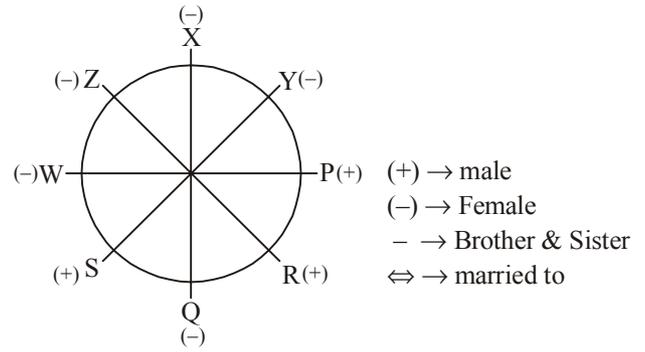
94 - 98

Day	Date	Play
Monday	25	A
Tuesday	26	Z
Wednesday	27	B
Thursday	28	No play
Friday	29	M
Saturday	30	Q
Sunday	31	X

94. (e) 95. (a) 96. (b) 97. (d) 98. (c)

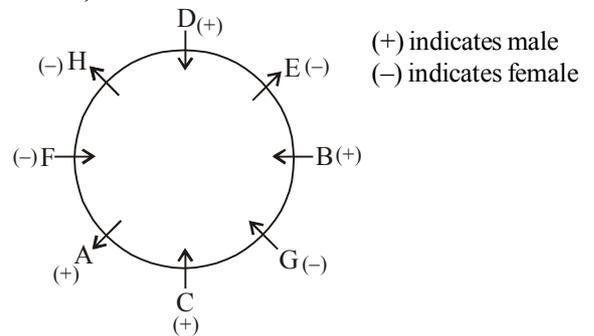
(99-105)

P, Q, R, S, W, X, Y, Z

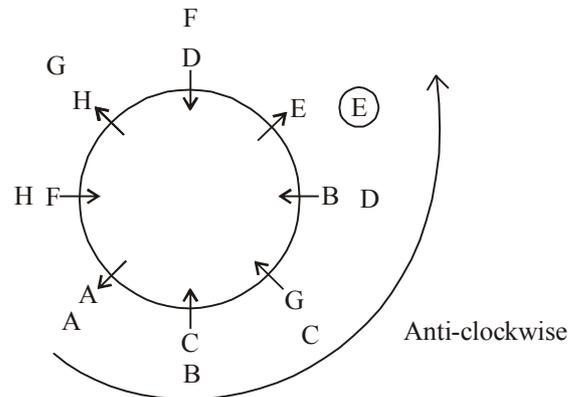


99. (e) 100. (a) 101. (a) 102. (d)
103. (c) 104. (c) 105. (a)

Sol: (106-112)



106. (c)
107. (b)
108. (a)
109. (b)
110. (c)
111. (d)
112. (d) Circular Rearrangement



Syllogism

INTRODUCTION

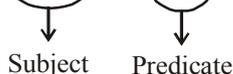
Syllogism is a Greek word that does mean 'inference' or 'deduction'. The problems of syllogism are based on two parts :

1. Proposition / Propositions
2. Conclusion / Conclusions drawn from given proposition/ propositions

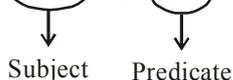
WHAT IS A PROPOSITION?

Just consider the sentences given below:

(i) "All lions are pigs"



(ii) "No cat is rat"



(iii) "Some girls are beautiful"



(iv) "Some kites are not birds"



All the sentences mentioned above give a relation between subject and predicate. Here, it is clear from the sentences that a subject is the part of a sentence something is said about, while a predicate is the term in a sentence which is related to the subject.

Now, let us define the proposition :

A proposition is a sentence that makes a statement giving a relation between two terms. It has three parts :

- (a) the subject
- (b) the predicate
- (c) the relation between subject and predicate

WHAT IS A CATEGORICAL PROPOSITION?

Let us see the sentences given below :

"All M are P"

"No M are P"

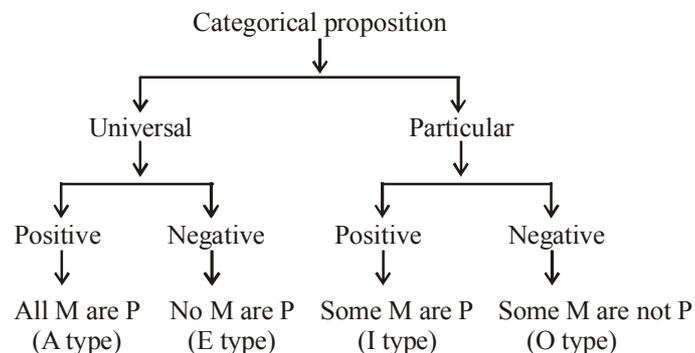
"Some M are P"

"Some M are not P"

What we notice in all above-mentioned sentences that they are **condition free**. These type of sentences are called **Categorical Propositions**. In other words a categorical proposition has no condition attached with it and it makes direct assertion. It is different from non-categorical proposition which is in the format "If M then P"

Types of categorical proposition:

It can be understood by the diagram given below :



Therefore, it is clear, that universal propositions either completely include the subject (A type) or completely exclude it (E type). On the other hand, particular propositions either only partly include the subject (I type) or only partly exclude the subject (O type).

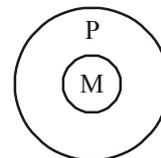
Now we can summarise the four types of propositions to be used while solving the problems of syllogism :

Format	Type
All M are P	– A
No M are P	– E
Some M are P	– I
Some M are not P	– O

Venn Diagram

All A, E, I and O type of propositions can also be represented in pictorial way and this method is known as Venn diagram.

(i) **Representation of "All M are P" (A type):**



Here, the whole circle denoting M (all M) lies inside the circle denoting P. The other possibility is as picture given below :



(ii) **Representation of "No M are P" (E type):**



Here, the circle denoting M and P do not intersect at all and therefore, truly represents "No M are P"

(iii) **Representation of "Some M are P" (I type):**

This representation will be in two ways :

Either (a):



Here it is clear from the picture that shaded part of M is some part of P and shaded part of P is some part of M. Thus "Some M are P". Similarly, unshaded part of M is not P and unshaded part of P is not M. Thus it represents "Some M are not P".

Or (b):



Here, only shaded part of M is P also. Thus we can say "Some M are P."

(iv) **Representation of "Some M are not P" (O type):**

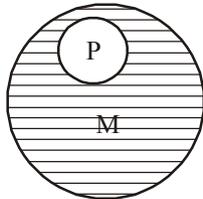
This representation will be in three ways :

Either (a):



Here, unshaded part of M is not a part of P. Thus it represents "Some M are not P." But the shaded part represents "Some M are P".

Or (b):



Here, shaded part of M is not a part of P. Thus it represents "Some M are not P" and the circle denoting P represents "All P are M".

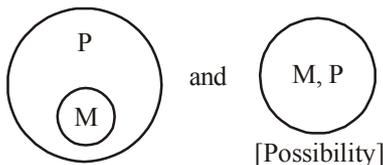
Or (c):



It is clear from this pictorial representation that this represents "Some M are not P" and "No M are P" as well.

Now we can make a summary of Venn diagram:

All M are P (A type):

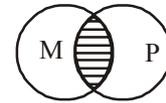


No M are P (E type):



Some M are P (I type):

Either:



Some M are P
[Some M are not P]

Or :



Some M are P
[All P are M]

Some M are not P (O type):

Either:



Some M are not P
[Some M are P]

Or:



Some M are not P
[All P are M]

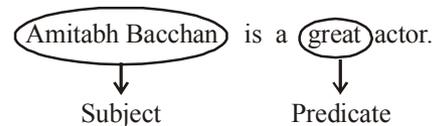
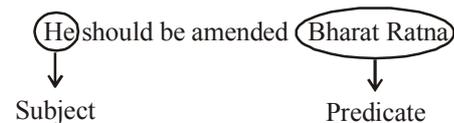
HOW TO IDENTIFY HIDDEN PROPOSITIONS?

(i) **A type:** Apart from 'all' it starts with every, each and any.

EXAMPLE 1.

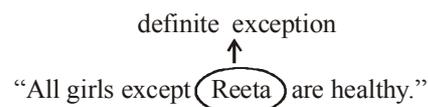
- Every girl is beautiful.
- [All girls are beautiful.]
- Each of them is healthy.
- [All (of them) are healthy.]
- Any one could kill the lion.
- [All can kill the lion.]

Further, let us see the sentences given below :



Thus, a positive sentence with a particular person as its subject is A type.

Also, a sentence in the following format is A type :

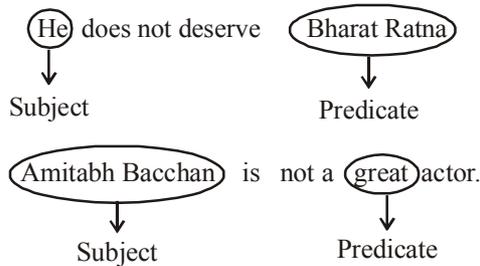


(ii) **E type:** Apart from 'no' this type of propositions starts from 'no one', 'none', 'not a single' etc.

EXAMPLE 2.

No one (student) is studious.
[No student is studious]
None of the girl is beautiful.
[No girl is beautiful]
Not a single girl is healthy.
[No girl is healthy].

Further, let us see the sentences given below :



Thus, a negative sentence with a particular person as its subject is E type proposition.

Also, sentences in following formats are E type :

definite exception
↑
"No student except Reena has failed"
"Is there any truth left in the world"
[No truth is left in the world.]

(iii) **I type:** Apart from some it also starts with words such as often, frequently, almost, generally, mostly, a few, most etc.

EXAMPLE 3.

Almost all the girls are beautiful.
[Some girls are beautiful].
Most of the garments are handmade.
[Some of the garments are handmade].
Usually girls are beautiful.
[Some girls are beautiful.]
A few money are left in my wallet.
[Some money are left in my wallet].

Further, let us see the sentences given below :

Few girls are not studious.
[Some girls are studious.]
Rarely is a girl not beautiful.
[Some girls are beautiful].
Seldom are women not housewife.
[Some women are housewife].

It is clear from the above examples that negative sentences beginning with words like 'few', 'rarely', 'seldom', etc. (Also 'hardly', 'scarcely', 'little' etc.) are to be reduced to I type. Just see the other formats given below :

Not a definite exception as name of girls are not given.

All girls except a few are beautiful.
[Some girls are beautiful]

Not a definite exception as name of girls are not given.

All girls except 5 have passed

[Some girls have passed]

Therefore, a positive proposition with an indefinite exception is reduced to I type.

(iv) **O type :** Apart from "Some not" this type of statements start with words like 'all', 'every', 'any', 'each', etc.

EXAMPLE 4.

All girls are not beautiful.
[Some girls are not beautiful]
Every boy is not present.
[Some boys are not present.]

Further, let us see the following sentences :

Poor are usually not healthy.
[Some poor are not healthy]
Almost all the girls are not beautiful.
[Some girls are not beautiful.]
Most of the garments are not handmade.
[Some of the garments are not handmade.]
Girls are not frequently short tempered.
[Some girls are not short tempered].

Now, it is clear from the above mentioned examples that negative propositions with words such as 'almost', 'frequently', 'most', 'mostly', 'a few', generally, etc. are to be reduced to the O-type propositions.

Again, positive propositions starting with words like 'few', 'scarcely', 'rarely', 'little', 'seldom' etc. are said to be O-type.

EXAMPLE 5.

Seldom are women jealous.
[Some women are not jealous]
Few girls are beautiful.
[Some girls are beautiful]
Rarely is a wealthy person worried.
[Some wealthy person are not worried.]

Also, see the following formats :

No definite exception as name of girls are not given.

No girls except three are beautiful.

[Some girls are not beautiful.]

No definite exception as name of women are not given.

No women except a few are housewife.

Therefore, a negative proposition with an indefinite exception, is reduced to O type.

Identifying Exclusive Propositions

Such propositions start with 'only', 'alone', 'none else but', 'none but' etc. and they can be reduced to either A or E or I format.

EXAMPLE 6.

Only graduates are Probationary Officers.
 ⇒ No graduate is Probationary Officer (E type)
 ⇒ All Probationary Officers are graduates. (A type)
 ⇒ Some graduates are Probationary Officers (I type)
 General format of sentences given in the examinations :

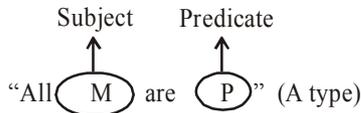
- All M are P (A type)
- No M are P (E type)
- Some M are P (I type)
- Some M are not P (O type)

Note : General format given above are frequently asked formats in the examinations. But students must be ready for other hidden formats of A, E, I and O types of propositions as problems in hidden formats can also be given in question papers.

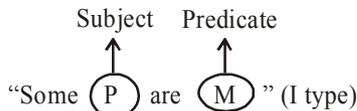
Conversion of Propositions :

Before solving the problems of syllogism it is must to know the conversion rules of all A, E, O, and I types of propositions :

Conversion of A type :

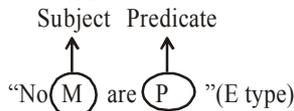


After conversion it becomes.

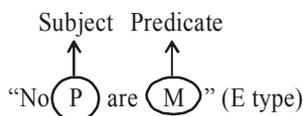


Therefore, it is clear that A type of propositions get converted into I type.

Conversion of E type :

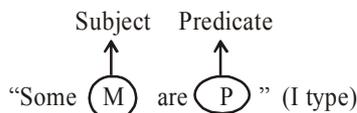


After conversion it becomes

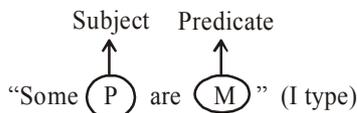


Therefore, E gets converted into E. “sss”

Conversion of I type :



After conversion it becomes



Therefore, I gets converted into I.

Conversion of O type :

O type of proposition can't be converted.

Note : In each conversion, subject becomes predicate and predicate becomes subject.

In fact, conversion is an immediate inference that is drawn from a single proposition while inference drawn from two propositions are called mediate inference.

Now we can make a short table of conversion to remember.

Table of conversion :

Type of proposition	Get converted into
A	I
E	E
I	I
O	Never get converted

Rule to draw conclusion :

After knowing conversion of propositions, we must learn the rules to draw conclusions. In problems of syllogism, conclusions are drawn either from single propositions or from two proposition or from both. But a conclusion from single proposition is just a conversion of that proposition while to get conclusion from two propositions a certain table is used that tells us what type of conclusion (in form of proposition) we get out of two propositions. To understand it, let us see the following conclusion table :

Conclusion Table

I Proposition	II Proposition	Conclusion
A	A	A
A	E	E
E	A	(O) ^R
E	I	(O) ^R
I	A	I
I	E	O

Note :

- (a) Apart from above 6 pairs of propositions, no other pair will give any conclusion.
- (b) The conclusion drawn out of two propositions is itself a proposition and its subject is the subject of the 1st statement while its predicate is the predicate of the 2nd statement. The common term get disappeared.
- (c) (O)^R does mean that the conclusion is O type but is in reverse order. In this case, the subject of the inference or conclusion is the predicate of the 2nd proposition and the predicate of the conclusion is the subject of the 1st sentence or statement.
- (d) The conclusion table gives correct conclusions or inference if and only if the two propositions are aligned properly.

WHAT IS ALIGNING ?

Let us see the following examples :

EXAMPLE 7.

Statements :

- I. All (girls) are beautiful.
- II. Some (girls) are Indian.

EXAMPLE 8.

Statements :

- I. No (pen) is chair.
- II. Some tables are (pen).

EXAMPLE 9.

Statements :

- I. Some women are (men).
- II. No (men) is chair.

In all the above mentioned example, we notice that in two statements of every example, there is a common term. In example 1 the word 'girl' is common; in example 2 the word 'pen' is common while in example 3 the word 'men' is common.

Now, the aligning of the two statements (propositions) does mean that the pair of statements must be written in such a way that the common term is the predicate of the 1st sentence and the subject of the 2nd.

Just think over the following examples :

Statements :

- I. Some girls are (cute).
 II. All (cute) are tall.

Here, the common term cute is the predicate of the I statement and subject of the 2nd statement. Therefore, the two statements (I & II) are properly aligned.

But see another example.

Statements :

- I. Some (bats) are chairs.
 II. Some cats are (bats).

Here, the sentences are not aligned as the predicate of the 1st statement is not the subject of the 2nd.

Then how to align it? In such type of cases we change the order of sentences. In another words we put I sentence in place of II and II in place of I :

- II. Some cats are (bats).
 I. Some (bats) are chairs.

Let us consider another pair of statements.

- I. All bats are chair.
 II. All bats are cats.

Then how to align it? In fact, in such cases we do alignment in two ways :

- (a) by converting statement I as
 I. Some chair are (bats).
 II. All (bats) are cats.

and

- (b) by changing the order of the sentences and then converting the statement II.
 Now 1st change the order as :

- II. All bats are cats.
 I. All bats are chair.

Again we do conversion for II and the aligned pair takes the form as

- II. Some cats are (bats).
 I. All (bats) are chair.

Therefore, as per the requirement and nature of the sentence the alignment is done.

- (i) only by changing the order of sentences.
 or
 (ii) only by converting of the sentences.
 or
 (iii) By changing the order of the statements and then converting one of the sentences.

IEA Rule

Alignment must be done in IEA order. It does mean that if the two statements are I & E then the conversion must be done for I and for E & I it will be done for E.

After discussing all the minute things about this chapter, now we have come at the position of solving the problems of syllogism.

This chapter suggests two methods:

- (1) By Analytical Method
 - (2) By Venn Diagram
- (1) **Analytical method :**
 This method has two main steps :
 (a) Aligning the pair of sentences.
 (b) Using conclusion table to draw conclusion.

EXAMPLE 10.

Statements :

- I. All rats are cats.
 II. All rats are men.

When aligned it takes the form as

- I. Some cats are (rats) [I type]
 II. All (rats) are men [A type]

Now we use the conclusion table given in this chapter that says

I + A = I type of conclusion.

Therefore, the drawn conclusion must be
 "Some cats are men"

It is clear that the conclusion drawn "Some cats are men" is a mediate inference as it is the result of two propositions. But in actual problem immediate inferences are also given in conclusion part and that format is given below :

EXAMPLE 11.

Statements :

- I. All rats are cats.
 II. All rats are men.

Conclusion :

- (i) Some cats are men.
- (ii) Some men are cats.
- (iii) Some rats are cats.
- (iv) Some cats are rats.
- (v) Some rats are men.
- (vi) Some men are rats.

Answer options :

- (a) only (iii) follows
- (b) only (i), (ii) and (iii) follow
- (c) only (iv) follows
- (d) all follow
- (e) none of these

Here, the correct option is (d).

Conclusion (i) follows because it is the mediate inference of statements I & II.

Conclusion (ii) is the conversion of conclusion (i).

Conclusion (iii) is the immediate inference (conversion) of statement I while conclusion (iv) is the conversion of conclusion (iii).

Conclusion (v) is the immediate inference (conversion) of statement II while conclusion (vi) is the conversion of conclusion (v).

Further, in some problems complementary pairs are also seen in the conclusion part in the forms of sentence given below :

- | | | |
|------------------------------|---|----------|
| (i) Some cats are rats. | } | I-O pair |
| (ii) Some cats are not rats. | | |
| (i) All cats are rats. | } | A-O pair |
| (ii) Some cats are not rats. | | |
| (i) Some cats are rats. | } | I-E pair |
| (ii) No cats are rats. | | |

Apart from I-O, A-O and I-E pair the two sentences must have same subject and predicate as are the above mentioned pairs. For these pairs we write the form

Either (i) or (ii) follows

For example, see the following format :

EXAMPLE 12.

Statements :

- I. Some dogs are cats. II. Some cats are rats.

Conclusions :

- (i) Some cats are dogs.
- (ii) Some rats are cats.
- (iii) All cats are rats.
- (iv) Some dogs are rats.
- (v) Some dogs are not rats.

Answer options :

- (a) All follow.
- (b) Only (i) follows.
- (c) Only (ii) and (iii) follow.
- (d) Either (iv) or (v) and (i) & (ii) follow.

Here, option (d) is correct because conclusion (i) is the immediate inference (conversion) of statement I while conclusion (ii) is the immediate inference of II. Conclusion (iv) & (v) make complementary pair of I-O type.

Conclusion (iii) is not correct because I and II are I type of statements and I + I does not give any conclusion. Further, A type of conclusion can not be found from the immediate inferences (conversion) of I type of statements as I & II are.

Now, the complete process of solving syllogism problems can be summarised as below :

- (a) 1st step is aligning the sentences.
- (b) 2nd step is using conclusion table.
- (c) 3rd step is checking immediate inferences.
- (d) 4th step is checking through the conversion of immediate inferences & mediate inferences.
- (e) Checking the complementary pairs.

(2) **Venn diagram method for solving problems :**

Students will have to adopt three steps to solve the syllogism problems through Venn diagram method :

- (a) 1st step is sketching all possible pictorial representation for the statements separately.
- (b) 2nd step is combining possible pairs of these representations of all the statements into one.
- (c) 3rd and final step is making interpretation of this combined figure. Conclusions are true if they are supported by all the combined figures in 2nd step.

Now let us solve a problem.

EXAMPLE 13.

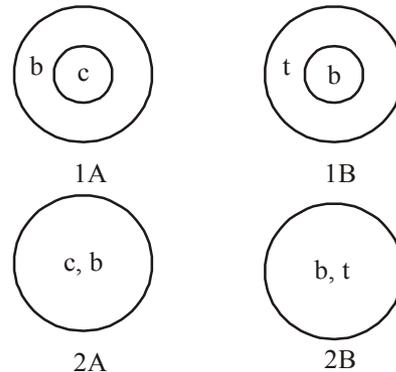
Statements :

- A. All chairs are books. B. All books are ties.

Conclusions :

- I. Some ties are books. II. Some ties are chairs.

1st Step :

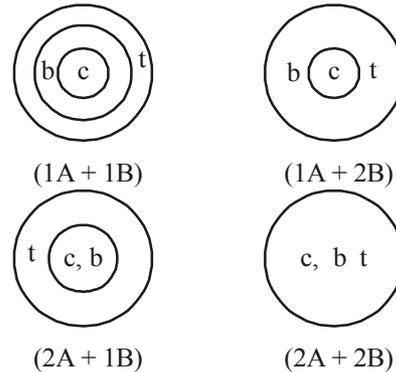


Here, 1A and 2A are representations for statement A while 1B and 2B are representations for statement B. In these representations

- b = books
- c = chairs
- t = ties

2nd step :

Let us combine all the possible pairs of this pictorial representations :



3rd step :

When we interpret the pictures in step II, we find that all the pictures support both the conclusions. Therefore, conclusion I :

- “Some ties are books” and
- conclusion II.
- “Some ties are chairs”
- both are true.

Important Note : In the Venn diagram method, any conclusion given with any problem will be true if and only if it is supported by all the combined pictorial representations through 2nd step. If any pictorial representation contradicts the given conclusion, it will be put in the category of incorrect or wrong conclusion.

Now take another problem :

EXAMPLE 14.

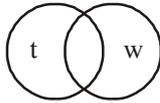
Statements :

- A. Some tigers are wolves.
B. Some wolves are lions.

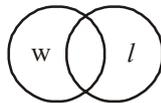
Conclusion :

- I. Some tigers are lions.
II. Some tiger are not lions.

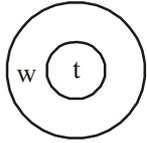
Sol. 1st step :



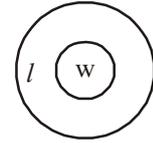
1A



1B

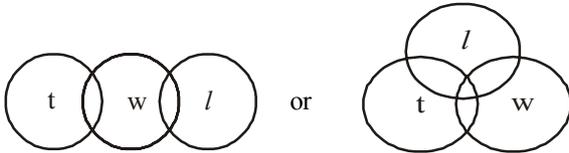


2A

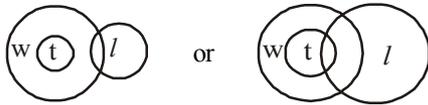


2B

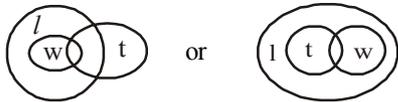
2nd step :



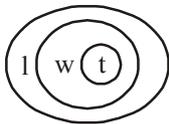
(1A + 1B)



(2A + 1B)



(1A + 2B)



(2A + 2B)

POSSIBILITY

Possibility is a concept of inconsistency for an event which is not yet verified but if true would explain certain facts or phenomena.

Generally the meaning of possibility is probability, viz. possibility exists where nothing is certain between the objects. In general language determination of possibility exist easily in that condition when between two objects have no certainty or the truth facts accordingly.

Let's understand below table in which possibility exists where no definite relation occurs between the objects and definite or proper relation between the objects eliminate existence of any possibility. In simple way given condition eliminates the possibility and improper condition favours the possibility. Here, we can go through with an example which will also clear the term possibility.

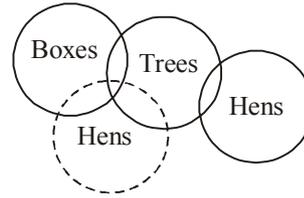
Condition	Possibility
Given facts	cannot be determined
Imaginary facts	can be determined

EXAMPLE 15.

Statements Some boxes are trees
Some trees are hens.

Conclusions I. Some boxes being hens is a possibility
II. All trees being hens is a possibility

Sol.



In Conclusion I, before deciding the possibility between boxes and hens, we must notice the relation between both, we find that there is no relation between boxes and hens, so possibility favours the condition and the conclusion I is true for possibility and in Conclusion II we must notice the relation between trees and hens. We find that both have some type of relation between them so the possibility of 'All between trees and hens is true. Hence, both the Conclusions I and II follow.

Given Exclusive Proposition	Desired Proposition	Possibility
All	All	×
Some	Some	×
No	No	×
No	Some not	×
Some	All	✓
No proper relation	Some All	✓

Note: Improper relation between two objects favours the possibility (In above example Conclusion I)

Special Cases of Exclusive Proposition

If the statement is of	Conversion	Illustration	Meaningful Conversion
Much, more, many, very, a few, most, almost	Some	Most A are B. A few X are Y.	Some A and B. Some X or Y.
Atleast	Some	Atleast some A are B.	Some A and B.
Definitely	No use	Some A are definitely B. Some X are definitely not Y.	Some A are B. Some X are not Y.
Only		Only A are B.	All B are A.
1% to 99%	Some	38% A are B. 98% X are Y.	Some A are B. Some X are Y.

EXERCISE

Directions (Qs. 1-5) : In each questions below are given some statements followed by two conclusions I and II. You have to take given statements to be true even if they seem to be at variance from commonly known facts and then decide which of the given conclusions logically follow/s from the given statements, disregarding commonly known facts. Read both the conclusions and give answer as

- (a) If only conclusion I follows.
 (b) If only conclusion II follows.
 (c) If either conclusion I or II follows.
 (d) If neither conclusion I nor II follows.
 (e) If both conclusions I and II follow.
1. **Statements :** All mobiles are androids.
 No android is a phone.
Conclusions : I. Some mobiles are not phones.
 II. No phone is a mobile.
2. **Statements :** All artists are smokers.
 Some smokers are drunkards.
Conclusions : I. All smokers are artists.
 II. Some drunkards are not smokers.
3. **Statements :** Some pastries are toffees.
 All toffees are chocolates.
Conclusions : I. Some chocolates are toffees.
 II. Some toffees are not pastries.
4. **Statements :** All stones are water.
 Some water are clean.
Conclusions : I. Some stones are clean.
 II. No stone is clean.
5. **Statements :** All umbrellas are aeroplanes.
 Some aeroplanes are birds.
Conclusions : I. Some umbrellas are aeroplanes.
 II. Some birds are umbrellas

Directions (Qs. 6-20) : In each of the questions below are given three statements followed by four conclusions numbered I, II, III and IV. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

6. **Statements:**
 Some boxes are trees.
 Some trees are horses.
 All horses are fruits.
Conclusions:
I. Some fruits are boxes.
II. Some fruits are trees.
III. Some horses are boxes
IV. No fruits are boxes.
 (a) None follows
 (b) Only either II or IV follows
 (c) Only either I or IV and II follow
 (d) Only either I or III and IV follow
 (e) None of these

7. **Statements:**
 All fans are rooms.
 No room is green.
 Some windows are green.
Conclusions:
I. Some windows are fans.
II. Some windows are rooms.
III. Some fans are green.
IV. No green is fan.
 (a) Only I follows (b) Only III follows
 (c) Only IV follows (d) Only II and IV follow
 (e) All follow
8. **Statements:**
 No man is sky.
 No sky is road.
 Some men are roads.
Conclusions:
I. No road is man.
II. No road is sky.
III. Some skies are men.
IV. All roads are men.
 (a) None follows (b) Only I follows
 (c) Only I and III follow (d) Only II and III follows
 (e) None of these
9. **Statements:**
 Some shirts are coats.
 All coats are jackets.
 Some jackets are trousers.
Conclusions:
I. Some shirts are jackets.
II. Some jackets are shirts.
III. All trousers are jackets.
IV. Some trousers are jackets.
 (a) All follow
 (b) Only I, II and III follow
 (c) Only I, II and IV follow
 (d) Only II, III and IV follow
 (e) None of these
10. **Statements:**
 All bikes are scooters. .
 All scooters are scooties.
 All scooties are mopeds.
Conclusions:
I. All mopeds are scooties.
II. All scooties are scooters.
III. All scooters are bikes.
IV. All bikes are mopeds.
 (a) None follows (b) All follow
 (c) Only III and IV follow (d) Only IV follows
 (e) None of these

11. **Statements:**
 All biscuits are chocolates.
 Some chocolates are breads.
 All breads are pastries.
Conclusions:
 I. Some biscuits are pastries.
 II. Some pastries are chocolates.
 III. Some biscuits are not pastries.
 IV. All pastries are breads.
 (a) Only I and II follow
 (b) Only I, II and III follow
 (c) Only either I or III and II follow
 (d) Only either I or III and IV follow
 (e) None of these
12. **Statements:**
 Some buses are trains.
 No train is a dog.
 All dogs are parrots.
Conclusions:
 I. No bus is a parrot.
 II. Some parrots are trains.
 III. Some parrots are buses.
 IV. No dog is a bus.
 (a) Only either I or III follows
 (b) Only II follows (c) Only IV follows
 (d) Only I and III follow (e) None of these
13. **Statements:**
 Some cups are flowers.
 Some flowers are boxes.
 All boxes are tigers.
Conclusions:
 I. Some tigers are cups.
 II. Some tigers are flowers.
 III. Some boxes are cups.
 IV. No tiger is a flower.
 (a) None follows
 (b) Only either II or IV follows
 (c) Only III follows
 (d) Only either I or III follows
 (e) None of these
14. **Statements:**
 All glasses are roads.
 No road is a stick.
 Some sticks are pens.
Conclusions:
 I. Some glasses are sticks.
 II. Some pens are sticks.
 III. Some roads are sticks.
 IV. No glass is a stick.
 (a) None follows
 (b) Only I or IV and II follow
 (c) Only either I or III or II follows
 (d) Only either I or II and IV follow
 (e) None of these
15. **Statements:**
 All buses are trains.
 All trains are rickshaws.
 All rickshaws are cycles.
Conclusions:
 I. All cycles are buses.
 II. All rickshaws are buses.
 III. All buses are rickshaws.
 IV. All trains are cycles.
 (a) All follow (b) None follows
 (c) Only I and II follow (d) Only II and III follow
 (e) None of these
16. **Statements:**
 No tree is fruit.
 All fruits are stones.
 All stones are rains.
Conclusions:
 I. No stone is tree.
 II. No rain is tree.
 III. Some rains are fruits.
 IV. Some rains are trees.
 (a) None follows
 (b) Only either II or IV and III follow
 (c) Only either II or III and I follow
 (d) All follow
 (e) None of these
17. **Statements:**
 All fans are tubelights.
 No pen is a bulb.
 Some bulbs are fans.
Conclusions:
 I. Some pens are tubelights.
 II. No pens are tubelights.
 III. Some tubelights are fans.
 IV. All tubelights are fans.
 (a) Only I and II follow
 (b) Only I, II and III follow
 (c) Either I or II and III follow
 (d) Only III and IV follow
 (e) None of these
18. **Statements:**
 All shirts are trousers.
 Some socks are shoes.
 All shoes are shirts.
Conclusions:
 I. Some socks are shirts.
 II. Some socks are trousers.
 III. All shoes are trousers.
 IV. All shoes are socks.
 (a) Only I and II follow (b) Only I or II or III follows
 (c) Only II and IV follow (d) Only III and IV follow
 (e) None of these
19. **Statements:**
 All cups are tables.
 No table is water.
 Some waters are clothes.
Conclusions:
 I. No cloth is cup.
 II. No cloth is table.
 III. Some clothes are waters.
 IV. Some waters are cups.
 (a) None follows (b) All follow
 (c) Only III follows (d) Only I and II follow
 (e) None of these

20. **Statements:**
No table is fruit.
No fruit is window.
All windows are chairs.
Conclusions:
I. No window is table. **II.** No chair is fruit.
III. No chair is table. **IV.** All chairs are windows.
(a) None follows (b) All follow
(c) Only I and II follow (d) Only III and IV follow
(e) None of these

Directions (Qs. 21-35): In each of the following questions two/three statements are given and these statements are followed by two conclusions numbered I and II. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read the conclusions and then decide which of the given conclusions logically follows from the two given statements, disregarding commonly known facts.

Give answer:

- (a) If only I conclusion follows
(b) If only II conclusion follows
(c) If either I or II follows
(d) If neither I nor II follows
(e) If both I and II follow
21. **Statements:** Some mobiles are pagers.
No mobile is a laptop.
Conclusions: I. No laptop is a pager.
II. Some pagers are definitely not mobiles
22. **Statements:** All tables are chairs.
All chairs are beds.
No bed is sofa.
Conclusions: I. Some tables are definitely not beds.
II. No sofa is a table.
23. **Statements:** All tables are chairs.
All chairs are beds. No bed is sofa
Conclusions: I. No chair is sofa.
II. Some tables being sofa is a possibility.
24. **Statements:** Some digits are letters.
All digits are symbols. No symbol is an alphabet.
Conclusions: I. Some symbols are letters.
II. No digit is an alphabet.
25. **Statements:** All rivers are seas. Some seas are oceans.
Conclusions: I. All rivers are oceans.
II. All oceans being rivers is a possibility.

(Qs. 26-27)

- Statements:** A. Some poor are rich
B. All rich are doctors.
C. Some intelligent are doctors.
26. **Conclusions:** I. At least some poor are intelligent.
II. All intelligent being rich is a possibility.
27. **Conclusions:** I. All intelligent being doctors is a possibility.
II. Some poor are doctors.

(Qs. 28-29)

- Statements:** A. All fans are bulbs
B. All wires are holders.
C. Some wires are bulbs.

28. **Conclusions:** I. At least some fans are wires.
II. All holders being fans is a possibility.
29. **Conclusions:** I. All fans being holders is a possibility.
II. Some holders are bulbs.

(Qs. 30-31)

- Statements:** A. No saving A/c is a current A/c.
B. Some fixed deposits are saving A/c.
C. Some currents A/c are recurring deposits.
30. **Conclusions:** I. All saving A/c being current A/c is a possibility.
II. All fixed deposits being current A/c is a possibility.
31. **Conclusions:** I. All current A/c being fixed deposits is a possibility.
II. All saving A/c being recurring deposits is a possibility.
32. **Statements:** All shopkeepers are servants.
Some shopkeepers are poor.
No poor is rich.
Conclusions: I. All shopkeepers, If they are poor, are also rich
II. At least some shopkeepers being rich is a possibility.
33. **Statements:** All books are dictionaries.
Some books are diaries.
All dictionaries are copies
Conclusions: I. Some books are not copies
II. All dictionaries being diaries is a possibility.
34. **Statements:** No fan is a light.
All boards are fans.
All fans are wires.
Conclusions: I. All boards being wires is a possibility.
II. No boards is a light.
35. **Statements:** No air is wind.
All winds are typhoons.
Conclusions: I. No air is typhoon.
II. All air being typhoons is a possibility.

Directions(Qs. 36-56): In each of the following questions two/three statements are given and these statements are followed by two/three/four conclusions. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read the conclusions and then decide which of the given conclusions logically follows from the two given statements, disregarding commonly known facts.

36. **Statements:** All petals are flowers.
Some flowers are buds.
Some buds are leaves.
All leaves are plants.
Conclusions: I. Some petals are not buds.
II. Some flowers are plants.
III. No flower is plant.
(a) Only I follows (b) Either II or III follows
(c) I and II follow (d) Only III follows
(e) None of the above
37. **Statements:** Some pens are keys.
Some keys are locks.
All locks are cards.
No card is paper.

- Conclusions:** I. No lock is paper.
II. Some cards are keys
III. Some keys are not paper.
- (a) I and II follow (b) Only I follows
(c) Only II follows (d) All follow
(e) None follows
38. **Statements:** Some pearls are gems.
All gems are diamonds.
No diamond is stone.
Some stones are corals.
- Conclusions:** I. Some stones are pearls.
II. Some corals being diamond is a possibility.
III. No stone is pearl.
- (a) Only I follows (b) Only II follows
(c) Either I or III follows (d) I and II follow
(e) None of these
39. **Statements :** Some apartments are flats.
Some flats are buildings.
All buildings are bungalows.
All bungalows are gardens.
- Conclusions:** I. All apartments being building is a possibility.
II. All bungalows are not buildings
III. No flat is garden.
- (a) None follows (b) Only I follows
(c) Either I or III follows (d) II and III follow
(e) Only II follows
40. **Statements :** All chairs are tables.
All tables are bottles.
Some bottles are jars.
No jar is bucket.
- Conclusions :** I. Some tables being jar is a possibility.
II. Some bottles are chairs.
III. Some bottles are not bucket.
- (a) Only I follows (b) I and II follow
(c) All follow (d) Only II follows
(e) None of these
41. **Statements :** Most of the doctors are engineers.
None of the engineers is a pilot.
All pilots are doctors.
- Conclusions :** I. Some engineers are doctors.
II. All doctors are pilots.
III. No pilot is an engineers.
IV. Some pilots are engineer.
- (a) Only I follow (b) II and III follows
(c) I and III follow (d) Either III or IV follows
(e) None of these
- Directions (Qs. 42-43) :** In each questions below are given three statements followed by three Conclusions I, II and III. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read all the conclusions and then decide which of the given conclusion logically follows from the given statements disregarding commonly known facts.
42. **Statements :** Some nurses are doctors.
All doctors are medicines.
Some medicines tables.

- Conclusions:** I. Atleast some tablets are doctors.
II. Some medicine being doctors is a possibility.
III. Some medicine are definitely nurses.
- (a) All follow (b) II and III follow
(c) Only II follow (d) Either III or Iv follows
(e) None of these
43. **Statements :** All files are folders.
All folders are boxes.
All boxes are drawers.
- Conclusions:** I. All folders being drawers is a possibility.
II. All boxes are files.
III. All files are definitely drawers.
IV. Atleast some drawers are folders.
- (a) I and II follow (b) III and IV follow
(c) II and III follow (d) All follows
(e) None of these
- Directions (Qs. 44-45) :** In each question given four statements are followed by three Conclusions I, II and III. You have to take the four given statements to be true even if they seem to be at variance from the commonly known facts. Read the conclusions and decide which logically follows from the four given statements disregarding commonly known facts.
44. **Statements :** All footballers are music lover.
All footballers are dancer.
No dancer is cricketer.
No cricketer is player.
- Conclusions :** I. Some players can be music lover.
II. 25% of footballers are music lover.
III. No footballers is cricketer.
- (a) Both II and III follow
(b) Only III follows
(c) Only II follows
(d) Only II and either I or III follow
(e) None of the above
45. **Conclusions :** I. Some cricketer are music lover.
II. There is a possibility that any cricketer can be music lover.
III. No music lover are cricketer.
- (a) Either I or II follows
(b) Only I follows
(c) Only II follows
(d) Only II and either I or III follow
(e) None of the above
- (Qs. 46 and 47):**
- Statements :** All villages are cities.
Some cities are tehseel.
No tehseel is state.
46. **Conclusions :** I. Some states are cities being a possibility.
II. All cities are villages being a possibility.
- (a) Only I follows (b) Only II follows
(c) Either I or II follows (d) None follows
(e) Both follow
47. **Conclusions :** I. Some states can never be tehseels.
II. All villages and cities being tahseel is a possibility.
- (a) Only I follows (b) Only II follows
(c) Either I or II follows (d) None follows
(e) Both follows

Directions (Qs. 48-50) : In each of the questions below are given some statements followed by some conclusions. You have to take the given statements to be true even if they seem to be at variance with commonly known facts. Read all the conclusions and then decide with of the given statements disregarding commonly known facts.

48. **Statements :** Some roses which are plants are flowers.
All plants are lotus.

Conclusions: I. Some lotus are not flowers.
II. Some lotus which are roses are flowers.
III. Some roses are lotus.

- (a) I and II follow (b) Only II follows
(c) II and III follows (d) Only III follows
(e) None of these

49. **Statements :** All matches are cups.
Some fields are not viewers.
All viewers are fans.
Some matches are not fans.

Conclusions: I. Some cup which are fans are not viewers.
II. Some matches which are not viewers are cups.
III. Some fields which are fans are not matches.

- (a) I and III follow (b) Only II follows
(c) II and III follows (d) Only III follows
(e) None of these

50. **Statements:** Some schools which are not students are colleges.
Student is a principal.
All schools are principals.

Conclusions: I. No college is a principal.
II. Some principals are colleges.
III. All colleges are schools.

- (a) I and III follow (b) Either I or II follows
(c) Only II follows (d) Either I or III follows
(e) None of these

Directions (Qs. 51-54) In these questions statements followed by two conclusions(A&B) numbered I and II have been given. You have to decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.

51. **Statements:** All fishes are birds.
No Bird is an animal.
All animals are mammals.

Conclusion A: I. At least some birds are mammals.
II. All mammals being birds is a possibility.

- (a) Only conclusion II is true
(b) Neither conclusion I or II is true
(c) Both conclusion I and II are true
(d) Either conclusion I or II is true
(e) Only conclusion I is true

Conclusion B: I. No fish is an animal
II. All fishes being mammals is a possibility

- (a) Only conclusion II is true
(b) Neither conclusion I or II is true
(c) Both conclusion I and II are true

- (d) Either conclusion I or II is true
(e) Only conclusion I is true

52. **Statements:** Some forces are groups
All groups are powers
All powers are growth

Conclusion A: I. At least some forces are growth
II. All groups are growth

- (a) Only conclusion II is true
(b) Either conclusion I or II is true
(c) Only conclusion I is true
(d) Neither conclusion I or II is true
(e) Both conclusion I and II are true

Conclusion B: I. All forces being powers is possibility
II. All powers are group

- (a) Only conclusion II is true
(b) Either conclusion I or II is true
(c) Only conclusion I is true
(d) Neither conclusion I or II is true
(e) Both conclusion I and II are true

53. **Statements:** All books are scales
All scales are pencils
Some scales are pens

Conclusion A: I. No book is pen
II. All pencils are scales

- (a) Only conclusion I follows
(b) Only conclusion II follows
(c) Either conclusion I or II follows
(d) Neither conclusion I or II follows
(e) Both conclusion I and II follows

Conclusion B: I. At least some scales are pen
II. No scale is a pen

- (a) Only conclusion I follows
(b) Only conclusion II follows
(c) Either conclusion I or II follows
(d) Neither conclusion I or II follows
(e) Both conclusion I and II follows

54. **Statements:** All rainy are summers
Some summers are springs
No spring is sunny

Conclusion A: I. At least some rainy are springs
II. Some sunny being summers is a possibility

- (a) Either conclusion I or II follows
(b) Both conclusion I and II follows
(c) Neither conclusion I or II follows
(d) Only conclusion I follows
(e) Only conclusion II follows

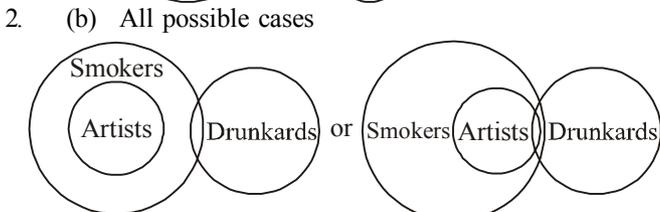
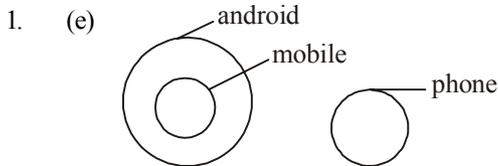
Conclusion B: I. All summers can never be sunny
II. No spring is a sunny

- (a) Either conclusion I or II follows
(b) Both conclusion I and II follows
(c) Neither conclusion I or II follows
(d) Only conclusion I follows
(e) Only conclusion II follows

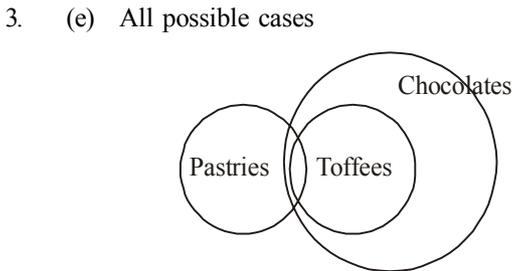
ANSWER KEY

1	(e)	6	(c)	11	(c)	16	(b)	21	(d)	26	(b)	31	(e)	36	(b)	41	(c)	46	(e)	51	(b,c)
2	(b)	7	(c)	12	(a)	17	(c)	22	(b)	27	(b)	32	(b)	37	(d)	42	(e)	47	(e)	52	(e,c)
3	(e)	8	(e)	13	(e)	18	(e)	23	(a)	28	(d)	33	(b)	38	(e)	43	(b)	48	(c)	53	(d,c)
4	(c)	9	(c)	14	(e)	19	(c)	24	(e)	29	(e)	34	(b)	39	(a)	44	(e)	49	(b)	54	(e,b)
5	(d)	10	(d)	15	(e)	20	(a)	25	(b)	30	(d)	35	(b)	40	(c)	45	(d)	50	(c)		

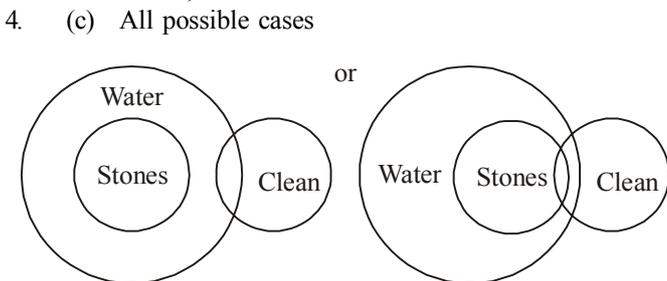
Hints & Explanations



Hence, Conclusion II follows.

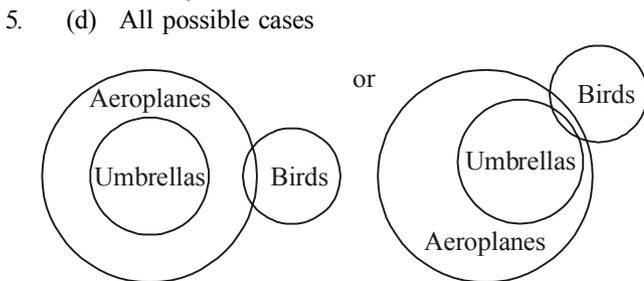


Hence, both I and II are true.



Alternative It is a special case, hence either Conclusion I or II follows.

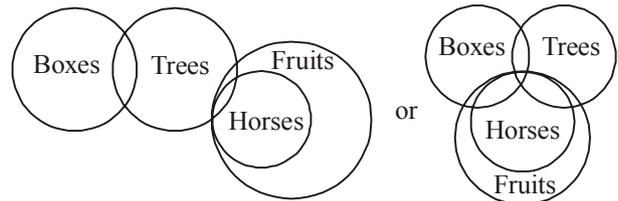
Hence, either I or II follows.



Hence, none follows.

6. (c) **Ist method** : Conclusion II follows from conversion of the conclusion obtained from statement (b) and statement (c) [$\therefore I + A = I$]. Conclusion I, III and IV do not follow because statement (a) + statement (b) gives no conclusion. But the conclusion I and IV make a complementary pair IE-type. Hence, either of the two follows.

IInd method:



Conclusion I: False
 Conclusion II: True
 Conclusion III: False
 Conclusion IV: False

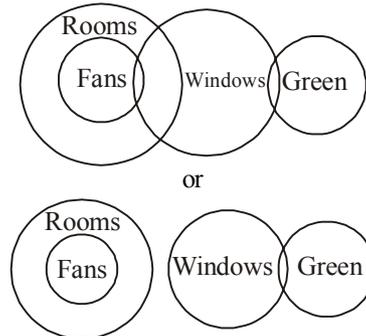
OR

Hence, only Either I or IV and II follow.

7. (c) **Ist method** : Statement (a) + statement (b) gives the conclusion "No fans are green" [say (d)] [$\therefore A + E = E$]. Now, conversion of statement (d) gives conclusion IV. Now statement (c) + conclusion IV gives the conclusion "Some windows are not fans". Hence, I does not follow. Conclusion III does not follow because conclusion IV follows.

Again, statement (b) + conversion of statement (c) gives the conclusion "Some windows are not rooms". Hence, conclusion II does not follow.

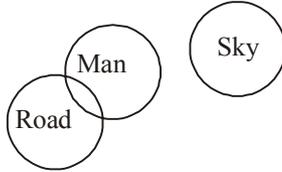
IInd method:



Conclusion I: False
 Conclusion II: False
 Conclusion III: False
 Conclusion IV: True

8. (e) **Ist method :** Only II follows. Statement (a) + statement (b) gives no conclusion [$\therefore E + E = \text{no conclusion}$]. Hence, I does not follow. Note that I does not follow from statement (c) either. Conclusion II follows from conversion of statement (b). Conclusion III does not follow from statement (a). Conclusion IV does not follow from statement (c).

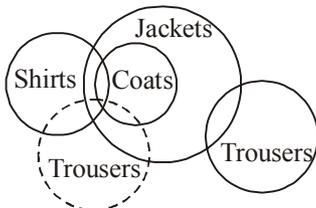
IInd method:



- Conclusion I: False
 Conclusion II: True
 Conclusion III: False
 Conclusion IV: False

9. (c) **Ist method :** First + second statement gives conclusion I. Conclusion II follows as conversion of conclusion I. Third statement, on conversion, gives conclusion IV but not conclusion III.

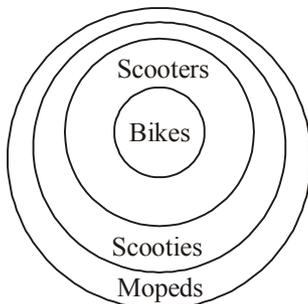
IInd method:



- Conclusion I: True
 Conclusion II: True
 Conclusion III: False
 Conclusion IV: True

10. (d) **Ist method :** I does not follow from the last statement, on conversion. II does not follow from the second statement, on conversion. III does not follow from the first statement, on conversion. 1st + 2nd + 3rd statement gives conclusion IV.

IInd method:

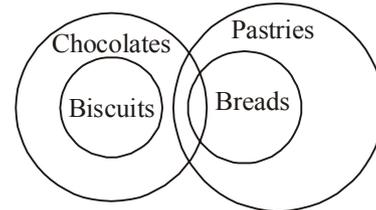


- Conclusion I: False
 Conclusion II: False
 Conclusion III: False
 Conclusion IV: True

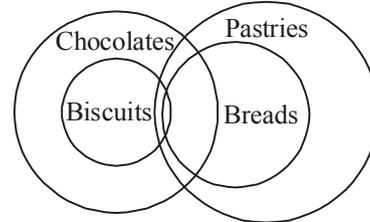
11. (c) **Ist method :** Some chocolates are breads + All breads are pastries \Rightarrow Some chocolates are pastries \rightarrow on conversion \rightarrow Some pastries are chocolates. Hence, II follows. 1st statement + Some chocolates are pastries gives no conclusion. Hence, I and III do not follow but

they make a complementary (I-O) pair. Hence, either I or III follows. IV does not follow from the last statement.

IInd method:



or

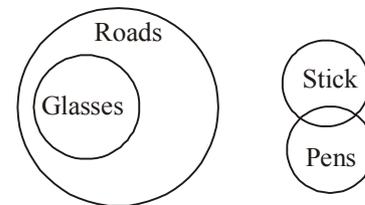


- Conclusion I: False
 Conclusion II: True
 Conclusion III: False
 Conclusion IV: False

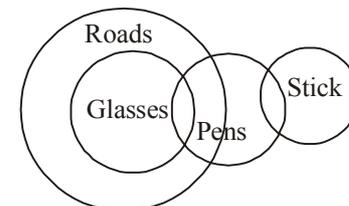
OR

12. (a) Conclusions I and III make a complementary pair. Hence, either I or III follows. Conclusion II does not follow since "No train is a dog" (E) + "All dogs are parrots" (A) gives the conclusion "Some parrots are not trains" [$\therefore E + A O \star$]. Conclusion IV does not follow because "Some buses are trains" + "No train is a dog" gives the conclusion "Some buses are not dogs" [$\therefore I + E = O$].
13. (e) "Some flowers are boxes" (I) + "All boxes are tigers" (A) gives conclusion "Some flowers are tigers" (I) [$\therefore I + A = I$]. **On conversion**, we get "some tigers are flowers". Hence, conclusion II follows but IV does not follow. "Some cups are flowers" (I) + "Some flowers are boxes" (I) gives no conclusion [$\therefore I + I = \text{No conclusion}$]. Hence, III does not follow. No relation is given between tigers and cups and hence, I does not follow.

14. (e)



or

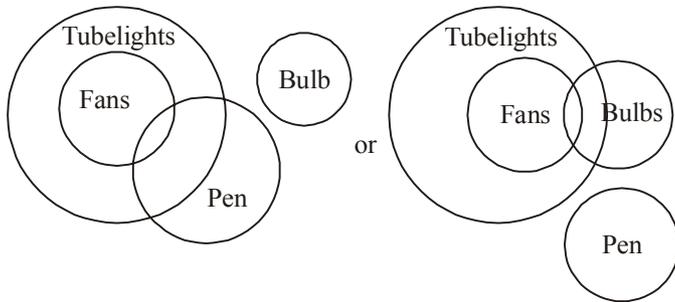


- Conclusion I: False
 Conclusion II: True
 Conclusion III: False
 Conclusion IV: True

15. (e) 1st + 2nd statements gives conclusion III. 2nd + 3rd statements gives conclusion IV. I and II do not follow.
 16. (b) Statement (a) + Statement (b) gives the conclusion "Some stones are not trees." [$\therefore E + A = O \star$]. Hence, conclusion I does not follow. Statement (b) + Statement (c) gives the conclusion "All fruits are rains". On conversions it gives conclusion III. Now, statement (a) + "All fruits are rains" gives the conclusion "Some rains are not trees" [$\therefore E + A = O \star$]. Conclusions II and IV do not follow but these two conclusions make a complementary pair (E-I-type). Hence, either conclusion II or conclusion IV follows.

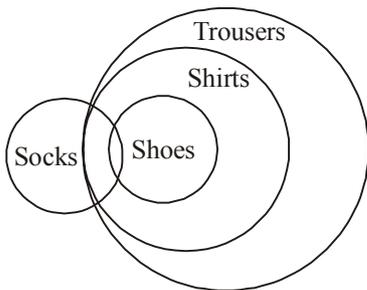
17. (c) **Ist method :** Some bulbs are fans + All fans are tubelights = Some bulbs are tubelights ... (a) [$I + A = I$]. Now, statement (b) + (a) gives: .Some tubelights are not pens. Hence, conclusions I and II can't be established. III follows from first statement on conversion. But IV does not. But I and II make a complementary pair [$I - E$ pair]. Hence, either I or II follows.

IInd method:



- Conclusion I: False
 Conclusion II: False] OR
 Conclusion III: True
 Conclusion IV: False

18. (e)

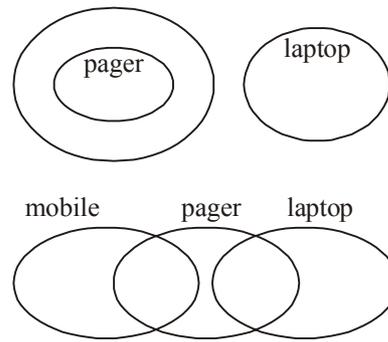


- Conclusion I: True
 Conclusion II: True
 Conclusion III: True
 Conclusion IV: False

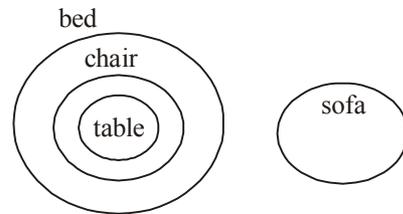
19. (c) III follows from the last statement, on conversion. 1st statement + 2nd statement gives: No cup is water ... (A). Hence IV does not follow from A, on conversion. (A) + last statement gives: Some clothes are not cups. Hence, I does not follow. 2nd statement + last statement gives: Some clothes are not tables. Hence II does not follow.

20. (a) 1st + 2nd statement gives no conclusion. Hence I does not follow. 2nd + last statement gives: Some chairs are not fruits. Hence II does not follow. III does not follow from combining all. IV does not follow from the last statement, on conversion.

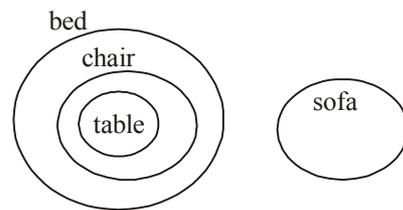
21. (d)



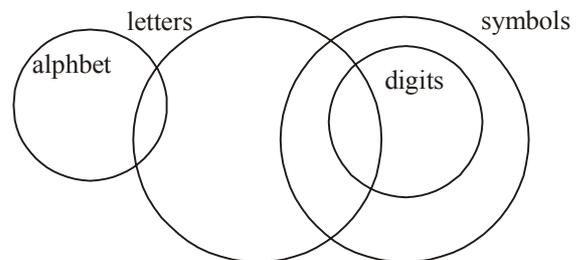
22. (b)



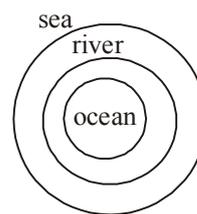
23. (a)



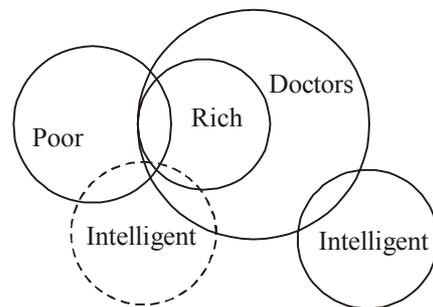
24. (e)



25. (b)

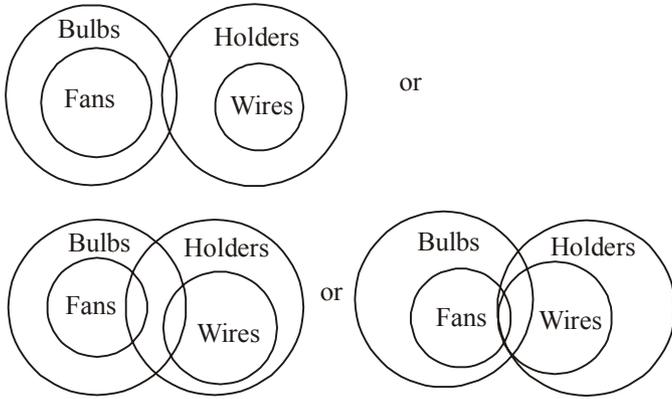


(26-27) :

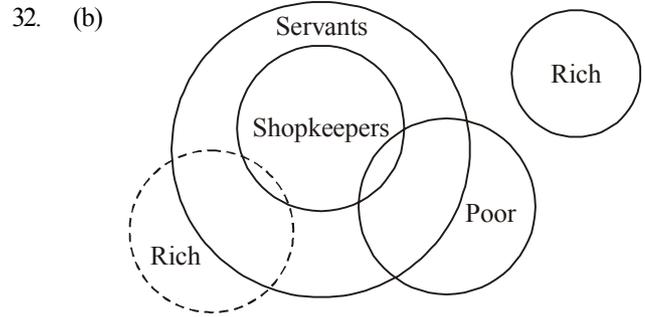
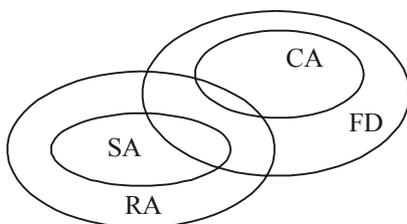
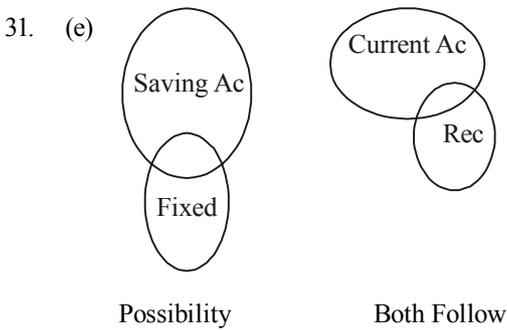
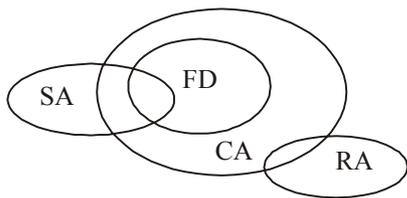
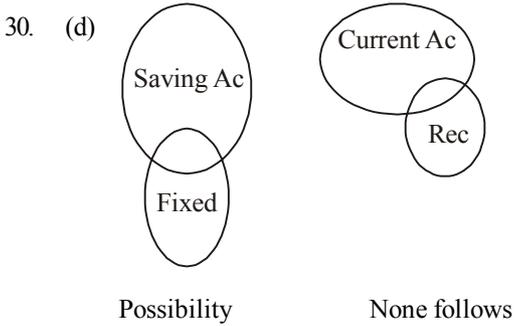


26. (b) Conclusion I : False
 Conclusion II : True
 27. (b) Conclusion I : True
 Conclusion II : True

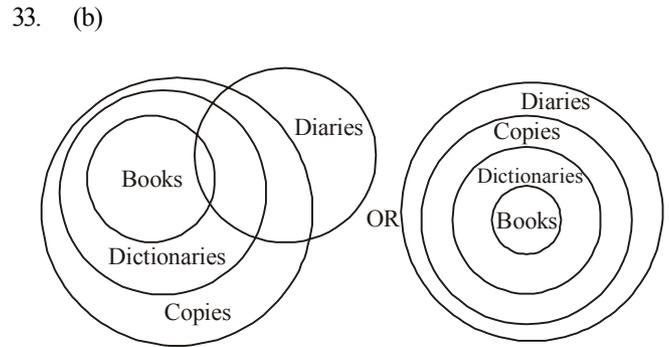
(28-29) :



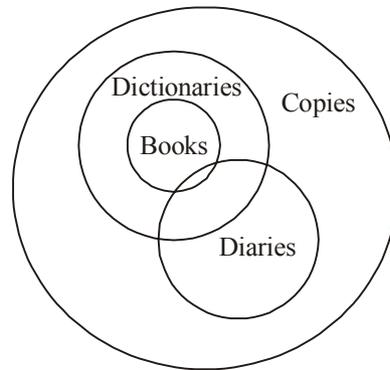
28. (d) Conclusion I : False
Conclusion II. False
29. (e) Conclusion I : True
Conclusion II : True



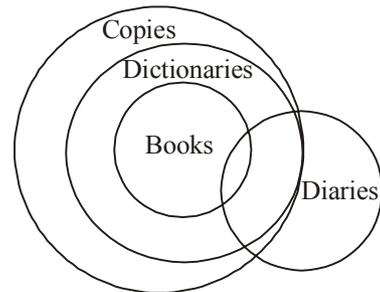
Conclusion I : False
Conclusion II. True



Conclusion I : False
Conclusion II. True

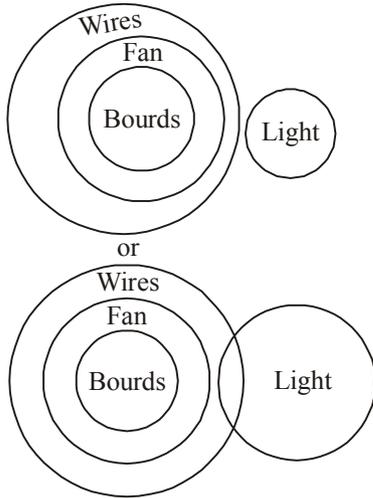


OR



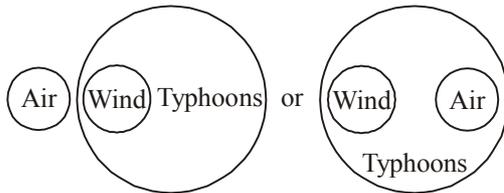
Conclusion I: False
Conclusion II. True

34. (b)



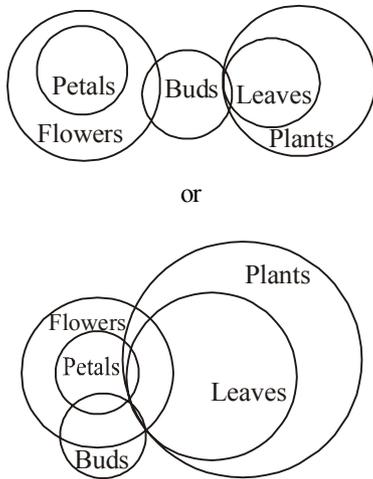
Conclusion I: False
Conclusion II: True

35. (b) According to given information,



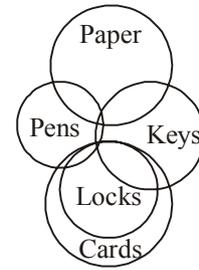
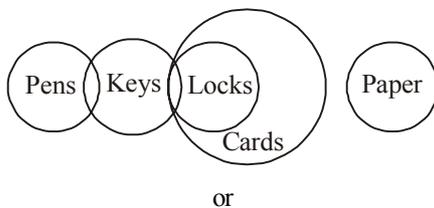
Hence, only Conclusion II follows.

36. (b) According to question,



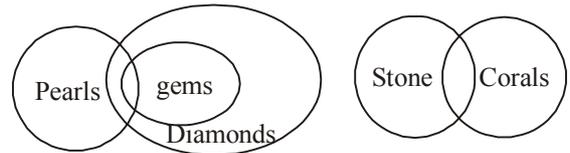
Conclusions: I. False
Conclusions: II. False
Conclusions: III. False } or
Hence, only either II or III follows.

37. (d) According to question

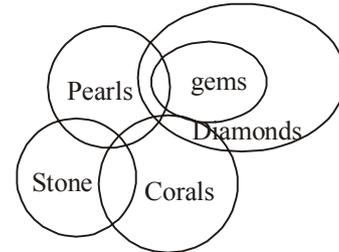


Conclusions: I. True
Conclusions: II. True
Conclusions: III. True
Hence, All conclusions follow.

38. (e) According to question,

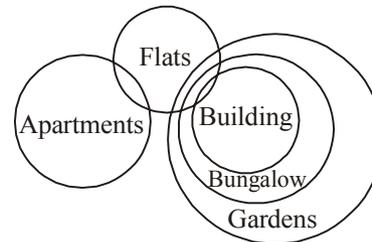


OR

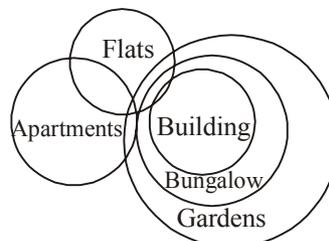


Conclusions: I. False
Conclusions: II. True
Conclusions: III. False } or
Hence, only conclusions II and either I or III follow.

39. (a) According to question,

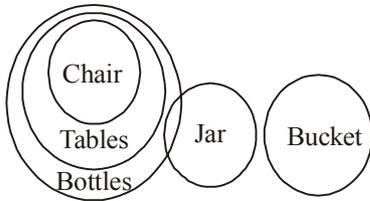


Or

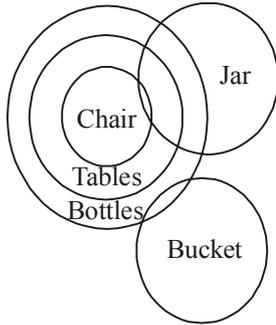


Conclusions: I. True
Conclusions: II. False
Conclusions: III. False
Hence, only conclusion I follows.

40. (c) According to question,

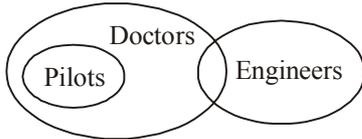


OR



Conclusions: I. True
 Conclusions: II. True
 Conclusions: III. True
 Hence, All I, II and III follow.

41. (c) According to given information,



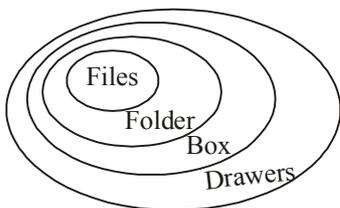
Hence, Conclusions I and III follow.

42. (e) According to given information

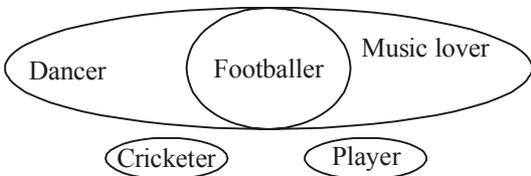


Hence, only Conclusions III follows.

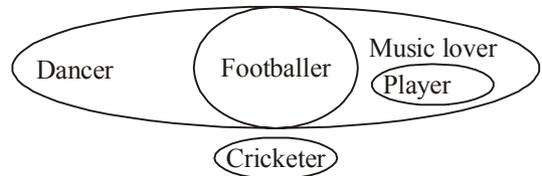
43. (b) According to given information,



Hence, Conclusions III and IV follow.
 According to given information,

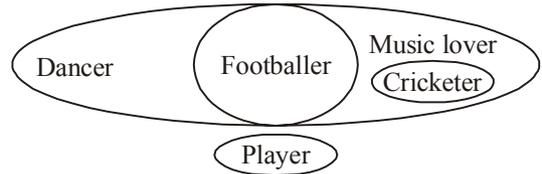


44. (e) Possibility case



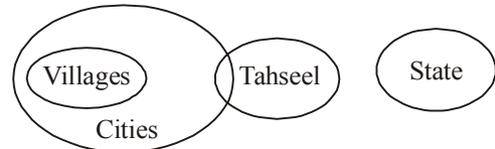
Hence, all of the Conclusions I, II and III follow.

45. (d) Possibility case

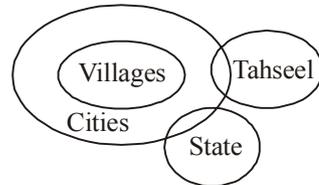


Hence, only II and either I or III follow.

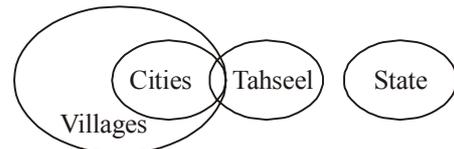
(46-47) : According to given information,



46. (e)

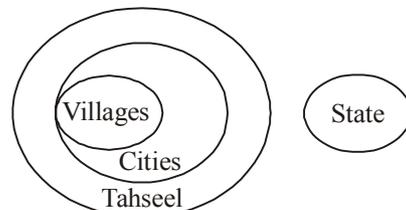


or



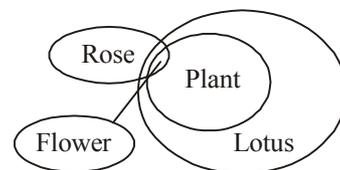
Hence, both the Conclusions I and II follow.

47. (e) Possibility case,



Hence, both the Conclusions I and II follow.

48. (c) According to given information,



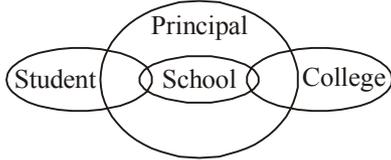
Hence, Conclusions II and III follow.

49. (b) According to given information,



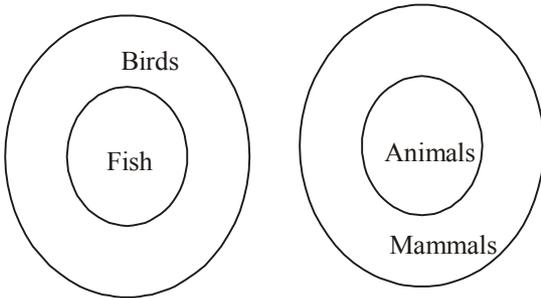
Hence, only Conclusion II follows.

50. (c) According to given information,



Hence, only Conclusion II follows.

51.



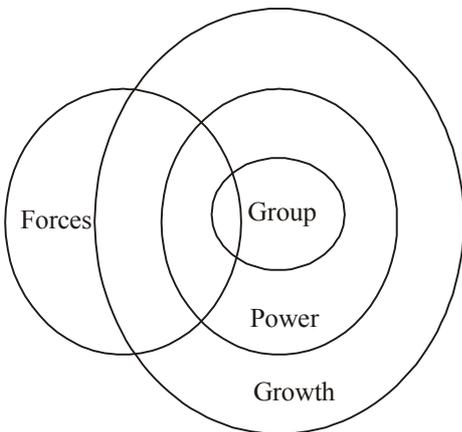
Conclusion A -

(b) Neither conclusion I or II is true

Conclusion B -

(c) Both conclusion I and II are true

52.



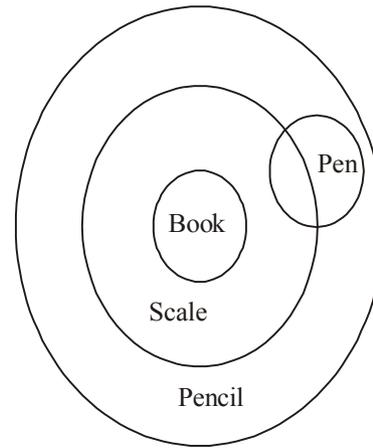
Conclusion A -

(e) Both conclusion I and II are true

Conclusion B -

(c) Only conclusion I is true

53.



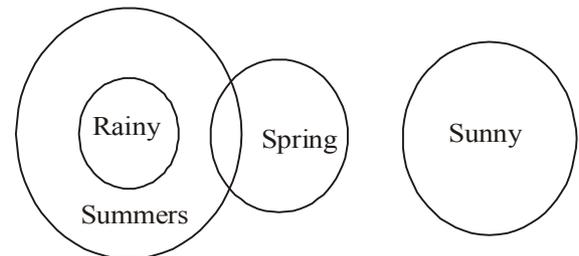
Conclusion A:

(d) Neither conclusion I or II follows

Conclusion B:

(c) Either conclusion I or II follows

54.



Conclusion A:

(e) Only conclusion II follows

Conclusion B:

(b) Both conclusion I and II follows



Coded Inequalities

INTRODUCTION

Questions related to coded inequalities are essential part of competitive examinations. Such problems are not very difficult and very easy for them who are even slightly comfortable with basic mathematics. But for those, who are not at ease with maths may find it a bit difficult. This chapter would give you the basic idea of inequalities and methods to solve it in time saving way.

WHAT IS THE PROBLEM LIKE? (PROBLEM FORMAT)

Sample Problem

Directions (Qs. 1-5) : In the following questions, the symbols α , β , γ , δ and η are used with following meaning:

$A \alpha B$ means A is greater than B.

$A \beta B$ means A is either greater than or equal to B.

$A \gamma B$ means A is equal to B.

$A \delta B$ means A is smaller than B.

$A \eta B$ means A is either smaller than or equal to B.

Now, in each of the following questions, assuming the given statements to be true, find which of the two conclusions I and II given below them is/are definitely true. Give answer.

- (a) If only conclusion I is true.
 (b) If only conclusion II is true.
 (c) If either I or II is true.
 (d) If neither I nor II is true; and
 (e) If both I and II are true.

- Statements:** $P \alpha N, L \gamma P, O \delta N, L \eta K$
Conclusions: I. $P \delta K$ II. $L \alpha N$
- Statements:** $E \gamma F, C \delta D, F \beta G, D \alpha E$
Conclusions: I. $E \alpha G$ II. $C \gamma E$
- Statements:** $T \beta M, O \gamma N, T \delta H, M \gamma O$
Conclusions: I. $T \gamma N$ II. $T \alpha N$
- Statements:** $R \eta Y, K \gamma L, Y \delta X, R \alpha K$
Conclusions: I. $Y \alpha L$ II. $Y \gamma L$
- Statements:** $P \delta I, S \gamma C, S \beta I, C \alpha O$
Conclusions: I. $C \delta I$ II. $S \alpha P$

It is clear from the given problem format that such problems involves essentially a combination of two elementary problems:-

- Inequalities
- Coding

It is obvious, that the coding part is not a big challenge here as the coding scheme is told entirely in advance. Hence, to decode the inequalities in a given problem is not an uphill task. In fact, you require only few seconds to decode the inequalities. As such problems based on inequalities, it is high time to get the concept of the basics of inequalities.

WHAT IS INEQUALITY?

As we know,

$$3 \times 3 = 9$$

Now, we can say that the result of multiplication between 3 and 3 is equal to 9. Therefore, $3 \times 3 = 9$ is a case of equality. But when we multiply 3×4 , we get 12 as a result of this multiplication. It does mean that

$$3 \times 4 \neq 9$$

As 3×4 , is not equal to 9, it is a case of inequality.

When, we come to know that one thing is not equal to another; there can be only two possibilities:-

- (i) One thing is greater than another thing.

or

- (ii) One thing is less than the another thing.

When, we denote (i) and (ii) mathematically, then we will write.

- (i) One thing $>$ another thing.

or

- (ii) One thing $<$ another thing.

where ' $>$ ' denotes 'greater than'.

and ' $<$ ' denotes 'less than'

Hence, you can write,

$$3 \times 4 > 9$$

$$4 \times 1 < 9$$

$(3 \times 4 > 9)$ does mean 'Product of 3 and 4 is greater than 9'.

$(4 \times 1 < 9)$ does mean 'Product of 4 and 1 is less than 9'.

Sometimes we come across two numbers where, we do not know the exact state of inequality between them. For example, we may have two numbers m and n and all that we know that ' n ' is not less than m '. In such case m can be either greater than or equal to n . This situation is represented as \geq sign. When we have to represent ' m is less than or equal to n ' then we will use ' \leq ' sign. Let us see:-

$m \geq n$ does mean m is either greater than or equal to n .

$m \leq n$ does mean n is either less than or equal to m .

Hence, we can summarise the signs to be used in inequalities as below:

' $=$ ' is called equal to
 ' $>$ ' is called greater than
 ' \geq ' is called greater than or equal to
 ' $<$ ' is called less than
 ' \leq ' is called less than or equal to

WHAT IS CHAIN OF INEQUALITIES?

Sometimes two or more inequalities are combined together to create a single inequality having three or more terms. Such combination is called chain of inequalities. For example $24 > 20$ and $20 > 16$ can be combined as $24 > 20 > 16$. In the same way, $13 < 17$; $17 < 31$ and $31 < 38$ may be combined as $13 < 17 < 31 < 38$.

Note : If you see the given problem format (sample problem). You will find that your primary task is to combine two or more inequalities to create a single inequality.

CONDITIONS FOR COMBINING TWO INEQUALITIES

Condition I: Two inequalities will be combined if and only if they have a common term.

Condition II: Two inequalities will be combined if and only if the common term is greater than (or 'greater' than or equal to) one and less than (or 'less than or equal to') the other.

For example : $14 > 13$, $13 > 12$ can be easily combined as ' $14 > 13 > 12$ '.

Coded Inequalities

Here,

$$14 > \boxed{13} > 12$$

↓
Common term

Clearly, $14 > 13$ and $13 > 12$ have common term 13 and this common term is greater than 12 and less than 14. Hence, $14 > 13$ and $13 > 12$ have been combined into $14 > 13 > 12$ as per the conditions I and II.

For example : $17 < 19$, and $19 < 20$ can be easily combined as $17 < 19 < 20$.

Here,

$$17 < \boxed{19} < 20$$

↓
Common term

Clearly, $17 < 19$ and $19 < 20$ have common term 19 and this common term is greater than 17 and less than 20. Hence, $17 < 19$ and $19 < 20$ have been combined into $17 < 19 < 20$ as per the conditions I and II.

Now, let us see some examples of inequalities which can not be combined. Some such examples are given below:

- i. $14 > 12$, $19 > 18$
- ii. $18 < 20$, $22 < 25$
- iii. $100 > 99$, $80 > 77$
- iv. $100 < 115$, $118 < 119$

Clearly, (i), (ii), (iii) and (iv) can not be combined as they do not have any common term and therefore, they do not follow condition I and condition II.

How to Derive Conclusions from a Combined Inequalities?

To derive conclusion from a combined inequality, you have to eliminate the common term.

For example,

- (a) If we have
 $m > \ell > n$

then, our conclusion is $m > n$

- (b) When, we have

$$m < \ell < n$$

then, our conclusion is $m < n$

- (c) When, we have ' \geq ' signs in the combined inequalities then you have to think a little bit more. Let us consider the combined inequality given below:

$$m \geq \ell > n$$

Here, m is either greater than ℓ or equal to ℓ .

Hence, the minimum value for m is equal to ℓ . But ℓ is always greater than n . Therefore, m is always greater than n .

\therefore Our conclusion is $m > n$

- (d) When, we have the following inequalities:-

$$m > \ell \geq n$$

In this case, m is always greater than ℓ and ℓ is either greater than n or equal to it. When ℓ is greater than n ; m will obviously be greater than n . Even when ℓ is equal to n ; m will be greater than n as m is always greater than ℓ .

\therefore Our conclusion is $m > n$

- (e) When, we have combined inequality

$$m \geq \ell \geq n$$

Here, m is either greater than ℓ or equal to ℓ .

When m is greater than ℓ ; we have $m > \ell \geq n$, which gives the conclusion.

$$\boxed{m > n} \quad \text{--- (A)}$$

When m is equal to ℓ ; we have

$m = \ell \geq n$, which gives the conclusion

$$\boxed{m \geq n} \quad \text{--- (B)}$$

Combining (A) and (B), we have the final conclusion as

$$\boxed{m \geq n}$$

From (a), (b), (c), (d) and (e), we get a rule for deriving conclusions from a combined inequality, we may say it 'Golden Rule'.

GOLDENRULE

The conclusion inequality will have an ' \geq ' sign or a ' \leq ' sign if and only if both the signs in the combined inequality are ' \geq ' or ' \leq ' sign

Clearly, in (a), (b), (c), (d) and (e) only one inequality (e) ($m \geq \ell \geq n$) has ' \geq ' as its both the sign.

REMEMBER

- ★ If $m > n$, then $n < m$ must be true.
- If $m < n$, then $n > m$ must be true.
- If $m \geq n$, then $n \leq m$ must be true.
- If $m \leq n$, then $n \geq m$ must be true.

EITHER CHOICE RULES

- I** When your derived conclusion is of the type $m \geq n$ (or $m \leq n$) then check if the two conclusions are $m > n$ and $m = n$ (or, $m < n$ and $m = n$). If yes, choice “either follows” is true.
- II** If neither of the given conclusions seems correct. Then try to check if the given conclusions form a complementary pair. Given conclusions form a complementary pair in the 4 cases given below:-
- (i) $m \geq n$ and $m < n$ (ii) $m > n$ and $m \leq n$
 (iii) $m \leq n$ and $m > n$ (iv) $m < n$ and $m \geq n$

In such case, the choice “either follows” is correct.

Steps for Solving Problems

Step I: Decode the given symbols like $\alpha, \beta, \gamma, \theta, \delta, \eta$, etc.

Step II: Take one conclusion at a time and make an idea that which statements are relevant for evaluating it.

Step III: Use conditions I and II and the ‘Golden Rule’ to combine the relevant statements and derive a conclusion from it. They are:

Condition I: There must be a common term.

Condition II: The common term must be less than or equal to one term and greater than or equal to another.

Golden Rule: The conclusion — inequality is obtained by letting the common term be eliminated and it has a ‘ \geq ’ or a ‘ \leq ’ sign if and only if both the inequalities in 2nd step had a ‘ \geq ’ or a ‘ \leq ’ sign. In all other cases, there will be a ‘ $>$ ’ or a ‘ $<$ ’ sign in the conclusion.

After performing the above mentioned three steps, if a conclusion is established and verified, it is well and good. But if does not happen so, then you have to perform 4 more new steps given below:

New Step I: Check if the given conclusion directly follows from anyone single statement.

New Step II: Check if the conclusion — inequality you get is essentially as same as the given conclusion but written differently (As discussed in important points to remember)

New Step III: Check if the derived conclusion follows ‘Either choice Rule I’.

New Step IV: If neither of the conclusions has been proved correct till now, then check ‘Either choice Rule II’.

SOLUTION TO SAMPLE PROBLEM (PROBLEM FORMAT)

Through this, we will demonstrate how to use the stepwise method mentioned above to solve the real problem.

Step I: We decode the symbols at this very 1st step.

- (1) **Statements:** $P > N, L = P, O < N, L \leq K$
Conclusions: I. $P < K$ II. $L > N$
- (2) **Statements:** $E = F, C < D, F \geq G, D > E$
Conclusions: I. $E > G$ II. $C = E$
- (3) **Statements:** $T \geq M, O = N, T < H, M = O$
Conclusions: I. $T = N$ II. $T > N$
- (4) **Statements:** $R \leq Y, K = L, Y < X, R > K$
Conclusions: I. $Y > L$ II. $Y = L$
- (5) **Statements:** $P < I, S = C, S \geq I, C > O$
Conclusions: I. $C < I$ II. $S > P$

Next, we will take each of the questions separately and perform step II and step III for each of the conclusion.

1. **Conclusion I:** Relevant statements = $(L = P, L \leq K)$. Combining both the relevant statements, we get $P \leq K$. This does not match to the given conclusion $P < K$.
- Conclusion II:** Relevant statements are $P > N$ and $L = P$ combining both the relevant statement, we get $L > N$. Hence, only conclusion II follows.
 \therefore Our correct answer choice is (b)
2. **Conclusion I:** Relevant statements = $(E = F, F \geq G)$. Combining both the relevant statements, we get $E \geq G$. This does not match with the given conclusion $E > G$.
- Conclusion II:** Relevant statements are $C < D$ and $D > E$. Combining both the relevant statements, we get $C < E$. This does not match with $C = E$. Hence, both conclusions are rejected. Now, new steps I, II, III, IV as mentioned in the segment ‘Steps for solving problems’ also does not work for this conclusion. Hence, our correct answer choice is (d).
3. **Conclusion I:** Relevant statements = $(O = N, M = O, T \geq M)$. Combining the 1st two statements, we have $M = N$. Now, combining $M = N$ with $T \geq M$, we get $T \geq N$. Clearly, conclusion I does not follow.
- Conclusion II:** We have already seen then $T \geq N$ follows. This is different from $T > N$. So, the conclusion II does not follow. But, by virtue of New step III. Choice (c) is our correct answer.
4. **Conclusion I:** Conclusion I is $Y > L$. Now from the given statements Y and L do not appear separately with a single common term. Y appears with R , R with K and K with L . Hence, we will take these three statements as our relevant statements. They are $R \leq Y, R > K, K = L$
 Combining $R \leq Y$ and $R > K$
 (Just see ‘Golden Rule’), we get $Y > K$, now combining it with $K = L$; we get $Y > L$. Hence, conclusion I follows.
- Conclusion II:** Conclusion II is $Y = L$, which is not true as $> L$ has been proved.
 \therefore Our correct answer choice is (a).
5. **Conclusion I:** Conclusion I is $C < I$. C and I appear separately with S in $S = C$ and $S \geq I$. So, these two are our relevant statements. Combining these two relevant statements, we get: $C > I$. This does mean conclusion I is not true.
- Conclusion II:** Conclusion II is $S > P$. Now, S and P appear separately with a common term I ; in $P > I$ and $S \geq I$. So these two are our relevant statements and combining them, we get: $P < S$. By New step II, it is the same as $S > P$. Therefore, conclusion II follows.
 \therefore Our correct answer choice is (b)

In this type of questions, usual mathematical symbols (+, −, ÷, ×, <, > etc.) are represented by symbols, different from the usual ones. To solve this type of questions, substitute the real signs in the given expression and then solve the expression according to the rule BODMAS.

EXAMPLE 1 to 3: In the following questions, the symbols ©, @, =, * and \$ are used with the following meanings :

- © means 'P is greater than Q';
- @ means 'P is greater than or equal to Q';
- = means 'P is equal to Q';
- * means 'P is smaller than Q';
- \$ means 'P is either smaller than or equal to Q'.

Now in each of following questions, assuming the given statements to be true, find which of the two conclusions I and II given below them is/are definitely true.

Give answer :

- (a) if only conclusion I is true;
- (b) if only conclusion II is true;
- (c) if either I or II is true;
- (d) if neither I nor II is true.
- (e) if both I and II are true.

1. **Statements :** P © T, M \$ K, T = K

Conclusions : I. T © M II. T = M

Sol. (c) Given statements : P > T, M ≤ K, T = K.
T = K, K ≥ M ⇒ T ≥ M ⇒ T > M or T = M
⇒ T © M or T = M

So, either I or II is true.

2. **Statements:** D © F, F = S, S \$ M

Conclusions : I. D © M II. F @ M

Sol. (d) Given statements : D > F, F = S, S ≤ M

F = S, S ≤ M ⇒ F ≤ M

Therefore, II is not true.

Now D > F, F ≤ M

⇒ nothing can be said about F and M.

So, I is not true.

3. **Statements :** J = V, V * N, R \$ J

Conclusions : I. R * N II. J @ N

Sol. (a) Given statements: J = V, V < N, R ≤ J
R ≤ J, J = V, V < N ⇒ R < N i.e R * N.

So, I is true.

Now, J = V, V < N ⇒ J < N

So, J @ N i.e., J ≥ N is not true.

Thus, II is false.

DIRECT INEQUALITY

In this type of questions direct relation between two or more than two elements are given in a meaningful inequality. Candidates are required to establish the relation between elements with the help of used signs between the elements.

EXAMPLE 4: Which of the following symbols should replace the question mark in the given expression in order to make the expressions. 'I > L' as well as 'M ≥ K' definitely true?

$$I > J \geq K ? L \leq N = M$$

- (a) >
- (b) <
- (c) ≤
- (d) =
- (e) Either < or ≤

Sol. (d) On putting sign (=) in place of question mark (?)
I > J ≥ K = L ≤ N = M ⇒ means I > L and M ≥ K

EXAMPLE 5. Which of the following symbols should be placed in the blank spaces respectively (in the same order from left to right) in order to complete the given expression in such a manner that 'S > P' definitely holds true but 'S = P' does not hold true?

$$P _ _ Q _ _ R _ _ S$$

- (a) ≥, >, ≥
- (b) ≤, =, ≤
- (c) >, <, <
- (d) <, ≤, ≤
- (e) None of these

Sol. (d) On putting sign (<, ≤, ≤) in place of blank spaces P ≤ Q ≤ R ≤ S ⇒ means S > P and S = P

Directions (Illustrations 3 and 4) : In these questions, relationship between different elements is shown in the statements. These statements are followed by two conclusions.

Give answer

- (a) If only Conclusion I follows
- (b) If only Conclusion II follows
- (c) If either Conclusion I or II follows
- (d) If neither Conclusion I nor II follows
- (e) If both Conclusions I and II follow

3. **Statement** E < F ≤ G = H > S

Conclusions I. G > S II. F ≤ H

Sol. (e) **Statement** E < F ≤ G = H > S

Conclusions I. G > S → It follows because G = H is greater than S.

II. F ≤ H → It follows because H is equal to G and G ≥ F.

So, both Conclusions I and II follow.

4. **Statement** P ≤ Q < W = L

Conclusions I. L > P

II. Q ≤ L

Sol. (a) **Statement** P ≤ Q < W = L

Conclusions I. L > P → It follows

II. Q ≤ L → It does not follow because L is equal to W and W is only greater than Q.

REMEMBER

Inequality depends upon combining more than two element with a common term. Now observe the below diagram thoroughly

Accordance to this diagram

Definite Conclusion

- > = → >
- < = → <
- ≥ = → ≥
- ≤ = → ≤
- ≥ > → >
- ≤ < → <
- < = ≤ → <
- > = ≥ → >

Indefinite Conclusion

- > < → No relation
- ≥ ≤ → No relation
- > ≤ → No relation
- ≥ < → No relation

Shortcut Approach

Case 1. < OR >

Two signs opposite to each other will make the conclusion wrong But again if the signs are in same manner that will not make it wrong.

For example:

If A > B < C > D then A < C = False, C > A = False .

But

If $E > F > G > H$ then $E > G = \text{True}$, $F > H = \text{True}$, $E > H = \text{True}$.

Statement: $A < D > C < E > B$

Conclusions:

- $C > B \rightarrow \text{False}$
- $A < E \rightarrow \text{False}$
- $D > B \rightarrow \text{False}$

In simple way, whenever these two sign comes in opposite direction the answer will be false.

Case 2. \leq OR \geq

Two signs opposite to each other will make the conclusion wrong But again if the signs are same then it will be true.

For example:

If $A \geq B \leq C$ then $A \leq C = \text{False}$, $C \geq A = \text{False}$.

But

If $A \geq B \geq C$ then $A \geq C = \text{True}$, $C \leq A = \text{True}$.

Statement: $B \geq D \leq A \geq F \geq C$

Conclusions :

- I. $A \geq C \rightarrow \text{True}$
- II. $B \leq F \rightarrow \text{False}$
- III. $D \geq C \rightarrow \text{False}$

Case 3. Sets Priority

1st Priority: $<$ or $>$

2nd Priority: \leq or \geq

3rd Priority: $=$

Statement: $P \geq R > Q = T \geq S$

Conclusions :

- I. $P \geq Q \rightarrow \text{False}$
- II. $P > Q \rightarrow \text{True}$
- III. $Q \geq S \rightarrow \text{True}$

Case 4.

When it occurs to you that the statement of order is opposite just change the sign into similar opposite direction. Then change the sign into similar opposite /corresponding / alternative direction.

If $A > B > F > C < D < E$

than $F < A \rightarrow \text{True}$

Example : [$\because A > B > F = F < B < A$]

Statements : $A > B > F > C$; $D > E > C$

Conclusions:

- I. $C < A \rightarrow \text{True}$
- II. $C > A \rightarrow \text{False}$

Statements : $R \geq S \geq T > U > X$; $T < V < W$

Conclusions:

- I. $R > X \rightarrow \text{True}$ [Note: Apply Case 3 here]
- II. $X < R \rightarrow \text{True}$ [Note: Apply Case 3 & 4 here]

Statements : $K \leq L \leq M = N$; $P \geq O \geq N$

Conclusions:

$K \leq L \leq M = N \leq O \leq P$

- I. $K < O \rightarrow \text{False}$ Neither Nor
- II. $K = N \rightarrow \text{False}$ Neither Nor
- III. $K \leq M \rightarrow \text{True}$
- IV. $K < P \rightarrow \text{False}$
- V. $K = P \rightarrow \text{False}$

Statement IV & V Apply Either Or

Case 5. $>$ or $<$ and \geq or \leq

Whenever there is two conclusions which are false then check for these two symbols ($>$ or $<$ and \geq or \leq). In most of case where two conclusions are false and these two similar signs are not

there respectively then that statement can call it as either or but should check there variable it should same.

#Case Either Or :

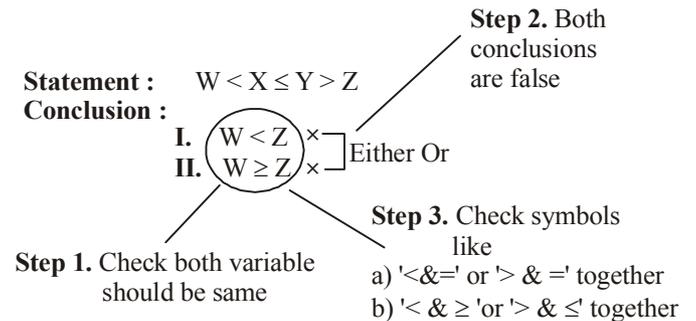
Note : First thing need to check whether in conclusion any 2 or more conclusions are wrong then if it is there then check whether the two variables are same. If It happens then write it as 'Either or' but after checking their symbols.

Rules:

1. Both conclusion should False
2. Should have same Predicate or Variable
3. Check the symbols

If above conditions are satisfied then write it as 'Either Or' Other wise leave it.

Note : If 3 condition is satisfied than the conclusions are called Either Or



Solved Examples :

Statement: $H = W \leq R > F$

Conclusion: I. $R = H \times$
II. $R > H \times$ Either Or

Statement: $H > L = E < T$

Conclusion: I. $H \leq T \times$
II. $H > T \times$ Either Or

Statement: $S < T \geq R \geq M$

Conclusion: I. $M < T \times$
II. $M = T \times$ Either Or

Statement: $I \geq H = T > S \leq R$

Conclusion: I. $I > T \times$
II. $I = T \times$ Either Or

#Case Neither Nor :

First thing you need to check whether in your conclusion any 2 or more conclusions are wrong then write it as 'Neither Nor' but before checking their symbols.

Rules:

1. Both conclusion should False
 2. Check the symbols
- If both conditions are satisfied then write it as " Neither Nor" other wise leave it.

Statement: $P > Q \geq S = R$

Conclusion: I. $P \geq R \times$
II. $R > Q \times$ Neither nor

Statement: $L = T \leq J \leq K$

Conclusion: I. $L > K$
II. $T \leq K$ Neither nor

Statement: $V < L \geq J \leq T$

Conclusion: I. $V < J$
II. $L = T$ Neither nor

Statement: $G \leq K \leq F < M$

Conclusion: I. $G > F$
II. $K \leq M$ Neither nor

EXERCISE

Directions (Qs.1-5): In the following questions, the symbols @, #, \$, * and % are used as illustrated below:

'P @ Q' means 'P is not smaller than Q'.

'P # Q' means 'P is neither greater than nor equal to Q'.

'P \$ Q' means 'P is neither smaller than nor greater than Q'.

'P * Q' means 'P is not greater than Q'.

'P % Q' means 'P is neither smaller than nor equal to Q'.

Now, in each of the following questions assuming the given statements to be true, find which of the two conclusions I and II given below them is/are definitely true? Give answer

- (a) if only Conclusion I is true.
 (b) if only Conclusion II is true.
 (c) if either Conclusion I or II is true.
 (d) if neither Conclusion I nor II is true.
 (e) if both Conclusions I and II are true.

1. **Statements:**

M \$ K, D * K, R # K

Conclusions:

I. D \$ M

II. M % D

2. **Statements:**

F * M, M % R, E @ F

Conclusions:

I. M % E

II. R @ E

3. **Statements:**

H \$ K, T # H, W * T

Conclusions:

I. K % W

II. T # K

4. **Statements:**

N % A, A # L, F \$ N

Conclusions:

I. L % F

II. F % A

5. **Statements:**

B * D, D \$ M, F % M

Conclusions:

I. B # M

II. F % B

Directions (Qs. 6-11): In the following questions the symbols +, ×, ?, @ and \$ are used with the following meanings:

$P + Q$ means P is neither smaller nor greater than Q .

$P \times Q$ means P is neither equal to nor smaller than Q .

$P ? Q$ means P is neither greater than nor equal to Q .

$P @ Q$ means P is either greater than or equal to Q .

$P \$ Q$ means P is not equal to Q .

Now, in each of the following questions assuming the given statements to be true, find which of the two conclusions I and II given below them is/are definitely true. Give answer

- (a) if only conclusion I is true;
 (b) if only conclusion II is true;

(c) if either I or II is true:

(d) if neither I nor II is true; and

(e) if both I and II are true.

6. **Statement:**

$P \$ Q, Q \times R, P + R$

Conclusions:

I. $Q \times P$

II. $P ? Q$

7. **Statement:**

$A + B, B \$ C, C ? A$

Conclusions:

I. $C \$ A$

II. $B + C$

8. **Statement:**

$Y @ Z, Z \times Q, Q \$ P$

Conclusions:

I. $Y ? Q$

II. $Y ? P$

9. **Statement:**

$E \times F, F @ L, L + N$

Conclusions:

I. $N + F$

II. $E \times L$

10. **Statement:**

$H @ J, J ? K, K \times M$

Conclusions:

I. $H @ M$

II. $M \times J$

11. **Statement:**

$M @ T, T + V, V ? E$

Conclusions:

I. $V + M$

II. $V ? M$

Directions (Qs. 12 - 16): In the following questions, the symbols @, ©, ★, \$ and # are used with the following meaning:

'P @ Q' means 'P is neither smaller than nor equal to Q'.

'P © Q' means 'P is not smaller than Q'.

'P ★ Q' means 'P is not greater than Q'.

'P \$ Q' means 'P is neither smaller than nor greater than Q'.

'P # Q' means 'P is neither greater than nor equal to Q'.

Now, in each of the following questions, assuming the given statements to be true, find which of the two conclusions I and II given below them is/are definitely true? Give answer

- (a) if only conclusion I is true.
 (b) if only conclusion II is true.
 (c) if either conclusion I or II is true.
 (d) if neither conclusion I nor II is true.
 (e) if both conclusions I and II are true.

12. **Statements:**

$Z \# N, F \textcircled{C} N, F \star K$

Conclusion :

I. $K \$ N$

II. $K @ Z$

13. **Statements:**
 $D \$ T, T \odot M, M \# K$
Conclusion:
I $M \$ D$
II $D @ M$
14. **Statements:**
 $W \odot A, B \star A, B @ M$
Conclusions:
I $B \# W$
II $W \$ B$
15. **Statements:**
 $J \star M, M \$ N, N \# T$
Conclusions:
I $T @ J$
II $T \$ J$
16. **Statements:**
 $V \star F, F @ R, R \odot G$
Conclusions:
I $G \# V$
II $G @ V$

Directions (Qs. 17-21): In the following questions, the symbols #, \$, @, * and \odot are used with the following meaning as illustrated below:

- ' $P \# Q$ ' means ' P is not smaller than Q '
' $P \$ Q$ ' means ' P is neither smaller than nor greater than Q '
' $P @ Q$ ' means ' P is neither greater than nor equal to Q '
' $P * Q$ ' means ' P is not greater than Q '
' $P \odot Q$ ' means ' P is neither smaller than nor equal to Q '

Now in each of the following questions assuming the given statements to be true, find which of the two conclusions I and II given below them is/are **definitely true**. Give answer

- (a) if only Conclusion I is true.
(b) if only Conclusion II is true.
(c) if either Conclusion I or II is true.
(d) if neither Conclusion I nor II is true.
(e) if both Conclusions I and II are true.
17. **Statements:**
 $B \$ K, K @ D, D \# M$
Conclusions:
I $B \$ M$
II $B @ M$
18. **Statements:**
 $H @ N, N \odot W, W \# V$
Conclusions:
I $H @ V$
II $V @ N$
19. **Statements:**
 $J * D, Q \# D, Q @ M$
Conclusions:
I $Q \odot J$
II $Q \$ J$
20. **Statements:**
 $F \# G, N \$ G, N \odot T$
Conclusions:
I $T \odot F$
II $N * F$
21. **Statements:**
 $M \odot R, R @ K, K \$ T$
Conclusions:
I $T \odot R$
II $T \odot M$

Directions (Qs. 22-26): In the following questions the symbols @, +, \odot , \$, Δ and ? are used with the following meaning:

- $P \Delta Q$ means P is not equal to Q .
 $P @ Q$ means P is greater than Q .
 $P + Q$ means P is smaller than Q .
 $P \odot Q$ means P is either greater than or equal to Q .
 $P \$ Q$ means P is either smaller than or equal to Q .
 $P ? Q$ means P is equal to Q .

Now in each of the following questions assuming the given statements to be true, find which of the two conclusions I and II given below them is/are definitely true. Give answer

- (a) if only conclusion I is true.
(b) if only conclusion II is true.
(c) if either conclusion I or II is true.
(d) if neither conclusion I nor II is true.
(e) if both conclusions I and II are true.
22. **Statements :**
 $K \odot M, M \Delta R, R ? T$
Conclusions:
I $K \odot T$
II $M ? T$
23. **Statements:**
 $B + D, D @ N, N \$ H$
Conclusions:
I $H \odot D$
II $H \odot N$
24. **Statements:**
 $M \odot K, K @ P, P \$ N$
Conclusions:
I $M @ N$
II $M ? N$
25. **Statements:**
 $T \$ M, M ? Q, Q + R$
Conclusions:
I $Q @ T$
II $Q ? T$
26. **Statements:**
 $D @ B, B \$ T, T + M$
Conclusions:
I $M @ B$
II $T \odot B$
- Directions (Qs.27-31):** In the following questions, the symbols \$, \odot , \times , @ and # are used with the following meanings:
- $P \$ Q$ means P is not smaller than Q .
 $P \odot Q$ means P is neither greater than nor smaller than Q .
 $P @ Q$ means P is not greater than Q .
 $P \times Q$ means P is neither smaller than nor equal to Q .
 $P \# Q$ means P is neither greater than nor equal to Q .
- Now in each of the following questions, assuming the given statements to be true, find which of the two conclusions I and II given below them is/are definitely true. Give answer
- (a) if only conclusion I is true;
(b) if only conclusion II is true;
(c) if either I or II is true;
(d) if neither I nor II is true; and
(e) if both I and II are true.

27. **Statements:**
 $Z \$ K, K \times T, T \odot F$
Conclusions:
I. $F \# Z$
II. $Z \times T$
28. **Statements:**
 $K \times B, B @ D, D \# K$
Conclusions:
I. $B @ K$
II. $B \# K$
29. **Statements:**
 $N \odot R, R @ M, M \$ J$
Conclusions:
I. $N \odot M$
II. $N \# M$
30. **Statements:**
 $S \$ T, T @ R, R \# M$
Conclusions:
I. $M \times T$
II. $M \odot T$
31. **Statements:**
 $H @ V, V \odot M, M \times R$
Conclusions:
I. $R \times H$
II. $H \times R$

Directions (Qs. 32-36): In these questions, certain symbols have been used to indicate relationships between elements as follows:

- $A B$ means A is either equal to or greater than B.
 $A \$ B$ means A is equal to B.
 $A \# B$ means A is either equal to or smaller than B.
 $A \& B$ means A is smaller than B.
 $A @ B$ means A is greater than B.

In each question, three statements showing relationships have been given, which are followed by **two** conclusions I & II. Assuming that the given statements are true, find out which conclusion(s) is/are **definitely true**.

- Mark answer (a)** if only conclusion I is true.
Mark answer (b) if only conclusion II is true.
Mark answer (c) if either conclusion I or II is true.
Mark answer (d) if neither I nor II is true.
Mark answer (e) if both conclusions I and II are true.

32. **Statements:**
 $S K, T \& K, K B$
Conclusions:
I. $S \$ B$
II. $S @ B$
33. **Statements:**
 $Y \$ Z, H \$ D, Z D$
Conclusions:
I. $D \# Y$
II. $H \# Z$
34. **Statements:**
 $M @ N, P @ R, P \& N$
Conclusions:
I. $P \# M$
II. $R \& N$
35. **Statements:**
 $T \& K, K B, S K$

Conclusions:

- I.** $B T$
II. $S \# T$

36. **Statements:**
 $P @ R, M @ N, P \& N$
Conclusions:
I. $N @ R$
II. $P \& M$

Directions (Qs. 37-41): In the following questions, the symbols $\times, \%, \#, @$ and \odot are used with the following meanings as illustrated below:

- ' $P @ Q$ ' means 'P is neither greater than nor equal to Q'.
' $P \times Q$ ' means 'P is not smaller than Q'.
' $P \# Q$ ' means 'P is not greater than Q'.
' $P \odot Q$ ' means 'P is neither smaller than nor equal to Q'.
' $P \% Q$ ' means 'P is neither greater than nor smaller than Q'.

Now in each of the following questions assuming the given statements to be true, find which of the conclusions given below are **definitely true**.

37. **Statements :** $J \odot T, T B, B @ R$
Conclusions :
I. $J @ R$
II. $R \% T$
III. $J @ B$
(a) None follows
(b) Only I follows
(c) Only II follows
(d) Only II and III follow
(e) Only I and II follow
38. **Statements :** $T M, K @ M, K \times Z,$
Conclusions :
I. $T @ Z$
II. $Z @ M$
III. $M \% Z$
(a) None follows
(b) Only II follows
(c) Only either II or III follows
(d) Only I follows
(e) All follow
39. **Statements :** $K N, N \% T, R @ T$
Conclusions :
I. $K @ R$
II. $T \odot K$
III. $R \% K$
(a) All follow
(b) Only II follows
(c) Only either I or III and II follow
(d) Only either I or II and III follow
(e) None follows
40. **Statements :** $H \odot M, M \times D, T @ D$
Conclusions :
I. $T @ M$
II. $H \odot D$
III. $H \% D$
(a) All follow
(b) Only I and III follow
(c) Only II and III follow
(d) Only I and II follow
(e) None of these

41. **Statements :** $W \times M, M \odot F, D \neq F$

Conclusions :

I $D @ W$

II $M \odot D$

III $F @ W$

- (a) None follows
 (b) Only I and II follow
 (c) Only II and III follow
 (d) Only I and III follow
 (e) All follow

Directions (Qs. 42-45) : In the questions given below, certain symbols are used with the following meanings:

$P \$ Q$ means P is neither equal to nor smaller than Q.

$P \odot Q$ means P is not smaller than Q.

$P * Q$ means P is neither greater nor smaller than Q.

$P \# Q$ means P is neither greater than nor equal to Q.

$P @ Q$ means P is not greater than Q.

Now in each of the following questions, assuming the given statements to be true, find which of the two conclusions I and II given below them is/are definitely true. Give answer

- (a) if only conclusion I is true.
 (b) if only conclusion II is true.
 (c) if either conclusion I or II is true.
 (d) if neither conclusion I nor II is true.
 (e) if both conclusions I and II are true.

42. **Statements :**

$M \# K, K * D, D @ P$

Conclusions :

I $M @ P$

II $M * P$

43. **Statements :**

$W \odot T, T \$ M, B \# M$

Conclusions :

I $W \$ B$

II $M \# W$

44. **Statements :**

$H * D, D \# R, R \odot N$

Conclusions :

I $N * H$

II $N \$ H$

45. **Statements:**

$Z @ R, R \odot D, D \# T$

Conclusions:

I $D \# Z$

II $Z \# T$

Directions (Qs. 47-50) In these questions, relations between different elements is shown in the statements. These statements are followed by two conclusions.

Give answer

- (a) Only Conclusion I follows
 (b) Only Conclusion II follows
 (c) Either Conclusion I or II follows
 (d) Neither Conclusion I nor II follows
 (e) Both Conclusions I or II follow

46. **Statements**

$N = P, P \leq F, F \geq L, L = K$

Conclusions

I. $F = K$

II. $F > K$

47. **Statements**

$Z > T, T < M, M \leq J$

Conclusions

I. $T = J$

II. $J > Z$

48. **Statements**

$Q = Z, C \geq G, G \geq Q, Q \geq R, J \geq C$

Conclusions

I. $G \geq Z$

II. $C \geq R$

49. **Statements**

$A > B > C, D > E > F, D > C$

Conclusions

I. $E > C$

II. $F > B$

50. **Statements**

$K > L, K > M, M \geq N, N > O$

Conclusions

I. $O > M$

II. $O > K$

Directions (Qs. 51-55) In these questions, relationship between different element is shown in the statements. These statements are followed by two conclusions.

Give answer

- (a) If only Conclusion I follows
 (b) If only Conclusion II follows
 (c) If either Conclusion I or II follows
 (d) If neither Conclusion I nor II follows
 (e) If both Conclusions I and II follow

51. **Statements**

$P \geq Q = R > S > T$

Conclusions

I. $P \geq T$

II. $T < Q$

52. **Statements**

$L \leq M < N > O \geq P$

Conclusions

I. $O < M$

II. $P \leq N$

53. **Statements**

$A > B, B \geq C = D < E$

Conclusions

I. $C < A$

II. $D \leq B$

54. **Statements**

$H > J = K, K \geq L, L > T, T < V$

Conclusions

I. $K < T$

II. $L \leq H$

55. **Statements**

$A \leq B = C, D > C = E$

Conclusions

I. $E \geq A$

II. $A < D$

56. Which of the following expression will be true if the expression $P > Q = R \geq S < T \leq U$ is definitely true?

- (a) $P \geq T$ (b) $Q > T$
 (c) $S < P$ (d) $U = R$
 (e) $Q < U$

57. Which of the following expression will be false if the expression $A < B \leq C = D \geq E$ is definitely true?

- (a) $C > A$ (b) $E \leq C$
 (c) $D > B$ (d) $C \geq E$
 (e) $B \leq D$

58. Which of the following expression will be true if the expression $M \geq P < N = O \geq R$ is definitely true?

- (a) $M > R$ (b) $P > O$
 (c) $R < P$ (d) $P \geq R$
 (e) $O < M$

59. Which of the symbols should be placed in the blank spaces respectively (in the same order from left to right) in order to complete the given expression in such a manner that makes the expression $P < K$ as well as $O \leq K$ definitely true?

"K _ L _ O _ P _ Q"

- (a) $\geq, =, >, \geq$ (b) $=, =, >, \geq$
 (c) $\geq, >, \geq, >$ (d) $>, =, \geq, \geq$
 (e) $>, \geq, \geq, \geq$

60. Which of the following should be placed in the blank spaces respectively (in the same order from left to right) in order to complete the given expression in such a manner that makes the expression $D < A$ definitely false.

 > = < <

- (a) E, B, C, D, A (b) A, C, D, B, E
 (c) C, E, A, B, D (d) B, D, E, C, A
 (e) C, B, D, E, A

Directions (Qs. 61-65): In the given questions, assuming the given statement to be true, find which of the given four conclusions numbered I, II, III and IV is/are definitely true and give your answer accordingly.

61. **Statements:**

$D \leq A < C, N \geq B = E, N = F > D$

Conclusions:

- I. $F \geq E$
 II. $C < D$
 III. $N \geq A$
 IV. $B \leq F$
 (a) Only I is true
 (b) Only III is true
 (c) Only II and IV are true
 (d) Only I and IV are true
 (e) None of these

62. **Statements:** $B > E \geq L, N = G \geq B, M \leq P < L$

Conclusions:

- I. $G \geq L$
 II. $E > P$
 III. $B > M$
 IV. $M < N$
 (a) Only I, II and III are true
 (b) Only II, III and IV are true
 (c) Only III and IV are true
 (d) Only I is true
 (e) None of these

63. **Statements:** $H < A \leq V < L, M = H, J > K \geq M$

Conclusions:

- I. $L > M$
 II. $A \leq K$
 III. $J > V$
 IV. $K < L$
 (a) Only II and III are true
 (b) Only I and II are true
 (c) Only III and IV are true
 (d) Only I, II and IV are true
 (e) None of these

64. **Statements:** $E \leq N \geq T \leq R, P \geq Q = R$

Conclusions:

- I. $P \geq T$
 II. $Q \leq N$
 III. $R \geq E$
 IV. $N \leq P$
 (a) Only I is true
 (b) Only II and III are true
 (c) Only II and IV are true
 (d) Only I and IV are true
 (e) None of these

65. **Statements:** $R > S = T \leq U, P = K > M \geq U$

Conclusions:

- I. $R > K$
 II. $M \geq T$
 III. $P > U$
 IV. $S \leq M$
 (a) Only II and IV are true
 (b) Only II, III and IV are true
 (c) Only I and III are true
 (d) All I, II, III and IV are true
 (e) None of these

Directions (Qs. 66-70): Read each statement carefully and answer the following questions.

66. Which of the following expressions will be true, if the expression $R > O = A > S < T$ is definitely true?

- (a) $O > T$ (b) $S < R$
 (c) $T > A$ (d) $S = O$
 (e) $T < R$

67. Which of the following symbols should replace the question mark (?) in the given expression in order to make the expressions ' $P > A$ ' as well as ' $T < L$ ' definitely true?

$P > L ? A \geq N = T$

- (a) \leq (b) $>$
 (c) $<$ (d) \geq
 (e) Either (a) and (b)

68. Which of the following symbols should be placed in the blank spaces respectively (in the same order from left to right) in order to complete the given expression in such a manner that makes the expressions ' $B > N$ ' as well as, ' $D \leq L$ ' definitely true?

$B - L - O - N - D$

- (a) $=, =, \geq, \geq$ (b) $>, \geq, =, >$
 (c) $>, <, =, \leq$ (d) $>, =, =, \geq$
 (e) $>, =, \geq, >$

69. Which of the following should be placed in the blank spaces respectively (in the same order from left to right) in order to complete the given expression in such a manner that makes the expression ' $A < P$ ' definitely false?

$- \leq - \leq - \geq$

- (a) L, N, P, A (b) L, A, P, N
 (c) A, L, P, N (d) N, A, P, L
 (e) P, N, A, L

70. Which of the following symbols should be placed in the blank spaces respectively (in the same order from left to right) in order to complete the given expression in such a manner that makes the expression ' $F > N$ ' and ' $U > D$ ' definitely false?

$F - O - U - N - D$

- (a) $<, <, >, =$ (b) $<, =, =, >$
 (c) $<, =, =, <$ (d) $\geq, =, =, \geq$
 (e) $>, >, =, <$

ANSWER KEY

1	(c)	8	(d)	15	(a)	22	(d)	29	(c)	36	(e)	43	(e)	50	(d)	57	(c)	64	(a)
2	(d)	9	(b)	16	(d)	23	(b)	30	(a)	37	(a)	44	(d)	51	(b)	58	(d)	65	(b)
3	(e)	10	(d)	17	(d)	24	(d)	31	(d)	38	(b)	45	(d)	52	(d)	59	(a)	66	(b)
4	(b)	11	(c)	18	(b)	25	(c)	32	(c)	39	(e)	46	(c)	53	(e)	60	(c)	67	(b)
5	(b)	12	(b)	19	(c)	26	(e)	33	(e)	40	(d)	47	(d)	54	(a)	61	(d)	68	(d)
6	(e)	13	(c)	20	(b)	27	(e)	34	(b)	41	(e)	48	(e)	55	(e)	62	(b)	69	(e)
7	(a)	14	(c)	21	(a)	28	(b)	35	(d)	42	(d)	49	(d)	56	(c)	63	(e)	70	(c)

Hints & Explanations

1. (c) $M = K$ (i);
 $D \leq K$ (ii);
 $R < K$ (iii)
 From (i) and (ii), we get
 $M = K \geq D \Rightarrow M \geq D$
 Hence, either $M > D$ (conclusion II) or $M = D$ (conclusion I) is true
2. (d) $F \leq M$... (i); $M > R$... (ii); $E \geq F$... (iii)
 From (i) and (iii), no specific relation can be obtained between M and E . Similarly, no specific relation can be obtained between R and E .
3. (e) $H = K$... (i); $T < H$... (ii),
 $W \leq T$... (iii)
 From (i), (ii) and (iii), we get
 $K = H > T \geq W \Rightarrow K > W$ (conclusion I) and
 $T < K$ (conclusion II).
4. (b) $N > A$... (i), $A < L$... (ii), $F = N$... (iii)
 From (i) and (iii), we get
 $F = N > A \Rightarrow F > A$ (conclusion II). But no specific relation can be obtained between L and F . Hence, conclusion I is not necessarily true.
5. (b) $B \leq D$... (i); $D = M$... (ii);
 $F > M$... (iii)
 From (i), (ii) and (iii), we get
 $F > M = D \geq B \Rightarrow B < M$ and $F > B$ (conclusion II).
 Since, $B < M$, therefore, conclusion I is not necessarily true.
6. (e) $P \neq Q$... (i), $Q > R$... (ii), $P = R$... (iii)
 From (ii) and (iii), we get $Q > R = P \Rightarrow Q > P$. Hence, both I and II are true.
7. (a) $A = B$... (i), $B \neq C$... (ii), $C < A$... (iii) From (iii), conclusion I is true. II contradicts statement (ii), hence, it is not true.
8. (d) $Y \geq Z$... (i), $Z > Q$... (ii), $Q \neq P$... (iii)
 From (i) and (ii), we get $Y > Z > Q \Rightarrow Y > Q$... (A)
 Hence, I is not true. From (iii), two possible relationships between P and Q are;
Case I: When $P > Q$
 Now, using (A), we get $Y > Q < P \Rightarrow$ no conclusion.
Case II: When $Q > P$
 using (A), we get $Y > Q > P \Rightarrow Y > P$. Hence, II is not true.
9. (b) $E > F$... (i), $F \geq L$... (ii), $L = N$... (iii)
 From (ii) and (iii), we get $F \geq L = N \Rightarrow F \geq N$ or $N \leq F$.
 Hence, I may be true but not necessarily so.
 From (i) and (ii), we get $E > F \geq L \Rightarrow E > L$
 Hence, II is true.
10. (d) $H \geq J$... (i), $J < K$... (ii), $K > M$... (iii)
 From (ii) and (iii), we get $J < K > M \Rightarrow$ no relationship between J and M can be established. Hence, II can't be established. Again, combining all we can't conclude the relationship between H and M . Hence, I is not true.
11. (c) $M \geq T$... (i), $T = V$... (ii), $V < E$... (iii)
 From (i) and (ii), we get
 $M \geq T = V \Rightarrow M \geq V \Rightarrow$ either $V = M$ or $V < M$ is true.
12. (b) $Z < N$... (i); $F \geq N$... (ii); $F \leq K$... (iii) Combining all, we get
 $K \geq F \geq N > Z \Rightarrow K = N$ and $K > Z$
 Hence, conclusion I ($K = N$) is not necessarily true but conclusion II ($K > Z$) is true.
13. (c) $D = T$... (i); $T \geq M$... (ii); $M < K$... (iii) Combining (i) and (ii), we get
 $D = T \geq M \Rightarrow D \geq M \Rightarrow D = M$ or $D > M$
 Hence, either conclusion I ($M = D$) or conclusion II ($D > M$) is true.
14. (c) $W \geq A$... (i); $B \leq A$... (ii); $B > M$... (iii) Combining all, we get
 $W \geq A \geq B > M \Rightarrow B \leq W$
 $\Rightarrow B < W$ or $B = W$
 Hence, either conclusion I or II is true.
15. (a) $J \leq M$... (i); $M = N$... (ii); $N < T$... (iii)
 Combining all, we get
 $J \leq M = N < T \Rightarrow T > J$
 Hence, only conclusion I is true
16. (d) $V \leq F$... (i); $F > R$... (ii); $R \geq G$... (iii)
 Combining (ii) and (iii), we get $F > R \geq G$... (iv)
 Comparing (i) and (iv), we can't get any specific relationship between G and V . Hence, both conclusions are not true.
17. (d) $B = K$ (i);
 $K < D$ (ii);
 $D \geq M$ (iii)
 From (i) and (ii), we get
 $D > K = B$ (iv)

- From (iii) and (iv), no specific relation can be obtained between B and M . Therefore, $B = M$ (Conclusion I) and $B < M$ (Conclusion II) are not necessarily true.
18. (b) $H < N$... (i)
 $N > W$... (ii);
 $W \geq V$... (iii)
 From (ii) and (iii), we get
 $N > W \geq V$... (iv)
 From (i) and (iv), no specific relation can be obtained between H and V . Hence, $H < V$ (Conclusion I) is not necessarily true. But $V < N$ (Conclusion II) follows from equation (iv).
19. (c) $J \leq D$... (i);
 $Q \geq D$... (ii);
 $Q < M$... (iii)
 Combining (i) and (ii), we get
 $Q \geq D \geq J \Rightarrow Q > J$ (Conclusion I) or $Q = J$ (Conclusion II)
 Hence, either conclusion I or conclusion II is true.
20. (b) $F \geq G$... (i);
 $N = G$... (ii);
 $N > T$... (iii)
 Combining all, we get
 $F \geq G = N > T \Rightarrow N \leq F$ (Conclusion II) and $T < F$.
 Hence, conclusion I ($T > F$) is not true but conclusion II is true.
21. (a) $M > R$... (i);
 $R < K$... (ii);
 $K = T$... (iii)
 Combining (ii) and (iii), we get
 $K = T > R$
 $\Rightarrow T > R$ (Conclusion I).
 On the basis of the given information no specific relation can be obtained between T and M . Hence, $T > M$ (Conclusion II) is not necessarily true.
22. (d) $K \geq M$... (i); $M \neq R$... (ii); $R = T$... (iii)
 Combining all equations, we get
 $K \geq M \neq R = T \Rightarrow M \neq T$
 From this we can't get any specific relation between K and T . Hence, conclusion I is not true. Conclusion II is false since $M \neq T$.
23. (b) $B < D$... (i); $D > N$... (ii); $N \leq H$... (iii)
 From equations (ii) and (iii), we can't obtain any specific relation between H and D . Hence, conclusion I ($H \geq D$) is not true. But conclusion II ($H \geq N$) follows from equation (iii)
24. (d) $M \geq K$... (i); $K > P$... (ii); $P \leq N$... (iii)
 Combining (i) and (ii), we get
 $M \geq K > P$... (iv)
 From (iii) and (iv), no specific relation can be obtained between M and N . Hence, conclusion I ($M > N$) and conclusion II ($M = N$) are not true.
25. (c) $T \leq M$... (i); $M = Q$... (ii); $Q < R$... (iii)
 Combining (i) and (ii) we get
 $M = Q \geq T \Rightarrow Q > T$ (Conclusion I)
 or $Q = T$ (Conclusion II)
26. (e) $D > B$... (i); $B \leq T$... (ii); $T < M$... (iii)
 Combining (ii) and (iii), we get
- $M > T \geq B \Rightarrow M > B$ (Conclusion I) and
 $T \geq B$ (Conclusion II).
27. (e)
28. (b) $K > B$... (i); $B \leq D$... (ii); $D < K$... (iii)
 From (i), $B < K$. Hence II is true but I is not true.
29. (c) $N = R$... (i); $R \leq M$... (ii); $M \geq J$... (iii)
 From (i) and (ii), we get $N = R \leq M \Rightarrow N \leq M$. Hence either I or II is true.
30. (a) $S \geq T$... (i); $T \leq R$... (ii); $R < M$... (iii)
 From (ii) and (iii), we get $T \leq R < M \Rightarrow T < M$ or $M > T$.
 Hence I is true and II is not true.
31. (d) $H \leq V$... (i); $V = M$... (ii); $M > R$... (iii)
 Combining all, we get $H \leq V = M > R \Rightarrow$ no relationship between H and R can be established. Since conclusions I and II are not exhaustive, neither of them is true.
32. (c) $S \geq K$... (i); $T < K$... (ii);
 $K \geq B$... (iii)
 Combining (i) and (iii), we get
 $S \geq K \geq B$. Hence, $S > B$ or $S = B$. Therefore either conclusion I or II is true.
33. (e) Combining all the three statements, we get
 $Y = Z \geq D = H$. Therefore $D \leq Y$ and $H \leq Z$ are true.
34. (b) Combining all the three statements together we get
 $M > N > P > R$. Therefore $P \leq M$ is not true, but $R < N$ is true.
35. (d) Combining I and III, we get
 $S \geq K > T$. Therefore $S \leq T$ is not true. We have no information about the relationship between B and T .
36. (e) Combining all the three statements, we get
 $M > N > P > R$. Therefore $N > R$ and $P < M$ are true.
37. (a) $J > T$... (i)
 $T \leq B$... (ii)
 $B < R$... (iii)
 From (ii) and (iii), we get
 $R > B \geq T$... (iv)
 Hence, no specific relation can be obtained between (i) J and R or (ii) J and B . Hence, neither I nor III follows. From equation (iv) we get $R > T$. Therefore, conclusion II does not follow.
38. (b) $T \leq M$... (i)
 $K < M$... (ii)
 $K \geq Z$... (iii)
 From (ii) and (iii), we get
 $M > K \geq Z$... (iv).
 $\Rightarrow M > Z$
 Hence, conclusion II ($Z < M$) follows. But conclusion III ($M = Z$) does not follow. Again, no specific relation can be obtained between T and Z . Hence, conclusion I does not follow.
39. (e) $K \leq N$... (i);
 $N = T$... (ii);
 $R < T$... (iii)
 From (i) and (ii), we get
 $T = N \geq K$... (iv)
 From (ii) and (iii), we get
 $T = N > R$... (v)

From equation (iv), we get $T \geq K$. Hence, conclusion II ($T > K$) is not necessarily true.
 From equations (iv) and (v) we can't obtain any specific relation between K and R. Therefore, conclusion I and conclusion III do not follow. Thus, no conclusion follows.

40. (d) $H > M \dots$ (i); $M \geq D \dots$ (ii); $T < D \dots$ (iii)
 From (i), (ii) and (iii), we get
 $H > M \geq D > T \dots$ (iv)
 From equation (iv), we get $H > T$. This implies $T < M$. Hence, conclusion I follows.
 Again, $H > D$. Hence II follows but III does not.
41. (e) $W \geq M \dots$ (i); $M > F \dots$ (ii); $D \leq F \dots$ (iii)
 From (i), (ii) and (iii), we get
 $W \geq M > F \geq D \dots$ (iv)
 From (iv); we get $W > D$. Hence, conclusion I ($D < W$) follows. Again, from the equation (iv), we get $M > D$. Hence, conclusion II ($M > D$) follows. Again, from the equation (iv), we get $W > F$. Hence, conclusion III ($F < W$) follows.
42. (d) $M < K \dots$ (i); $K = D \dots$ (ii); $D < P \dots$ (iii)
 Combining all the equations, we get
 $P \geq D = K > M \Rightarrow P > M$. Hence, conclusion I ($M \leq P$) and conclusion II ($M = P$) are not true.
43. (e) $W \geq T \dots$ (i); $T > M \dots$ (ii); $B < M \dots$ (iii)
 Combining all, we get $W \geq T > M > B$
 $\Rightarrow W > B$ and $W > M$. Hence, both conclusions ($W > B$, $M < W$) are true.
44. (d) $H = D \dots$ (i); $D < R \dots$ (ii); $R \geq N \dots$ (iii)
 Combining (i) and (ii), we get
 $R > H = D \dots$ (iv)
 From (iii) and (iv), we can't get any specific relation between N and H. Therefore, conclusion I ($N = H$) and conclusion II ($N > H$) are not true.
45. (d) $Z \leq R \dots$ (i); $R \geq D \dots$ (ii); $D < T \dots$ (iii)
 With these equations no relation can be established between D and Z, and Z and T.
46. (c) $N = P$, $P \leq F$, $F \geq L$ and $L = K$
 $\therefore N = P \leq F \geq L = K$
 I. $F = K \Rightarrow$ false (because F is greater than and equal to L so, F is also greater than and equal to K. So, true will be $F \geq K$)
 II. $F > K \Rightarrow$ false
 (But either F is greater than or equal to so, Either I or II will be true)
- $F \geq K$ and $F = K$
- }
- Either
47. (d) $Z > T$, $T < M$, $M \leq J$
 $\therefore Z > T < M \leq J$
 (I) $T = J$
 (II) $J > Z =$ False
48. (e) $Q = Z$, $C \geq G$, $G \geq Q$, $Q \geq R$, $J \geq C$
 $\therefore J \geq C \geq G \geq Q \geq R$, $Q = Z$
 I. $G \geq Z \Rightarrow$ True
 II. $C \geq R \Rightarrow$ True
49. (d) $A > B > C$, $D > E > F$, $D > C$

- $\therefore A > B > C < D > E < F$
 I. $E > C \Rightarrow$ False
 II. $F > B \Rightarrow$ False
50. (d) $K > L$, $K > M$, $M \geq N$, $N > O$
 $\therefore L < K > M \geq N > O$
 I. $O > M \Rightarrow$ False
 II. $O > K \Rightarrow$ False
51. (b) **Statement** $P \geq Q = R > S > T$
Conclusions
 I. $P \geq T$ (It cannot follow, because $R > S > T$. If the conclusions were $P \geq R$, then it would be correct.)
 II. $T < Q$ (It follows.)
 So, only Conclusion II follows.
52. (d) **Statement** $L \leq M < N > O \geq P$
Conclusions
 I. $M > O$ (It cannot follow because $M < N \geq O$.)
 II. $N \geq P$ (It cannot follow)
 So, neither Conclusion I nor II follows.
53. (e) **Statement** $A > B$, $B \geq C = D < E$
 $\therefore A > B \geq C = D < E$
Conclusions
 I. $A > C$ (It follows because $A > B \geq C$)
 II. $B \geq D$ (It also follows because $B \geq C = D$)
 So, both Conclusions I and II follow.
54. (a) **Statements** $H > J = K$, $K \geq L$, $L > T$, $T < V$
 $\therefore H > J = K \geq L > T < V$
Conclusions
 I. $K > T$ (It follows because $K \geq L < T$)
 II. $H \geq L$ (It does not follow because $H > J = K \geq L$)
 So, only Conclusion I follows.
55. (e) **Statements** $A \leq B = C$, $D > C = E$
 $\therefore A \leq B = C = E < D$
Conclusions
 I. $E \geq A$ (It follows because $E = C = B \geq A$)
 II. $A < D$ (It follows because $D > B \geq A$)
 So, both Conclusions I and II follow.
56. (c) Conclusion $S < P$ is definitely true from the expression $P > Q = R \geq S < T \leq U$.
57. (c) Conclusion $D > B$ is definitely false from the expression $A < B \leq C = D \geq E$.
58. (d) Conclusion $P \geq R$ is definitely true from the expression $M \geq P < N = O \geq R$.
59. (a) Symbols \geq , $=$, $>$, \geq will make the expression meaningful to make the conclusion $P < K$ and $O \leq K$ definitely true
 $K \geq L = O > P \geq Q$.
60. (c) Letters C, E, A, B and D will make the expression meaningful to make the conclusion $D < A$ definitely false.
 $C > E = A \leq B < D$.
61. (d) **Statements** : $D \leq A \leq C$, $N \geq B = E$, $N = F > D$
 $\therefore E = B \leq N = F > D \leq A < C$
Conclusions :
 I. $F \geq E$ (True)
 II. $C < D$ (False)
 III. $N \geq A$ (False)
 IV. $B \leq F$ (True)

- So, only I and IV are true.
62. (b) **Statement :** $B > E \geq L, N = G \geq B, M \leq P < L$
 $\therefore N = G \geq B > E \geq L > P \geq M$
Conclusions
 I. $G \geq L$ (False)
 II. $E > P$ (True)
 III. $B > M$ (True)
 IV. $M < N$ (True)
 So, only II, III and IV are true.
63. (e) **Statements :** $H < A \leq V < L, M = H, J > K \geq M$
 $\therefore J > K \geq M = H < A \leq V < L$
Conclusions :
 I. $L > M$ (True)
 II. $A \leq K$ (False)
 III. $J > V$ (False)
 IV. $K < L$ (False)
 So, only I is true.
64. (a) **Statements :** $E \leq N \geq T \leq R, P \geq Q = R$
 $\therefore E \leq N \geq T \leq R = Q \leq P$
Conclusions :
 I. $P \geq T$ (True)
 II. $Q \leq N$ (False)
 III. $R \geq E$ (False)
 IV. $N \leq P$ (False)
 So, only I is true.
65. (b) **Statements :** $R > S = T \leq U, P = K > M \geq U$
 $\therefore R > S = T \leq U \leq M < K = P$
Conclusions :
 I. $R > K$ (False)
 II. $M \geq T$ (True)
 III. $P > U$ (True)
 IV. $S \leq M$ (True)
 So, only II, III and IV are true.
66. (b) Conclusion $S < R$ is definitely true from the expression $R > O = A > S < T$.
67. (b) Sign, ' $>$ ' will make the expression proper to conclude $P > A$ and $T < L$ definitely true.
68. (d) Sign, $>, =, =$, will complete the expression to conclude ' $B > N$ ' as well as ' $D \leq L$ ' definitely true.
69. (e) Expression $P \leq N < A > L$ will make the conclusion $A < P$ definitely.
70. (c) Expression $F < O = U = N < D$, will make the conclusion ' $F > N$ ' and ' $U > D$ ' definitely false.



Input-Output

INTRODUCTION

Problems related to input-output are frequently asked questions in various graduate level competitive examinations. They are not very tough stuff but take a good deal of time to be solved or sometimes students do not take attempt to solve them because of time consuming impression of such type of questions. But proper understanding of the subject makes you believe that such problems are not as tough and time consuming as they seem.

CONCEPT OF INPUT-OUTPUT PROBLEMS

In such problems:

- It is imagined that there is some kind of computer/word processing machine.
- An input is given to the computer/word processing machine
- The computer/word processing machine performs repeated operations as per a certain pattern to give different output in different steps.

Let us see the following input given to a word processing machine.

Input: Ram Shyam Mango Apple Ravi Orange

Now, just suppose that the word processing machine starts operation with a pre-fixed pattern in which first two words interchange their places while rest of the words remain at the same places then, we get

1st output:

Shyam Ram Mango Apple Ravi Orange

If machine does not stop and goes on performing further operations in the same manner for rest of the words then,

2nd output:

Shyam Ram Apple Mango Ravi Orange

3rd output:

Shyam Ram Apple Mango Orange Ravi

To get it more clearly just see the following presentation:

Input:

Ram	Shyam	Mango	Apple	Ravi	Orange
↙	↘	↓	↓	↓	↓

1st output:

Shyam	Ram	Mango	Apple	Ravi	Orange
↓	↓	↙	↘	↓	↓

2nd output:

Shyam	Ram	Apple	Mango	Ravi	Orange
↓	↓	↓	↓	↙	↘
Shyam	Ram	Apple	Mango	Orange	Ravi

3rd output:

It is clear from the presentation given above that for the 1st output, 1st two words (Ram and Shyam) interchange their places; for the 2nd output the next two words (Mango and Apple) interchange their places; for the 3rd output the last two words of the given input (Ravi and Orange) interchange their positions.

In fact, the machine will continue to perform further operations till it is stopped. Suppose the machine stops after 6 operations. Then three more outputs will be produced by it.

Now, we can start watching from 3rd output that how machine gives the another three outputs(4th, 5th and 6th). Let us see :

3rd output:

Shyam	Ram	Apple	Mango	Orange	Ravi
↓	↓	↙	↘	↓	↓

4th output:

Ram	Shyam	Apple	Mango	Orange	Ravi
↓	↓	↙	↘	↓	↓

5th output:

Ram	Shyam	Mango	Apple	Orange	Ravi
↓	↓	↓	↓	↙	↘
Ram	Shyam	Mango	Apple	Ravi	Orange

6th output:

Point to be noted that final output will be that output where the machine stops. Here, the machine stops after producing 6th output. Therefore, here, 6th output will be last or final output.

In the above example, we get clear picture of a problem that is solved by shifting of words as per a fixed pattern. Here 1st two words mutually shift their places in operation first; the next two words mutually shift their places in operation 2nd, last two words mutually shift their places in operation 3rd and further operation goes on in the same manner. Thus, we come to the conclusion that this is the type of problem which can be called as “**Problem of Shifting**”.

Now, let us go ahead with the word processing machine that performs a different type of operation in which machine arranges the words given in the input as per the arrangement order of those words in the dictionary. In another words, the words given in the input, will be arranged in such a way that the words coming 1st in the dictionary will be put 1st in the 1st output pushing the remaining words rightwards without changing their order; the

word coming 2nd in the dictionary will be put at 2nd place in the 2nd output pushing the remaining words rightwards without changing their order; the word coming third will be put at third place in the 3rd output pushing the remaining words to the right without changing their order. We goes on in the same manner to get further outputs till the machine stops. Suppose we have the following input.

Input: Left right above height dark sight. We know that the words given in the dictionary are arranged in alphabetical order. In the given input 'above' is the word that will come 1st in the dictionary. Then,

1st Output: above left right height dark sight. After the word 'above' the next word coming in the dictionary is 'dark'. Therefore, 'dark' will be but at 2nd place in the 2nd output pushing the remaining words left', 'right' 'height' & 'sight' towards right. Then,

2nd Output: above dark left right height sight. For the 3rd output the machine will pick up the word that comes after 'above' & 'dark' in the dictionary. Such word is 'height' and thus, machine put this word at the 3rd place in the 3rd output pushing the words 'left' 'right' & 'sight' rightwards. Therefore,

3rd Output: above dark height left right sight. After 3rd output, we see that the machine does not need to perform further operations as all the words written in the 3rd output have been arranged in alphabetical order. Therefore, machine stops here producing 3rd output as the final step.

In fact this example gives a clean picture of arrangement of words in alphabetical orders. But point to be noted that same kind of arrangement can be seen when numbers are given in place of words. In such cases, the numbers given in the input get arranged in increasing or decreasing order through the operations performed by a number processing machine. Thus, we come to the conclusion that this is the type of problem that can be classified as "**Problem of Arrangement**".

Important note

Shifting operation to be performed by a machine goes on endlessly but operation of arrangement ends as soon as the intended result is achieved.

Step I:	Rmsh	st	Mng	Tng
Step II:	ae	eea	ao	ao
Step III:	mesh	exta	ngo	ngo
Step IV:	Rame	see	Man	Tan

And so on.....

Have you noticed here something? Here the machine performs some random operations and the explanations are as follows:

- Step I:** Vowels from all words of input disappear.
- Step II:** Consonants from all words of input disappear.
- Step III:** 1st two letters from all words of input disappear.
- Step IV:** Last two letters from all words of input disappear.

After discussing this kind of input-output problem we can conclude:

- (a) For every step machine follows a different rule.
- (b) This is not a problem of shifting or arrangement or mathematics.

Then, what kind of problem is it? In fact, this is the input-output problem that can be put under the category of: **Miscellaneous**.

Note.

The above discussed problem is words/letters based. But this kind of miscellaneous problem can be digits/numbers based also.

Now, we have four types of problems:

- (i) Problems of shifting
- (ii) Problems of arrangement
- (iii) Problems of mathematical operation
- (iv) Miscellaneous.

Now, this is the time to discuss all the form types of input-output problems separately and in more explanatory way.

Step III: copy pencil ruber book pen stop.

Step IV: book pencil ruber copy pen stop.

Step V: copy pencil ruber book pen stop.

Suppose that after the step V the machine stops and thus, step V is the final output. Now, the question can be asked in the following format:

Q.1 What will be the 3rd step of the following input?

Input : One six ten four nine two

Q.2 If the 4th step of an input is:

"alone, tone known shown phone tone". Find out the step V

Q.3 Suppose step III of an input is :

Name Shame Game Fame Dam Ram ". Find the input.

As we know that this is the Problem of Shifting and as per the rule it is clear that 1st and 4th words mutually interchange their place in every step as follows:

from input to step I: book and copy mutually change their places.

from step I to step II: copy and book mutually change their places.

from step II to step III: book and copy mutually change their places.

from step III to step IV: copy and book mutually change their places.

from step IV to step V: book and copy mutually change their places.

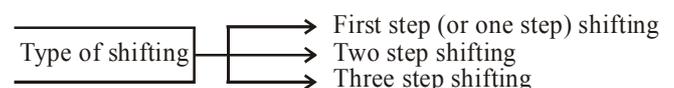
Now, we can do the solution:

Solution 1 : (As per the rule 'one' and 'four' mutually change their places).

Input:	one	six	ten	four	nine	two.
Step I:	four	six	ten	one	nine	two.
Step II:	one	six	ten	four	nine	two.
Step III:	four	six	ten	one	nine	two.

PROBLEM OF SHIFTING

We know that in such type of problem a word/number processing machine generate output through shifting. Shifting does mean an operation in which words or numbers of a given input give outputs in different steps through shifting their place to different place as per a fixed pattern.



(a) First Step Shifting:

In such type of shifting, only a single operation goes on repeatedly. For example, just see the following.

- Input:** Ravi works Hari talks
- Step I:** works Ravi Hari talks
- Step II:** Ravi works Hari talks
- Step III:** works Ravi Hari talks.

Have you noticed what happens here? Here, the same operation takes place again and again. It does mean that in every output only two words (Ravi & works) takes participation in shifting. In step I Ravi and works mutually interchange their place; in step II Works and Ravi mutually interchange their place; in step III again Ravi and works mutually interchange their place and the same operation will go on repeatedly, if we go ahead for further steps like step IV, step V, step VI, etc.

After having a concept of first step shifting let us solve a problem when the word processing machine gives outputs as follows:

- Input:** book pencil ruber copy pen stop
- Step I:** copy pencil ruber book pen stop
- Step II:** book pencil ruber copy pen stop

Solution 2

- Step IV:** alone tone known shown phonezone

Here as per the given pattern ‘alone’ and ‘shown’ mutually change their place in every step.

Thus,

- Step V:** shown tone known alone phone zone

Solution 3 Given that

- Step III:** Name Shame Game Fame Dam Ram

As per the given pattern ‘Name’ & ‘Fame’ mutually interchange their places then,

- Step II:** Fame Shame Game Name Dam Ram
- Step I:** Name Shame Game Fame Dam Ram
- Input:** Fame Shame Game Name Dam Ram

The examples so far discussed in first step shifting are very simple as only two words participate in every operations. But the problems related to first step shifting may be more complex when more than two words participate in each operation. Therefore, to identify such type of shifting the students must remember particular rule that is given below :

Identification rule:

0 to 1 = 1 to 2 = 2 to 3 = 3 to 4 =.....

where,

- 0 = Input
- 1 = Step I
- 2 = Step II
- 3 = Step III
- 4 = Step IV
- and so on

Further. 0 to 1 = changes from input to step I.

- 1 to 2 = changes in going from step I to step II.
- 2 to 3 = changes in going from step II to step III.
- 3 to 4 = changes in going from step III to step IV and so on.

If we go through the examples discussed so far under this category, we find that they follow this rule. Let us discuss another example that is more complex than those discussed so far. Just see

- Input:** Flight Sight Night White Fight Right.
- Step I:** Right Sight White Night Fight Flight.
- Step II:** Flight Sight Night White Fight Right.
- Step III:** Right Sight White Night Fight Flight.
- Step IV:** Flight Sight Night White Fight Right.
- Step V:** Right Sight White Night Fight Flight.

What we see here? Here we, see that in every operation ‘Flight and Right’ interchange their places and ‘Night and White’ interchange their places. Thus, the change in every further step is as same as the change take place in the previous step.

It does mean 0 to 1 = 1 to 2 = 2 to 3 = 3 to 4 = 4 to 5.

Note:

It is important to note that in first step shifting all even steps are equal and all odd steps are equal. Apart from this, all even steps are equal to input. In another words, “Input = Step II = Step IV = Step VI....and so on and “Step I = Step III = Step V...and so on.

(b) Two Step Shifting:

In such type of shifting two operations take place.

Let us see the following example:

- Input:** Ram Walks Hari Talks.
- Step I:** Walks Ram Hari Talks.
- Step II:** Walks Ram Talks Hari.
- Step III:** Ram Walks Talks Hari.
- Step IV:** Ram Walks Hari Talks.

Here, while going from input to step I only two words (Ram and Walks) interchange their places learning the remaining two words (Hari and Talks) at the same position they have occupied in the input and while going from step 1 to step II only the last two words (Hari and Talks) interchange their places learning the remaining two words (Walks and Ram) at the same position they have occupied in the step I. These two operations are being performed alternately in further steps. This does mean that the change in going from input to step I is different from the change in going from step I to step II. But the change from input to step I is the same as the change from step II to step III while the change from step I to step II is same as the change from step III to step IV.

After having the concept of two step shifting, let us solve a problem when a word processing machine gives outputs as follows:

- Input:** come what may say day gone
- Step I:** gone what may say day come
- Step II:** gone day may say what come
- Step III:** come day may say what gone
- Step IV:** come what may say day gone
- Step V:** gone what may say day come

Suppose that after the step V the machine stops and thus step V is the last and final input given by the machine. Now, the question can be asked in the following format.

Q.1 What will be the 3rd step of the following input?

Input: No Go Show Toe Know So

Q.2 If step IV of an input is as follows:

Step IV: Line Shine Nine Mine Wine Dine

What step will be the following arrangement?

Arrangement: Dine Shine Nine Mine Wine Line

Q.3 If the machine goes up to step VII which is as follows:

Step VII: Cow Now Dog Rat Lion Tiger

Find out the III step.

As we know that this is a problem of two step shifting, and as per the rule it is clear that in 1st step first and last word (come and gone) interchange their places learning the other words at the same positions they have occupied in the input. In the step II the other two words (what and day) interchange their places learning the remaining words at the same positions they have occupied in the step I. These two operations are being performed alternately as given below:

From input to step I: come and gone interchange places.

From step I to step II: what and dry interchange places.

From step II to step III: gone and come interchange places.

From step III to step IV: day and what interchange places

From step IV to step V: come and gone interchange places.

Now, we can do the solutions:

Solution 1

Input: No Go Show Toe Know So

Step I: So Go Show Toe Know No

Step II: So Know Show Toe Go No

Step III: No Know Show Toe Go So

Solution 2

As per the pattern the 1st and last word of step IV (come and gone) interchange their places in step I and step V learning the remaining words at the same positions they have occupied in step IV. This makes step I and step V equal. Further the given pattern also makes step IV equal to input. Therefore, applying the same pattern the given step IV (“Line Shine Nine Mine Wine Dine”) will be the input and the first word ‘Line’ and the last word ‘Dine’ of this input interchange their places to give outputs as Step I = Step V. Thus, the given arrangement (“Dine Shine Nine Mine Wine Line) is step I or step V.

Solution 3

Here, the machine follows the pattern given below:

Input = Step IV

Step I = Step V

Step II = Step VI

Step III = Step VII

Step IV = Step VIII

Step V = Step IX

and so on....

Therefore, following this rule given step VII (“Cow Now Dog Rat Lion Tiger”) will be equal to step III and this step III: Cow Now Dog Rat Lion Tiger” is your answer.

The examples discussed so far, related to two-step shifting, are simple ones. But more complex problems related to this type of shifting may appear before you. Therefore, to identify such type of problems a particular rule is given below:

Identification rule:

(a) 0 to 1 = 2 to 3 = 4 to 5and

(b) 1 to 2 = 3 to 4 = 5 to 6.....

where

0 = Input

1 = Step I

2 = Step II

3 = Step III

4 = Step IV

5 = Step V

and so on.

Further, 0 to 1 = changes in going from input to step I.

1 to 2 = changes in going from step I to step II.

2 to 3 = changes in going from step II to step III.

3 to 4 = changes in going from step III to step IV.

4 to 5 = changes in going from step IV to step V.

5 to 6 = changes in going from step V to step VI.

and so on.

If we go through the examples discussed so far under this category we find that they follow this rule. Let us see another example that is more complex than those discussed so far. Just see the following:

Input: catch an fire police team and sea

Step I: sea an police fire team and catch

Step II: an police catch team fire sea and

Step III: and police team catch fire sea an

Step IV: police team an fire catch and sea.

PROBLEMS OF ARRANGEMENT

In the earlier part of this chapter (input-output chapter), we have already discussed what kind of problems are called problems of arrangement. Let us discuss it further:

WHAT ARE THE POSSIBLE WAYS OF ARRANGEMENTS?

1. Word Arrangement from Left Side:

Let us see the following example:

Input: mango tango orange banana pear

Step I: banana mango tango orange pear

Step II: banana mango orange tango pear

Step III: banana mango orange pear tango

Here, we start arrangement from the word that comes 1st in the dictionary; then comes the word coming 2nd in the dictionary; then comes the word coming 3rd in the dictionary and so on. In this case, the arrangement start from left side. This is the reason in step I banana comes 1st as it comes 1st in the dictionary. In the 2nd step orange

comes at 3rd place because after the arrangement of step I the next word coming in the dictionary is mango but it get arranged automatically and hence there is no need to arrange it in step II. This is the reason after arranging banana in step I, we directly come to the word orange (coming 3rd in the dictionary) in step II. In the 3rd step we arrange the word 'pear' (coming 4th in the dictionary) and the word tango get arranged automatically.

Let us see the another format given below:

Input: mango tango orange banana pear
Step I: tango mango orange banana pear
Step II: tango pear mango orange banana
Step III: tango pear orange mango banana

What have you noticed here? In fact, here the arrangement has been done in reverse order. In other words, the last word coming in the dictionary comes 1st from left in the step I. In step II, the 2nd last word coming in the dictionary comes 2nd from left and the arrangement goes on further in the same manner.

2. Word Arrangement from Right:

Just see the following example :

Input: Name Fame Game Shame Jam
Step I: Name Game Shame Jam Fame
Step II: Name Shame Game Fame
Step III: Shame Name Jam Game Fame

In this case, the arrangement starts from right side. The word coming 1st in the dictionary comes at the 1st position from right. At the 2nd position from right comes the word coming 2nd in the dictionary and the process goes on till the arrangement gets completed. In the above given example, 'Fame' is the 1st word coming in the dictionary and hence it comes at the 1st position from right in the step I. In the step II the 2nd word coming in the dictionary (Game) comes at the 2nd position from right. Point to be noted that the word coming third in the dictionary will come at the 3rd position from right and this word is 'Jam'. But 'Jam' automatically get arranged as per the given pattern when we arrange the word 'Game' in II step. This is the reason why we don't arrange 'Jam' in the third step and jump directly to arrange the word. 'Name' that comes 4th in the dictionary. 'Name' occupies 4th position from right and the word 'Shame' automatically get arranged in the 3rd step. Hence, the word 'Shame' does not need to get arranged.

Let us see another format given below:

Input: Name Fame Game Shame Jam
Step I: Name Fame Game Jam Shame
Step II: Fame Game Jam Name Shame

What you have noticed here? In this case, the arrangement does start from right side but here the last word coming in the dictionary comes 1st from right and in this case, 'Shame' is the such word which comes last in the step I pushing rest of the word leftward. In step II the word coming 2nd last in the dictionary occupies the 2nd position from right pushing the words 'Fame', 'Game' and 'Jam' to the left. The rest of the words (Fame, Game and Jam) automatically get arranged in the step II. Here, there is no need to go for further steps.

3. Word Arrangement from the Left-Right Alternate:

Let us see the format given below:

Input: Sachin is a great cricket player
Step I: a Sachin is great cricket player
Step II: a is great cricket player Sachin
Step III: a cricket is great player Sachin
Step IV: a cricket great is player Sachin

Here, the arrangement is made by putting the first word at 1st place, then alphabetically last word at last place, then alphabetically second word at second place from left and the further arrangements goes on in the same manner. In the other words, are positioned from the left and from the right alternately. In the step I the word coming 1st in the dictionary is 'a' and it takes 1st position from left. In the step II, the last word coming alphabetically is Sachin and it takes last position (1st from right). In step III, the word coming 2nd in dictionary is 'cricket' that comes at 2nd position from left. In step IV, the word coming 3rd last in the dictionary takes the 3rd position from right. After the step IV, all the words get arranged in alphabetical order. Point to be noted that after step IV, there is no need to arrange the word 'great' as it get arranged automatically in step IV.

Let us see the another format given below:

Input: Sachin is a great cricket player
Step I: is a great cricket player Sachin
Step II: a is great cricket player Sachin
Step III: a is cricket great player Sachin
Step IV: a cricket is great player Sachin

Have you noticed here something? Here, the arrangement starts from right side. In step I, the last word (Sachin) that comes last alphabetically takes the last (1st from right) position. In step II, the word coming 1st alphabetically (the word is 'a') comes at the 1st position from left. As the 2nd last word (player) alphabetically has already taken 2nd position from right, the 3rd last word (great) alphabetically will occupy the third position from right in step III. In the 4th step, the word (cricket) coming 2nd alphabetically comes at the 2nd position from left and the word (is) coming 3rd alphabetically get arranged automatically occupying the 3rd position from left.

4. Arrangement in Increasing or Decreasing Order:

Just have a look at the arrangement format given below:

Input: 25 17 18 58 100 35
Step I: 17 25 18 58 100 35
Step II: 17 18 25 58 100 35
Step III: 17 18 25 35 58 100

This arrangement gives a clear idea of arrangement of numbers in increasing order. In step I, the smallest number (17) comes at the 1st position from left pushing the remaining to the right. In step II, the 2nd smallest number (18) comes at 2nd position from left pushing the remaining number to the right. In step III, the 4th smallest number (35) takes 4th position from left and the other two numbers 58 and 100 get arranged automatically.

The same arrangement take place in the following format also:

Input:	25	17	18	58	100	35
Step I:	25	17	18	58	35	100
Step II:	25	17	18	35	58	100
Step III:	17	18	25	35	58	100

This format gives the clear picture of arrangement in which the arrangement start from right side. In step I, the largest number comes at the 1st position from right; in 2nd step the 2nd largest number comes at the 2nd position from right; in the step III, there is no need to arrange the 3rd largest number (35) as it get arranged automatically in step II. Hence in 3rd step 4th largest number (25) comes at the 4th position from right and the other two number (17 and 18) do not to get arranged in further steps as they automatically get arranged in step III.

Now, let us see decreasing order arrangement:

Input:	25	17	18	58	100	35
Step I:	100	25	17	18	58	35
Step II:	100	58	25	17	18	35
Step III:	100	58	35	25	17	18
Step IV:	100	58	35	25	18	17

The same arrangement can take place from right side (or in the reverse order) as follow:

Input:	25	17	18	58	100	35
Step I:	25	18	58	100	35	17
Step II:	25	58	100	35	18	17
Step III:	58	100	35	25	18	17
Step IV:	100	58	35	25	18	17

5. Number Arrangement from Left-Right Alternate:

Like words left-right alternate arrangement, number arrangement also takes place. The process of this arrangement is exactly the same as the arrangement takes place in case of words. just see the following cases:

Input:	100	125	26	10	15	35
Step I:	10	100	125	26	15	35
Step II:	10	100	26	15	35	125
Step III:	10	15	100	26	35	125
Step IV:	10	15	26	35	100	125

Here, the smallest number (10) takes 1st position from left in step I. In step II the largest number takes the last (1st from right) position. Again in step III the 2nd smallest number (15) comes at the 2nd position from left. In the step IV, the 2nd largest number (100) comes at the 2nd position from right and the remaining number (26 and 35) get arranged automatically.

Case II :

Input:	100	125	26	10	15	35
Step I:	100	26	10	15	35	125
Step II:	10	100	26	15	35	125
Step III:	10	26	15	35	100	125
Step IV:	10	15	26	35	100	125

In case II, the arrangements take place in the same way as the arrangements take place in case I. But the difference here is that case I is a left-right arrangement and case II is the right-left arrangement. In case II, the arrangement starts with the largest number (125) coming at the 1st position from right and this is step I. In step II, the smallest number (10) comes at the 1st position from left. In step III the 2nd largest number (100) comes at the 2nd position from right. In step III, the third largest number (35) automatically comes at the 3rd position from right. In 4th step, the 2nd smallest number (15) comes at the 2nd position from left and 26 get arranged automatically coming at 3rd position from left.

Note: Left-right (or right-left) arrangement of numbers also take place in the same manner when numbers are arranged in decreasing order.

6. Arrangement of Words and Numbers Simultaneously:

Just see the following outputs produced by a word and number machine.

Case I

Input:	50	32	Vandana	Perna	Aradhna	100
Step I:	32	50	Vandana	Perna	Aradhna	100
Step II:	32	Aradhna	50	Vandana	Perna	100
Step III:	32	Aradhna	50	Perna	Vandana	100
Step IV:	32	Aradhna	50	Perna	100	Vandana

In such case, numbers and words get arranged alternately. In step I, the smallest number (32) comes at the 1st position from left pushing the remaining members of input towards right. In the step II, the word coming 1st alphabetically (that is the word 'Aradhna') takes the 2nd position from left pushing the remaining member rightward. Point to be noted that the 2nd smallest number automatically comes at the third position from left while arranging the word 'Aradhna' and hence, there is no need to arrange the 2nd smallest number '50'. This is the reason that in step III, the word (Perna) coming 2nd alphabetically comes at the 4th position from left pushing the other members to the right. In step IV, the largest number (100) occupies the 5th position from left and the word (Vandana) coming last alphabetically comes at last position automatically finishing the complete arrangement.

Let us see some other cases of this type:

Case II:

Input:	50	32	Vandana	Perna	Aradhna	100
Step I:	100	50	32	Vandana	Perna	Aradhna
Step II:	100	Vandana	50	32	Perna	Aradhna
Step III:	100	Vandana	50	Perna	32	Aradhan

In this case, largest number and the word coming last alphabetically get arranged alternately. Then the 2nd longest number and the word coming 2nd last alphabetically get arranged alternately and the process goes on till the arrangements of all the numbers and words get completed. In this case arrangement completes in step III.

Case III:

Input:	50	32	Vandana	Prerna	Aradhna	100
Step I:	Aradhna	50	32	Vandana	Prerna	100
Step II:	Aradhna	32	50	Vandana	Prerna	100
Step III:	Aradhna	32	Prerna	50	Vandana	100

In this case, arrangement starts with the word coming 1st alphabetically and such word is 'Aradhna' that comes at the 1st position from left is step I. In step II, the smallest number (32) comes at the 2nd position from left. Then, in step III, the word coming 2nd alphabetically comes at the 3rd position from left and all the other members get arranged automatically.

Case IV:

Input:	50	32	Vandana	Prerna	Aradhna	100
Step I:	Vandana	50	32	Prerna	Aradhna	100
Step II:	Vandana	100	50	32	Prerna	Aradhna
Step III:	Vandana	100	Prerna	50	32	Aradhna
Step IV:	Vandana	100	Prerna	50	Aradhna	32

In this case, word coming last alphabetically comes 1st from left in step I and such word is 'Vandana'. In step II, the largest number (100) comes at the 2nd position from left. In step III, the word coming 2nd last alphabetically occupies the 3rd position from left, and such word is 'Prerna'. As the 2nd largest number (50) automatically get arranged as per the pattern going on and hence this is not needed to arranged in step IV. This is the reason that in step VI, the word coming 1st alphabetically comes at the 5th position from left and such word is 'Aradhna'. The smallest number (32) get arranged automatically coming at the last position from left in step IV. Thus, it is clear that in this case the word coming 1st alphabetically and the greatest number get arranged alternately in 1st two steps; then 2nd last word alphabetically and 2nd largest number get arranged alternately finishing the whole arrangement in step IV.

Case V:

Input:	50	32	Vandana	Prerna	Aradhna	100
Step I:	32	50	Vandana	Prerna	Aradhna	100
Step II:	32	Vandana	50	Prerna	Aradhna	100
Step III:	32	Vandana	50	Prerna	100	Aradhna

In this case, the smallest number comes at the 1st position from left in step I and such number is 32. In step II, the word (Vandana) coming last alphabetically occupies the 2nd place from left. In the 2nd step the 2nd smallest number (50) takes the 3rd position from left automatically and also the word coming 2nd last alphabetically takes the 4th position from left automatically. Hence, there is no need to arrange '50' and 'Prerna'. In the III step the largest number (100) occupies the 5th position from left completing the whole arrangement.

Case VI:

Input:	50	32	Vandana	Prerna	Aradhna	100
Step I:	100	50	32	Vandana	Prerna	Aradhna
Step II:	100	Aradhna	50	32	Vandana	Prerna
Step III:	100	Aradhna	50	Prerna	32	Vandana

In this case, the logic is that the greatest number (100) comes at the 1st position from left in step I. In step II the word coming 1st

alphabetically takes the 2nd position from left and the 2nd largest number (50) gets arranged automatically. Hence, in step III, we direct arrange the word coming 2nd last alphabetically (that word is 'Prerna') occupies the 4th position from left and the other two members (32 and 'Vandana') get arranged automatically finishing the whole arrangement.

7. Arrangement Based on the Number of Letters in Words:

Just have a look at the following patterns:

Case I :

Input:	let	pattern	love	fried	be	mature
Step I:	be	let	pattern	love	fried	mature
Step II:	be	let	love	pattern	fried	mature
Step III:	be	let	love	fried	pattern	mature
Step IV:	be	let	love	fried	mature	pattern

Here, the words get arranged as per increasing number of letters.

In other words, the word having least number of letters comes 1st from left in step I and such word is 'be'. The word 'let' is bigger than 'be' and smaller than other words letterwise and hence, it takes 2nd position from left but it gets arranged automatically when the word 'be' is arranged in step I. In 2nd step, the word 'love' comes at the 3rd position from left as it is bigger than word 'let' letterwise. In step III, the letterwise bigger word (fried) than love comes at the fourth position from left. Similarly, mature comes at the 5th position from left and pattern comes at the last position automatically while arranging the word 'mature'.

Case II :

Input:	let	pattern	love	fried	be	mature
Step I:	pattern	let	love	fried	be	mature
Step II:	pattern	mature	let	love	fried	be
Step III:	pattern	mature	fried	let	love	be
Step IV:	pattern	mature	fried	love	let	be

In this case, the words get arranged in decreasing order in terms of letters. In other words, the word having the largest number of letters comes 1st from left; then comes the word having 2nd largest number of letters; then comes the word having 3rd largest number of letters and the process goes on till the word having the least number of letters occupies the last position from left.

Case III:

Input:	let	pattern	gate	a	set	be	hope
Step I:	a	let	pattern	gate	set	be	hope
Step II:	a	be	let	pattern	gate	set	hope
Step III:	a	be	let	set	pattern	gate	hope
Step IV:	a	be	let	set	gate	pattern	hope
Step V:	a	be	let	set	gate	hope	pattern

Have you noticed something here? Here, the words get arranged in increasing order of letters. But when it comes to the case of two or more words having equal number of letters the priority is given alphabetically. It does mean that the word coming 1st as per the alphabet will be put before the word coming 2nd. Similarly, the word coming 2nd alphabetically will be put before the word coming third. This is the reason why 'let' has been put before 'set' and 'gate' has been put before 'hope'.

Case IV:

Input: let pattern gate a set be hope
Step I: pattern let gate a set be hope
Step II: pattern hope let gate a set be
Step III: pattern hope gate let a set be
Step IV: pattern hope gate set let a be
Step V: pattern hope gate set let be a

In this case, the words get arranged in decreasing order of letters. But when it comes to the case of two or more words having equal number of letters the priority is given to the word that comes later alphabetically. It does mean that the word coming 1st alphabetically will be put after the word coming 2nd and the word coming 2nd will be put after the word coming 3rd. This is the reason why 'hope' has been put before 'gate' and 'set' has been put before 'let'.

Important Note: The case of arrangement discussed so far are the cases of push. In all the cases a new word jumps from its place in every step, occupies its new and due place and gives the remaining words and push either towards left or right as per the requirement of the pattern. But in some cases of arrangement interchange does take place and that format is given below:

8. Arrangement with Interchange:

Let us see the following format of arrangement :

Input: the most beautiful girl is Vandana
Step I: beautiful most the girl is Vandana
Step II: beautiful girl the most is Vandana
Step III: beautiful girl is most the Vandana

In this case, the word (beautiful) coming 1st in alphabetical order comes at the 1st position from left interchanging its place with the word 'the' and this is step I. In step II, the word (girl) coming 2nd in alphabetical order occupies the 2nd position from left interchanging with the word 'most'. In step III, the word coming 3rd (is) comes at the third position from left interchanging with the word 'the' and finishing the complete arrangement in alphabetical order.

This kind of arrangement can also be made in reverse order as follows:

Input : the most beautiful girl is Vandana
Step I: Vandana most beautiful girl is the
Step II: Vandana the beautiful girl is most
Step III: Vandana the most girl is beautiful
Step IV: Vandana the most is girl beautiful

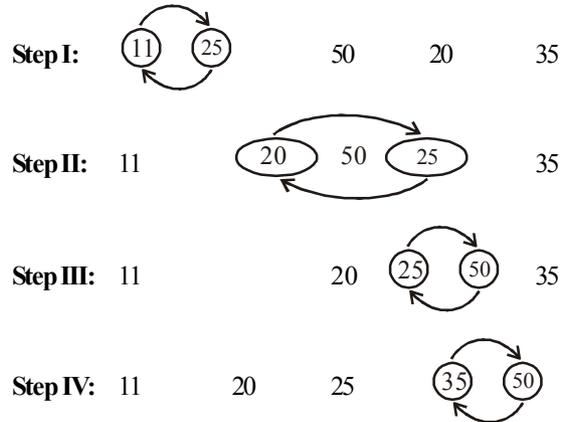
Here, the words take 4 steps to get arranged. In step I, the word (Vandana) coming last alphabetically comes at the 1st position from left interchanging its place with the word 'the'. In step II, the word (the) coming 2nd last alphabetically takes 2nd place from left interchanging its place with the word 'most'. In step III, the word (most) coming last alphabetically interchange its place with the word 'beautiful' and comes at the 3rd position from left. In step IV, the word (is) coming fourth last alphabetically comes at the 4th position interchanging its place with the word 'girl' and finishing the complete arrangement.

This type of cases can also be seen in number arrangements and in the arrangements of numbers and words simultaneously. The examples of these type of arrangements are given below:

EXAMPLE 1. (Increasing order number arrangement)

Input: 25 11 50 20 35
Step I: 11 25 50 20 35
Step II: 11 20 50 25 35
Step III: 11 20 25 50 35
Step IV: 11 20 25 35 50

Presentation :

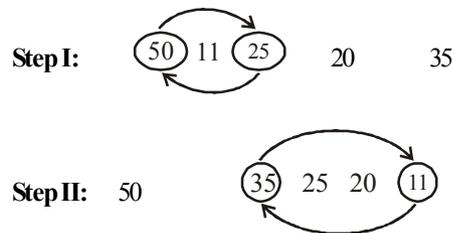


The presentation gives you the clear idea of how interchange takes place in every step.

EXAMPLE 2. (Decreasing order number arrangement)

Input: 25 11 50 20 35
Step I: 50 11 25 20 35
Step II: 50 35 25 20 11

Presentation:



Points to be Remember

1. First of all, observe the given input line of words or numbers and the last step of rearrangement, so that candidate may get an idea about the changes effected in various steps of rearrangement.
2. In order to know what changes have been made in each step, observe two consecutive steps carefully.
3. Now, correlate the input, the last step and anyone of the middle steps. This will enable you to identify the rule of arrangement.
4. In shifting problems, it is possible to determine the previous/earlier steps including input. We can proceed/move backward or in reverse direction in shifting problems.
5. In shifting problems for convenience, we assign numeric value to given words.

EXERCISE

Directions (Qs. 1-5): Study the following information to answer the given questions:

A word and number arrangement machine when given an input line of words and numbers, rearranges them following a particular rule in each step. The following is an illustration of input and steps of rearrangement:

Input: wind packet 19 7 back 12 task 34

Step I: 34 wind packet 19 7 back 12 task

Step II: 34 back wind packet 19 7 12 task

Step III: 34 back 19 wind packet 7 12 task

Step IV: 34 back 19 packet wind 7 12 task

Step V: 34 back 19 packet 12 wind 7 task

Step VI: 34 back 19 packet 12 task wind 7

Step VII: 34 back 19 packet 12 task 7 wind and Step VII is the last step.

As per the rules followed in the above steps, find out in the given questions the appropriate step for the given input.

- Input:** 9 13 about tariff 24 call 29 even.
Which of the following will be step IV?
(a) 29 about 24 9 13 tariff call even
(b) 29 about 24 call 9 13 tariff even
(c) 29 about 24 call 13 9 tariff even
(d) 29 about 24 call 13 even 9 tariff
(e) Cannot be determined
- If Step II of an input is "37 desk 34 garden 5 father victory 17", which of the following steps will be the last step?
(a) Step III (b) Step V
(c) Step IV (d) Step VI
(e) None of these
- If Step I of an input is
59 bead tenure father 38 11 ultimate 24
Which of the following will be Step III?
(a) 59 bead 38 tenure 11 father ultimate 24
(b) 59 bead 38 11 tenure father ultimate 24
(c) 59 bead 38 tenure father 11 ultimate 24
(d) 59 bead 38 father tenure 11 ultimate 24
(e) None of these
- If the last step of an input is 41 cost 32 over 28 project 17 violet which of the following must be the input?
(a) project 32 cost over 17 41 violet 28
(b) project 32 cost over 41 violet 17 28
(c) project cost 32 over 41 17 violet 28
(d) Cannot be determined
(e) None of these
- Which of the following will be the Step III of the following input?
Input: 24 12 entry sand butter 51 32 carry
(a) 51 butter 32 24 12 entry sand carry
(b) 51 butter 32 carry 24 12 entry sand
(c) 51 butter 32 carry 24 entry 12 sand
(d) 51 24 12 entry sand butter 32 carry
(e) None of these

Directions (Qs. 6-10): Study the following information carefully and answer the given questions:

A word and number arrangement machine when given an input line of words and numbers rearranges them following a particular rule in each step. The following is an illustration of input and rearrangement.

Input: 93 come home over 32 47 now 26

Step I: over 93 come home 32 47 now 26

Step II: over 26 93 come home 32 47 now

Step III: over 26 now 93 come home 32 47

Step IV: over 26 now 32 93 come home 47

Step V: over 26 now 32 home 93 come 47

Step VI: over 26 now 32 home 47 93 come

Step VII: over 26 now 32 home 47 come 93 and Step VII is the last step.

As per the rules followed in the above steps, find out in each of the following questions the appropriate step.

- Step II of an input is:
sky 20 90 37 begin again 11 home
Which of the following is definitely the input?
(a) 20 90 37 begin again 11 home sky
(b) sky 90 37 20 begin again 11 home
(c) 90 20 37 begin sky again 11 home
(d) Cannot be determined
(e) None of these
- Step III of an input is:
take 17 mind game 29 73 18 loud
How many more steps are required to complete the sequence?
(a) Two (b) Three
(c) Four (d) Five
(e) None of these
- Input:** by now 51 32 for 91 20 me
Which of the following steps will be the last?
(a) III (b) IV
(c) V (d) VI
(e) None of these
- Input:** fight for all 39 62 25 today 19
Which of the following will be step IV?
(a) today 25 for 39 fight all 62 19
(b) today 19 for 25 fight all 39 62
(c) today 19 for 25 fight 39 all 62
(d) Cannot be determined
(e) None of these
- Input:** queen mary 79 62 17 20 green west
Which of the following steps will be the last but one ?
(a) VI (b) VII
(c) V (d) VIII
(e) None of these

Directions (Qs. 11-17) : Study the following information to answer the given questions. A number arrangement machine when given an input of numbers, rearranges them following a particular rule in each step. The following is an illustration of input and steps of rearrangement.

Input	25	280	345	36	93	147	550
Step I	550	280	345	36	93	147	25
Step II	550	345	280	36	93	147	25
Step III	550	345	280	147	93	36	25

This is the final arrangement and Step III is the last step for this input.

11. If '842 485 68 358 236 123 93' is the second step of an input, which of the following steps will be '842 485 358 236 123 68 93'?
- (a) Fourth (b) Fifth
(c) Sixth (d) Can't be determined
(e) None of these
12. How many steps will be required to get the final output from the following input?
Input : 78 293 585 740 64 132 26
- (a) 4 (b) 5
(c) 3 (d) 6
(e) None of these
13. What will be the third step for the following input?
Input : 113 18 48 225 462 175 288
- (a) 462 288 48 225 113 175 18
(b) 462 288 225 175 113 48 18
(c) 462 225 288 48 113 175 18
(d) 462 288 225 48 113 175 18
(e) None of these
14. If following is the first step for an input, what will be the fourth step?
Step I : 498 175 292 96 79 387 158
- (a) 498 387 292 175 158 79 96
(b) 498 387 292 175 96 158 79
(c) 498 387 292 175 158 96 79
(d) 498 387 292 175 79 158 96
(e) None of these
15. Following is the step II for an input. What will be the first step for the input?
Step II : 595 438 28 142 38 65 289
- (a) 595 28 438 142 38 65 289
(b) 595 438 142 28 38 65 289
(c) 595 28 142 438 38 65 289
(d) Can't be determined
(e) None of these
16. What will be the second step for the following input?
Input : 158 294 22 89 .142 385 463
- (a) 463 385 294 22 89 142 158
(b) 463 385 89 22 142 294 158
(c) 463 385 22 89 142 158 294
(d) 463 385 22 142 89 158 294
(e) None of these
17. Which of the following is the last step for the following input?
Input : 145 227 900 49 116 243 356
- (a) 900 356 243 227 49 145 116
(b) 900 356 243 227 145 116 49
(c) 900 356 227 243 145 116 49
(d) 900 356 243 227 116 145 49
(e) None of these

Directions (Qs. 18-22) : Study the following information carefully and answer the given questions:

A word and number arrangement machine when given an input line of words and numbers rearranges them following a particular rule in each step. The following is an illustration of input and rearrangement.

Input : sky forward 17 over 95 23 come 40

Step I : come sky forward 17 over 95 23 40

Step II : come 95 sky forward 17 over 23 40

Step III : come 95 forward sky 17 over 23 40

Step IV : come 95 forward 40 sky 17 over 23

Step V : come 95 forward 40 over sky 17 23

Step VI : come 95 forward 40 over 23 sky 17

Step VI is the last step of the rearrangement of the above input. As per the rules followed in the above steps, answer the following questions.

18. **Input :** machine hire for 19 against 85 2146
Which of the following will be step II?
- (a) against 85 hire machine for 19 21 46
(b) against 85 machine 19 hire for 21 46
(c) against 85 machine hire for 19 21 46
(d) Cannot be determined
(e) None of these
19. **Input :** box at 20 53 62 gift now 32
Which of the following is step IV?
- (a) at 62 box 53 gift 32 20 now
(b) at 62 box 53 gift 32 now 20
(c) at 62 box 53 gift 20 now 32
(d) Cannot be determined
(e) None of these
20. **Input:** on at 33 27 42 sky mat 51
Which of the following steps will be the last?
- (a) VI (b) VII
(c) V (d) VIII
(e) None of these
21. Step III of an input is:
bring 63 desk 11 29 together fight 30
Which of the following steps will be the last but one?
- (a) VI (b) VII
(c) VIII (d) V
(e) None of these
22. Step II of an input is:
earn 72 31 46 higher goal 20 more
Which of the following is definitely the input?
- (a) 46 72 31 earn higher goal 20 more
(b) 20 31 72 46 higher goal earn more
(c) higher 20 31 72 46 goal earn more
(d) Cannot be determined
(e) None of these

Directions (Qs. 23-27) : Read the following information carefully and answer the questions given below:

A word and number arrangement machine when given an input line of words and numbers rearranges them following a particular rule and generates stepwise outputs till the arrangement is complete following that rule.

Following is an illustration of input and steps of rearrangement till the last step.

Input : tree cut 92 51 food 17 garden 32

Step I: cut tree 92 51 food 17 garden 32

Step II: cut food tree 92 51 17 garden 32

Step III: cut food 92 tree 51 17 garden 32

Step IV: cut food 92 51 tree 17 garden 32

Step V: cut food 92 51 garden tree 17 32

Step VI: cut food 92 51 garden tree 32 17

And Step VI is the last step of the input.

As per the rules followed in the above steps, find out the answer to each of the questions given below:

23. Step IV of an input is:
earn more 82 63 12 31 quite new
Which of the following will definitely be **Step II** of the output?
(a) earn more 12 63 82 31 quite new
(b) earn more new 82 63 12 31 quite
(c) earn more quite new 82 12 63 31
(d) Cannot be determined
(e) None of these
24. **Input:** bring home 42 73 15 goal 32 type
Which of the following steps will be the last?
(a) V (b) VI
(c) IV (d) VII
(e) None of these
25. **Input:** bench 47 63 advance 13 29 again between
Which of the following is the step III of the output?
(a) advance again 63 47 bench 13 29 between
(b) advance again 63 47 bench between 13 29
(c) advance again 63 47 bench between 29 13
(d) Cannot be determined
(e) None of these
26. Step II of an input is:
desk eagle 12 28 41 69 foreign land
How many more steps will be required to complete the rearrangement?
(a) 4 (b) 6
(c) 5 (d) 3
(e) None of these
27. Step III of an input is:
again dark 83 sour 19 21 prey 39
Which of the following steps will be the last but one?
(a) V (b) VI
(c) VIII (d) VII
(e) None of these

Directions (Qs. 28 - 32): Study the following information carefully to answer the questions given below. In a toy exhibition, a machine processes a given input by the following rule. Participants are shown one by one till it reaches its last step. Following is an illustration of the working of this machine.

Input : sui me ato fe zen u no

Step I : fe sui me no ato zen u

Step II : no fe sui u me ato zen

Step III : u no fe zen sui me ato

Step IV : zen u no ato fe sui me

Step V : ato zen u me no fe sui and so on.

Now attempt the questions given below.

28. Which of the following steps would read as 'not you only say wise yet are' for the input 'say not you are only wise yet'?

- (a) III (b) V
(c) VI (d) VII
(e) None of these

29. If the Step V of an input is 'so cd rom lay is nor it', which of the following would be its Step II?
(a) is nor it rom lay so cd (b) nor it lay is so cd rom
(c) lay so cd it rom is nor (d) Data inadequate
(e) None of these
30. If the Step III of an input is 'lo men chi from yet as know', which of the following would be its input?
(a) Data inadequate
(b) from lo men know chi yet as
(c) men chi yet lo as know from
(d) chi as know men know from lo
(e) None of these
31. Which of the following correctly describes the 'machine logic' in generating various steps based on the given input?
(a) Each step is generated on random basis.
(b) Words/letters are finally arranged in dictionary order.
(c) The seventh letter interchanges with the fourth every time.
(d) Data inadequate
(e) None of these
32. What will be the step IV for the following input?
Input : may sen to cry if not hell
(a) cry may sen to if not hell
(b) if not hell to cry may sen
(c) sen to if may not hell cry
(d) not hell cry if may sen to
(e) None of these

Directions (Qs. 33-37): A word arrangement machine, when given a particular input, rearranges it following a particular rule. The following is the illustration of the input and the steps of arrangement:

Input: 95 is 11 my are

Step I: is 95 11 my are

Step II: is 11 95 my are

Step III: is 11 my 95 are

Step III is the last step for this input.

Now, study the logic given above and answer the questions that follow:

33. **Input:** go 123 save be 39 67 let
Which among the given steps will be the last step for the given input?
(a) III (b) IV
(c) V (d) VI
(e) None of these
34. **Input:** we 143 lay as 12 may 36
What is step IV for the given input?
(a) as 12 we lay 36 143 may
(b) as 12 we 36 143 lay may
(c) as we 143 lay 12 may 36
(d) may 36 12 lay 143 we as
(e) None of these
35. If step III of an input is 'mare 1665 meat 1885 saves 20171 19199', then which of the following will definitely be the input?

- (a) meat saves 20171 1885 mare 1665 19199
 (b) mare 1885 saves meat 1665 19199 20171
 (c) 19199 saves mare meat 1885 1665 20171.
 (d) Can't be determined
 (e) None of these
36. **Input:** like tea 115 1264 eat 151 gate
 For the above input, which step will be the following arrangement?
Arrangement: eat 115 tea 151 like 1264 gate
 (a) VI (b) V
 (c) III (d) II
 (e) None of these
37. If step II of a given input is 'get 116 1250 say 1124 four 148 hire' then which of the following is step VI of the given input?
 (a) get 116 say 148 four 1124 hire 1250
 (b) get 116 say 148 1250 1124 four hire
 (c) get 116 say 148 four 1124 1250 hire
 (d) Data inadequate
 (e) None of these
- Directions (Qs. 38-42) :** Study the following information to answer the given questions.
 A word arrangement machine when given an input line of words, rearranges them following a particular rule in each step. The following is an illustration of the input and the steps of rearrangement.
Input : going but for crept to light sir
Step I : crept going but for te light sir
Step II : crept going light but for te sir
Step III : crept going light but for sir te
 (Step III is the last step for this input)
 As per the rules followed in the above steps, find out in the given questions the appropriate step for the given input.
38. **Input:** the in car as he may me
 Which of the following will be the third step for this input?
 (a) car the in as he may me
 (b) car may the as in he me
 (c) car as may he the in me
 (d) car may the in as he me
 (e) None of these
39. If the second step of an input is 'clever remand window sales batch tiger never' which of the following will be its sixth step?
 (a) clever remand window batch sales tiger never
 (b) window remand clever sales batch tiger never
 (c) batch never sales tiger clever remand window
 (d) clever remand window tiger batch sales never
 (e) It cannot have sixth step.
40. If the input is 'true se veto be nuke my like', which of the following will be the IV step?
 (a) like nuke true veto be se my
 (b) be my like se true veto nuke
 (c) be my se like true veto nuke
 (d) veto true nuke like so be my
 (e) Cannot be determined
41. **Input:** 'more fight cats cough sough acts idea'.
 Which of the following steps would be the last step for this input?
 (a) III (b) IV
 (c) V (d) VI
 (e) VII

42. If the V step of an input is 'more pure soft cat not so sir at', what will be the II step?
 (a) at so more pure cat not soft sir
 (b) more pure soft so sir cat at not
 (c) more pure soft cat so sir at not
 (d) more so sir soft pure cat at not
 (e) Cannot be determined
- Directions (Qs. 43-49):** Study the following information to answer the questions given below :
 A number arrangement machine when given an input of numbers, rearranges them following a particular rule in each step. The following is an illustration of input and steps of rearrangement.
Input : 48 245 182 26 99 542 378 297
Step I : 542 48 245 182 26 99 378 297
Step II : 542 26 48 245 182 99 378 297
Step III : 542 26 378 48 245 182 99 297
Step IV : 542 26 378 48 297 245 182 99
Step V : 542 26 378 48 297 99 245 182
 This is the final arrangement and step V is the last step for this input.
43. What will the fourth step for an input whose second step is given below?
Step: 765 42 183 289 542 65 110 350
 (a) 765 42 542 350 183 289 65 110
 (b) 765 42 542 65 110 183 289 350
 (c) 765 42 542 65 183 289 110 350
 (d) Cannot be determined
 (e) None of these
44. What should be the third step of the following input?
Input: 239 123 58 361 495 37
 (a) 495 37 361 123 239 58
 (b) 495 37 58 361 123 239
 (c) 495 37 58 123 361 239
 (d) 495 37 361 239 123 58
 (e) None of these
45. How many steps will be required to get the final output from the following input?
Input: 39 88 162 450 386 72 29
 (a) Two (b) Three
 (c) Four (d) Six
 (e) None of these
46. What should be the last step of the following input?
Input: 158 279 348 28 326 236
 (a) 348 28 326 158 279 236
 (b) 348 28 326 236 158 279
 (c) 348 28 236 158 279 326
 (d) 348 28 158 326 236 279
 (e) None of these
47. If the first step of an input is "785 198 32 426 373 96 49", then which of the following steps will be "785 32 426 49 198 373 96"?
 (a) Third (b) Fourth
 (c) Fifth (d) Second
 (e) None of these
48. Below is given the second step of an input. What will be its fourth step?
Step II: 298 12 128 36 212 185

- (a) 298 12 212 128 36 185
 (b) 298 12 212 36 128 185
 (c) 298 12 36 212 128 185
 (d) Cannot be determined
 (e) None of these

49. Below is given the third step of an input. What will be its second step?

Step III: 387 42 236 185 92 64

- (a) 387 42 185 236 92 64
 (b) 387 42 92 185 236 64
 (c) 387 42 185 92 236 64
 (d) Cannot be determined
 (e) None of these

Directions (Qs. 50-54): Study the following information carefully and answer the questions given below it :

An export processing unit has a computerised machine which generates six codes to distinguish products of each of the seven batches produced in a day. The machine is fed code for the first batch of each day. Based on that, the machine generates 6 codes by rearrangement of words for subsequent batches. Following is an illustration of generation of codes for some batches of a day.

Day's **first** batch – who nut cream page for table.

Day's **second** batch – who for cream page nut table.

Day's **third** batch – who for page cream nut table.

Day's **fourth** batch – table for page cream nut who.

Day's **fifth** batch – page table for nut who cream.

Day's **sixth** batch – page who for nut table cream.

and so on till seventh batch. Next day based on the same rule, new set of words will be introduced as given above :

50. If the seventh batch of the day is 'from door no leaf glass but', which of the following would be the first three words of the code of the third batch of that day?

- (a) door leaf from ... (b) door leaf but ...
 (c) glass leaf but ... (d) but door no ...
 (e) None of these

51. If the code of sixth batch of the day is 'very say could man on fire', which of the following batch codes would read as 'say could very fire man on'?

- (a) Second (b) Third
 (c) Fourth (d) Fifth
 (e) None of these

52. If the code of fourth batch is 'so when clean get lemon dust', which of the following would be the code for seventh batch?

- (a) get dust lemon when so clean
 (b) clean so when lemon dust get
 (c) when get dust so clean lemon
 (d) clean dust lemon when so get
 (e) None of these

53. If the first batch code of a day is 'five gave it close to mine', which of the following will be the code for fourth batch?

- (a) five to it close gave mine
 (b) mine to close it gave five
 (c) five to close it gave mine
 (d) close five to gave mine it
 (e) None of these

54. If the code of fifth batch of a day is 'same is tea at now then', which of the following would definitely be the first code of that day?

- (a) tea same is now then at
 (b) same now tea at is then
 (c) now at then same tea is
 (d) now tea is same then at
 (e) None of these

Directions (Qs. 55-59): Study the following information carefully and answer the questions given below:

An exhibition is open for public since 9 am till 3 pm and again since 4 pm till 10 pm. In a day there are 12 batches of 1 hour each. The entry ticket bears a pass code made up of seven words, which changes every hour following a particular rule. The pass codes for 4 pm to 10 pm are the same as those for respective hours during 9 am till 3 pm, i.e. the pass code for 4 pm to 5 pm is same as of 9 am to 10 am and so on. Following is an illustration of the code and steps of rearrangement for subsequent clock hours.

Day's Pass code

First batch	9 am to 10 am (4 pm to 5 pm)	dig more and you will find water and dig find you
Second batch	10 am to 11 am (5 pm to 6 pm)	water will more
Third batch	(11 am to 12 noon) (6 pm to 7 pm)	find and will you more water dig.

and so on.

55. If the pass-code for 7 pm to 8 pm batch is 'pen with write pencil nice time day', what will be the pass-code for 11 am to 12 noon?

- (a) day nice with pencil write pen time
 (b) day with nice pencil write pen time
 (c) nice day with pencil write pen time
 (d) nice day pencil with write time pen
 (e) None of these

56. If the pass-code for the batch 4 pm to 5 pm is 'go to office in time every day', what will be the pass code for 2 pm to 3 pm batch?

- (a) day to go in every office time
 (b) to day go in every office time
 (c) to go day in every office time
 (d) to go in day every office time
 (e) None of these

57. If the pass-code for the second batch is 'do not play the near water dirty', what will be the pass code for 2 pm to 3 pm batch?

- (a) dirty near play the not do water
 (b) near dirty not the play do water
 (c) dirty near not the play do water
 (d) near dirty not the play water do
 (e) None of these

58. If the pass-code for third batch is 'at study sleep and night child good', which batch will have the pass-code 'child sleep night and study good at'?

- (a) Second (b) Fourth
 (c) Sixth (d) Fifth
 (e) None of these

59. If the pass-code for 5 pm to 6 pm is 'out in above over field the and', what will be the pass-code for 1 pm to 2 pm?

- (a) field and the over out in above
 (b) the field and over out in above
 (c) field the and over out above in
 (d) the field and over out above in
 (e) None of these

Directions (Qs. 60-64): Study the following information carefully and answer the questions given below :

A word arrangement machine, when given a particular input, rearranges it following a particular rule. The following is the illustration of the input and the steps of arrangement:

Input: top the name good for is there

Step I: is top the name good for there

Step II: is for top the name good there

Step III: is for the top name good there

Step IV: is for the top good name there

(This is the last arrangement and step IV is the last step of this input.)

60. If following is the second step of an input, what will be the fourth step?

Step II: is to for while they were going day

- (a) is to day for they while were going
- (b) is to day for while they were going
- (c) is to for day while they were going
- (d) Can't be determined
- (e) None of these

61. If following is the third step of an input, what will be its first step?

Step III: no dog was first five forest dense

- (a) no was dog first five forest dense
- (b) no first was dog five forest dense

(c) no dog first was forest five dense

(d) can't be determined

(e) None of these

62. Which of the following is the third step for the following input?

Input: lack of a common safe in the

- (a) a of in the lack common safe
- (b) a of in lack common safe the
- (c) a in of lack common safe the
- (d) a in of the lack common safe
- (e) None of these

63. How many steps will be required to get the final output from the following input?

Input: where do you go out of way

- (a) One
- (b) Three
- (c) Four
- (d) Eight
- (e) None of these

64. If step I of an input is 'If there was no good man', what step would be 'if no man there was good'?

- (a) Second
- (b) Third
- (c) Fourth
- (d) Can't be determined
- (e) None of these

ANSWER KEY

1	(b)	8	(d)	15	(d)	22	(d)	29	(a)	36	(c)	43	(c)	50	(a)	57	(c)	64	(b)
2	(c)	9	(b)	16	(e)	23	(d)	30	(e)	37	(a)	44	(d)	51	(b)	58	(d)		
3	(d)	10	(e)	17	(b)	24	(a)	31	(e)	38	(b)	45	(e)	52	(d)	59	(e)		
4	(d)	11	(b)	18	(c)	25	(e)	32	(b)	39	(e)	46	(a)	53	(b)	60	(a)		
5	(a)	12	(b)	19	(c)	26	(c)	33	(d)	40	(a)	47	(b)	54	(c)	61	(d)		
6	(d)	13	(d)	20	(d)	27	(a)	34	(e)	41	(d)	48	(b)	55	(e)	62	(c)		
7	(b)	14	(c)	21	(a)	28	(c)	35	(d)	42	(e)	49	(d)	56	(b)	63	(e)		

Hints & Explanations

1-5: Here it is case of arrangement. The logic is: the words get arranged in alphabetical order. Whereas the numbers get arranged in descending order. Numbers occupy odd places in the final steps while words occupy even positions. When any element gets arranged the previous elements occupying that position shifts one place towards right.

1. (b) **Input:** 9 13 about tariff 24 call 29 even
Step I: 29 9 13 about tariff 24 call even
Step II: 29 about 9 13 tariff 24 call even
Step III: 29 about 24 9 13 tariff call even
Step IV: 29 about 24 call 9 13 tariff even
2. (c) **Step II:** 37 desk 34 garden 5 father victory 17
Step III: 37 desk 34 father garden 5 victory 17
Step IV: 37 desk 34 father 17 garden 5 victory Since all the elements of the input are fully arranged in Step IV, this is the last step of the given input.

3. (d) **Step I:** 59 bead tenure father 38 11 ultimate 24
Step II: 59 bead 38 tenure father 11 ultimate 24
Step III: 59 bead 38 father tenure 11 ultimate 24
 4. (d) Since it is a case of arrangement, we can't obtain previous steps with certainty.
 5. (a) **Input:** 24 12 entry sand butter 51 32 carry
Step I: 51 24 12 entry sand butter 32 carry
Step II: 51 butter 24 12 entry sand 32 carry
Step III: 51 butter 32 24 12 entry sand carry
- 6-10:** An intuitive look at the input and the steps makes it clear that it is a case of arrangement. The input is a combination of words and numbers. Words get arranged according to reverse order of alphabetical arrangement whereas numbers get arranged in ascending order.
 In step I, 'over' occupies the first place from the left end and the other elements are pushed one place rightward.

Similarly, in step II, '26' occupies the second place from the left end and the other elements are pushed one place rightward.

Thus, alternate arranging of words and numbers finally gives the last step in which the odd places from the left are occupied by words and the even places are occupied by numbers.

6. (d) Since it is a case of arrangement, therefore previous steps or input can't be determined with certainty.

7. (b) **Step III:** take 17 mind game 29 73 18 loud

Step IV: take 17 mind 18 game 29 73 loud

Step V: take 17 mind 18 loud game 29 73

Step VI: take 17 mind 18 loud 29 game 73

Hence, step VI is the last step. Therefore, three more steps are required to complete the sequence.

8. (d) **Input:** by now 51 32 for 91 20 me

Step I: now by 51 32 for 91 20 me

Step II: now 20 by 51 32 for 91 me

Step III: now 20 me by 51 32 for 91

Step IV: now 20 me 32 by 51 for 91

Step V: now 20 me 32 for by 51 91

Step VI: now 20 me 32 for 51 by 91

Hence, step VI is the last step for the given input.

9. (b) **Input:** fight for all 39 62 25 today 19

Step I: today fight for all 39 62 25 19

Step II: today 19 fight for all 39 62 25

Step III: today 19 for fight all 39 62 25

Step IV: today 19 for 25 fight all 39 62

10. (e) **Input:** queen mary 79 62 17 20 green west

Step I: west queen mary 79 62 17 20 green

Step II: west 17 queen mary 79 62 20 green

Step III: west 17 queen 20 mary 79 62 green

Step IV: west 17 queen 20 mary 62 79 green

Step V: west 17 queen 20 mary 62 green 79

Hence, step V is the last step. Therefore, the penultimate step (last but one) is step IV.

11 – 17: Here the rule followed is: numbers are getting arranged in descending order.

The largest of the given numbers interchanges its place with the first number. [In case the largest number is already arranged, the second largest is interchanged with the number next to the largest no., and so on until the numbers are arranged in descending order.

11. (b) **Step II:** 842 485 68 358 236 123 93

Step III: 842 485 358 68 236 123 93

Step IV: 842 485 358 236 68 123 93

Step V: 842 485 358 236, 123 68 93

13. (d) **Input:** 113 18 48 225 462 175 288

Step I: 462 18 48 225 113 175 288

Step II: 462 288 48 225 113 175 18

Step III: 462 288 225 48 113 175 18

14. (c) **Step I:** 498 175 292 96 79 387 158

Step II: 498 387 292 96 79 175 158

Step III: 498 387 292 175 79 96 158

Step IV: 498 387 292 175 158 96 79

15. (d) Previous step can't be determined.

16. (e) **Input:** 158 294 22 89 142 385 463

Step I: 463 294 22 89 142 385 158

Step II: 463 385 22 89 142 294 158

17. (b) The series which is in strictly descending order will be the answer.

18-22 : From the last step it can be concluded that words and numbers are arranged alternately. Words are arranged alphabetically whereas numbers are arranged in descending order. When the arrangement of all elements gets completed in a particular step that step is called last step.

18. (c) **Input:** machine hire for 19 against 85 21 46

Step I: against machine hire for 19 85 21 46

Step II: against 85 machine hire for 19 21 46

19. (c) **Input:** box at 20 53 62 gift now 32

Step I: at box 20 53 62 gift now 32

Step II: at 62 box 20 53 gift now 32

Step III: at 62 box 53 20 gift now 32

Step IV: at 62 box 53 gift 20 now 32

20. (c) **Input:** on at 33 27 42 sky mat 51

Step I: at on 33 27 42 sky mat 51

Step II: at 51 on 33 27 42 sky mat

Step III: at 51 mat on 33 27 42 sky

Step IV: at 51 mat 42 on 33 27 sky

Step V: at 51 mat 42 on 33 sky 27

21. (a) **Step III:** bring 63 desk 11 29 together fight 30

Step IV: bring 63 desk 30 11 29 together fight

Step V: bring 63 desk 30 fight 11 29 together

Step VI: bring 63 desk 30 fight 29 11 together

Step VII: bring 63 desk 30 fight 29 together 11

Step VII is the last step. Hence, step VI is the second last step (penultimate step).

22. (d) Previous steps can't be determined.

23-27: In the given arrangement the first and the second places are occupied by words; the third and the fourth by numbers; the fifth and the sixth by words; and the seventh and the eighth by numbers.

Words occupy place in alphabetical order while numbers occupy place in descending order.

Whenever a word or a number gets arranged other elements shift one place rightward.

23. (d) Since it is a case of 'Arrangement', previous steps can't be obtained with certainty.

24. (a) **I: Input:** bring home 42 73 15 goal 32 type

Step I: bring goal home 42 73 15 32 type

Step II: bring goal 73 home 42 15 32 type

Step III: bring goal 73 42 home 15 32 type

Step IV: bring goal 73 42 home type 15 32

Step V: bring goal 73 42 home type 32 15

Since all the elements of Input get arranged in Step V, it is the last step.

25. (e) **Input:** bench 47 63 advance 13 29 again between

Step I: advance bench 47 63 13 29 again between

Step II: advance again bench 47 63 13 29 between

Step III: advance again 63 bench 47 13 29 between

26. (c) **Step II:** desk eagle 12 28 41 69 foreign land

Step III: desk eagle 69 12 28 41 foreign land

Step IV: desk eagle 69 41 12 28 foreign land

Step V: desk eagle 69 41 foreign 12 28 land

Step VI: desk eagle 69 41 foreign land 12 28

Step VII: desk eagle 69 41 foreign land 28 12

27. (a) **Step III:** again dark 83 sour 19 21 prey 39
Step IV: again dark 83 39 sour 19 21 prey
Step V: again dark 83 39 prey sour 19 21
Step VI: again dark 83 39 prey sour 21 19
 Since step VI is the last step (because all elements of step III get arranged in step VI), step V is the required step (penultimate step or last but one.)

(28-32): Here the rule followed is: In each step the fourth word becomes first word and the last word becomes fourth word and all other words shift one place rightwards except the third, which shifts two place rightwards.

In order to make things easier, let us represent the words digitally from 1 to 7.

Then we have:

Input:	1	2	3	4	5	6	7
Step I:	4	1	2	7	3	5	6
Step II:	7	4	1	6	2	3	5
Step III:	6	7	4	5	1	2	3
Step IV:	5	6	7	3	4	1	2
Step V:	3	5	6	2	7	4	1
Step VI:	2	3	5	1	6	7	4

28. (c) **Input:** say not you are only wise yet
 1 2 3 4 5 6 7
Arrangement: not you only say wise yet are
Step VI: 2 3 5 1 6 7 4
29. (a) **Step V:** so cd rom lay is nor it
 3 5 6 2 7 4 1
Step II: 7 4 1 6 2 3 5
 is nor it rom lay so cd
30. (e) **Step III:** lo men chi from yet as know
 6 7 4 5 1 2 3
Input: 1 2 3 4 5 6 7
 yet as know chi from lo men
31. (e) The rule is given above.

(33-37): From the last step it can be concluded that words and numbers are arranged alternately. Word with least number of letters shifts to the leftmost position followed by the least number among the given numbers. In case of two words with same number of letters, words are arranged as per their dictionary order. For getting arranged they are interchanged with the word/number whose place it occupies.

33. (d) **Input :** go 123 save be 39 67 let
Step I : be 123 save go 39 67 let
Step II : be 39 save go 123 67 let
Step III : be 39 go save 123 67 let
Step IV : be 39 go 67 123 save let
Step V : be 39 go 67 let save 123
Step VI : be 39 go 67 let 123 save
34. (e) **Input :** we 143 lay as 12 may 36
Step I : as 143 lay we 12 may 36
Step II : as 12 lay we 143 may 36
Step III : as 12 we lay 143 may 36
Step IV : as 12 we 36 143 may lay
35. (d) Previous step can't be determined.
36. (c) **Input :** like tea 115 1264 eat 151 gate
Step I : eat tea 115 1264 like 151 gate

- Step II :** eat 115 tea 1264 like 151 gate
Step III : eat 115 tea 151 like 1264 gate
37. (a) **Step II :** get 116 1250 say 1124 four 148 hire
Step III : get 116 say 1250 1124 four 148 hire
Step IV : get 116 say 148 1124 four 1250 hire
Step V : get 116 say 148 four 1124 1250 hire
Step VI : get 116 say 148 four 1124 hire 1250

[**Note:** In the sample given for the arrangement, the mode of arrangement is ambiguous. We have taken interchange as our basis but arrangement by shifting is also a possibility. Such ambiguous questions should not be asked.]

38-42: The words are arranged according to the number of letters they have, one at a time. The word with the maximum number of letters is put first. If two words have the same number of letter, we go for alphabetical arrangement.

38. (b) **Input :** the in car as he may me
Step I : car the in as he may me
Step II : car may the in as he me
Step III : car may the as in he me
39. (e) **Step II :** clever remand window sales batch tiger never
Step III : clever remand window batch sales tiger never
Step IV : clever remand window batch never sales tiger
 Now, step IV would be the last step.
40. (a) **Input :** true se veto be nuke my like
Step I : like true se veto be nuke my
Step II : like nuke true se veto be my
Step III : like nuke true veto se be my
Step IV : like nuke true veto be se my
41. (d) **Input :** more fight cats cough sough acts idea
Step I : cough more fight cats sough acts idea
Step II : cough fight more cats sough acts idea
Step III : cough fight sough more cats acts idea
Step IV : cough fight sought acts more cats idea
Step V : cough fight sough acts cats more idea
Step VI : cough fight sough acts cats idea more
42. (e) We can't move backward.

(43-49): From the last step it is clear that there are two alternating series of numbers: One in descending order and the other in ascending order.

When we go through input to step I, we find that the largest no. becomes the first and remaining numbers shift rightward. In the next step the smallest no. becomes the second and the rest shift rightward. These two steps continue alternately until the two alternate series are formed.

43. (c) **Step II:** 765 42 183 289 542 65 110 350
Step III: 765 42 542 183 289 65 110 350
Step IV: 765 42 542 65 183 289 110 350
44. (d) **Input:** 239 123 58 361 495 37
Step I: 495 239 123 58 361 37
Step II: 495 37 239 123 58 361
Step III: 495 37 361 239 123 58
45. (e) **Input:** 39 88 162 450 386 72 29
Step I: 450 39 88 162 386 72 29
Step II: 450 29 39 88 162 386 72
Step III: 450 29 386 39 88 162 72
Step IV: 450 29 386 39 162 88 72
Step V: 450 29 386 39 162 72 88

46. (a) Last step can be known directly.
47. (b) **Step I:** 785 198 32 426 373 96 49
Step II: 785 32 198 426 373 96 49
Step III: 785 32 426 198 373 96 49
Step IV: 785 32 426 49 198 373 96
48. (b) **Step II:** 298 12 128 36 212 185
Step III: 298 12 212 128 36 185
Step IV: 298 12 212 36 128 185
49. (d) Previous steps can't be determined
- 50-54:** The machine operates as follows:
1st batch to 2nd batch: Second and fifth words interchange places.
2nd to 3rd: The middle two words interchange places.
3rd to 4th: First and last words interchange places.
4th to 5th: The middle words move to the extreme positions on their respective sides while the outer words move inwards.
 Hereafter, the process is repeated, i.e.,
5th to 6th: Same as 1st to 2nd
6th to 7th: Same as 2nd to 3rd
- Let us now make our job easy by going in for digital representation. We assign numbers 1 to 6 to the words in the first batch: who-1, nut-2, cream-3, page-4, for-5, table 6. Thus, our table becomes:

1st batch:	1	2	3	4	5	6
2nd batch:	1	5	3	4	2	6
3rd batch:	1	5	4	3	2	6
4th batch:	6	5	4	3	2	1
5th batch:	4	6	5	2	1	3
6th batch:	4	1	5	2	6	3
7th batch:	4	1	2	5	6	3

We can now answer the questions easily by applying the above table.

50. (a) **7th batch:** from door no leaf glass but
 4 1 2 5 6 3
3rd batch: 1 5 4...
 door leaf from ...
51. (b) **6th batch:** very say could man on fire
 4 1 5 2 6 3
 As per the above code, 'say could very fire man on' would read as 15 4 3 2 6, which clearly is the 3rd batch (see table).
52. (d) **4th batch:** so when clean get lemon dust
 6 5 4 3 2 1
7th batch: 4 1 2 5 6 3
 clean dust lemon when so get
53. (b) Note that 4th batch is the reverse order of the first batch.
54. (c) **5th batch:** same is tea at now then
 4 6 5 2 1 3
1st batch: 1 2 3 4 5 6
 now at then same tea is

(55-60): The order of words changes from one batch to the next as follows: the first word becomes the second; the second becomes the last; the third becomes the first; the fourth remains the same; the fifth becomes the sixth; the sixth becomes the third; and the last becomes the fifth.

For convenience, we plot the movement of each word in each step by the numbers assigned to them in the first batch:

dig-1, more-2, and-3, you-4, will-5, find-6 and water-7.	
1st batch: 9 am to 10 am (4pm to 5 pm)	1 2 3 4 5 6 7
2nd batch: 10 am to 11 am (5 pm to 6 pm)	3 1 6 4 7 5 2
3rd batch: 11 am to 12 noon (5 pm to 6 pm)	6 3 5 4 2 7 1
4th batch: 12 noon to 1 pm (7 pm to 8 pm)	5 6 7 4 1 2 3
5th batch: 1 pm to 2 pm (8 pm to 9 pm)	7 5 2 4 3 1 6
6th batch: 2 pm to 3 pm (9 pm to 10 pm)	2 7 1 4 6 3 5

55. (e) 7 pm – 8 pm: pen with write pencil nice time day
 5 6 7 4 1 2 3
 11 am to 12 noon:
 With day pen pencil time write nice
 6 3 5 4 2 7 1
56. (b) Batch -I (4 : 00 pm – 5 : 00 pm)
 go to office in time every day
 1 2 3 4 5 6 7
 Batch-VI (2 : 00 pm – 3 : 00 pm)
 to day go in every office time
 2 7 1 4 6 3 5
59. (e) The above field over in and out.
- (60-64)** The words get arranged one by one on the basis of the no. of letters, the word with least no. of words gets arranged first. If the no. of letters is the same, the word that comes first in the dictionary gets arranged first. While one word gets arranged, the other shift rightwards.
60. (a) **Step II:** is to for while they were going day
Step III: is to day for while they were going
Step IV: is to day for they while were going
61. (d) Previous step can't be determined.
62. (c) **Input:** lack of a common safe in the
Step I: a lack of common safe in the
Step II: a in lack of common safe the
Step III: a in of lack common safe the
63. (e) Six
64. (b) **Step I:** If there was no good man
Step II: If no there was good man
Step III: If no man there was good

Analytical Decision Making

INTRODUCTION

Analytical Decision Making is based on a set of relationships laid out, generally arbitrarily, from which new information can be deduced. This involves two steps—first of analysis and second of reasoning. Analytical decision making deals with questions in which you have to decide upon the course of action taken upon a candidate who has applied for a post or membership to an institution keeping in mind the essential requisites and the data given for the candidate. We can classify such questions into a few major categories.

Category I

In this type a vacancy is being declared. The necessary qualifications required by the recruiting agencies are given with certain exceptions. The qualifications and the merits of the candidates are mentioned. The decision about each candidate has to be made from amongst the five choices given, which state the courses of action to be taken as per the candidate's potential.

Category II

Here the eligibility conditions for joining a course or availing certain benefits etc are given as against the vacancies mentioned in the former category. The qualifications of the candidates are also mentioned. The decision about each candidate is to be made from amongst the five answer choices given.

FORMAT OF THE QUESTION

Example Directions: Read carefully the informations given below and answer the questions based on it:

The following are the given conditions for the recruitment of a candidate as a family member in a computer institute:

- (i) The candidate must be in the age range of 23 years to 28 years as on 1st November, 2013.
- (ii) The candidate must have work experience as a teacher or programming experience of at least 2 years.
- (iii) The candidate must have a PG degree in computer application, [MCA, M.Tech. or M.Sc. (computer science)] with not less than 60% marks.
- (iv) Out of total 50 marks in the interview, the candidate must obtain 50%. In the case when a candidate
- (v) Fulfils the above conditions, he/she shall be appointed as senior teacher.
- (vi) Has less than 60% but more than 50% marks in his/her PG degree in computer application, he/she will be appointed as junior teacher.
- (vii) Is of age more than 28 years but less than 32 years as on 1st November, 2013, the case may be referred to the GM of the institute.

On the basis of the above mentioned conditions and information about each of the candidates in the question below, you have to decide which of the following courses of action should be taken against each candidate. Point to be noted that nothing extra will be assumed except the given information. The decision must be based only on the data provided.

Mark your answer:

- (a) If the candidate is to be selected as a Junior teacher
- (b) If the candidate is to be selected as a Senior teacher
- (c) If the case will be referred to the GM of the institute.
- (d) If the data are inadequate
- (e) If the candidate is not to be selected.

QUESTIONS:

1. **Mukesh Verma** was born on 31st July, 1985. He is an M.Tech. in computer engineering with 70% marks. He has been working in an institution as a programmer for the last 7 years.
2. **Karishma Tiwari** is MCA with 72% marks. Her date of birth is 14th August, 1990. She has worked as a computer teacher for 4 years. She has got 35 marks in interview.
3. **Brijesh Shankar** is an M.Tech. with 54% marks. He was born on 31st December, 1991. He has been working as a programmer for the last 5 years. He has obtained 45 marks in the interview.
4. **Mansi Ranjan** is M.Sc. (computer science) with 55% marks. Her date of birth is 10 July, 1988. She has been working as a computer programmer for 6 years. She has obtained 40% marks in the interview.
5. **Subodh Saxena** is MCA with 54% marks. He has 4 years work experience as a computer teacher. His date of birth is 12th February, 1989. He has got 55% marks in interview.

What You See in the given Question Format?

In the given format you can see the following things:

- (1) Informations about some candidates have been provided.
- (2) Some conditions have been given for candidates to fulfil in order to get selected for a particular job/post. In case of the given format, four conditions have been given.
- (3) When a candidate fulfils all the criteria except some, then different course of action has to be taken for him.

Some more things to understand

Basic conditions: In the given question format, there are four basic conditions — (i), (ii), (iii) and (iv). They are called basic conditions because they are the original conditions.

Additional conditions: In the given question format, there are two more conditions apart from the basic conditions and they are (vi) and (vii). point to be noted that (v) will not be on additional condition as it does not talk of exceptions. In fact (v) is only a totality of the four basic or original conditions given in the question format.

What is data inadequacy?

As one of the answer is given as ‘data inadequate’ we must be clear about what exactly does data inadequacy mean? When details given about any candidate provide no information as required by the basic conditions/additional conditions then this would be the case of data inadequacy, For example, let us see the 1st question given in the format. No information is given about what marks have been obtained by Mukesh Verma in the interview. Hence, the data is inadequate here.

How to solve a given problem?

Let us consider the questions given in the format and start one stepwise process.

STEP I

Write the name of the candidates in the left side and then write the symbols (i, ii, iii, iv) of the basic conditions to the top right. Now, put the symbols of the additional conditions (vi and vii) below the symbols of that basic condition with which these might be related. For example, (vi) is a condition about educational qualification and so, it is an exception of (iii). Hence (vi) should be written below (iii). Similarly, (vii) should be written below (i). Now, after the completion of step I, the following format will be prepared:

		i (vii)	ii	iii (vi)	iv
1	Mukesh Verma				
2	Karishma Tiwari				
3	Brijesh Shankar				
4	Mansi Ranjan				
5	Subodh Saxena				

NOTE : To differentiate between basic conditions and additional conditions. The additional conditions have been encircled.

STEP II

At the 2nd step just see the given answer choices carefully and decide which combination of the conditions leads to which conclusion. If we see the given question format with serious eye, we find that the following combination can be formed.

$$i + ii + iii + iv \rightarrow 2 \text{ [Senior teacher]}$$

$$vii + ii + iii + iv \rightarrow 3 \text{ [Case will be referred to GM]}$$

$$i + ii + vi + iv \rightarrow 1 \text{ [Junior teacher]}$$

When we have decided the above three combination giving answer choices remain and the answer choice (a), (b) and (c), two answer choices remains and they are answer choice (d) and answer choice (e). The answer choice (e), which says that the candidate is not to be selected, should be chosen when any one or more of the given conditions is violated. The answer choice (d), which tells that the data are inadequate, should be chosen when no information is given about any one or more conditions.

How to examine data?

After step II you are required to read all the statements carefully. Just take each question one by one and compare then with the given conditions. Examinees are suggested to use following symbols while doing this comparison:

- I If a basic condition is fulfilled mark ‘✓’ sign below it.
- II If a basic condition is violated and it is not attached with an additional condition then mark ‘X’ sign below it.
- III If a basic condition is violated but it is attached with an additional condition then.
- (A) Mark a ‘×’ sign below it if additional condition is also violated.
- (B) Mark a ‘✓’ sign below it if additional condition is fulfilled.
- IV In case of unavailability of any information about any condition, a mark ‘?’ Will be put below that condition.

To understand point (i) to point (iv) let us see the presentation given below:

Question No.	I	II/V	III/VI	IV
1	✓	✓	✓	×
2	✓	✓	✓	✓
3	✓	(✓)	(✓)	✓
4	✓	✓	(×)	✓
5	✓	?	✓	✓

Now just see the explanation of above table:

- (1) I, II, III and IV are basic conditions while (V) and (VI) are two additional conditions. (V) is attached to II and (VI) is attached to III.
- (2) In question (1), I, II and III are satisfied while VI is violated
- (3) In question (2), all the basic conditions I, II, III and IV are satisfied
- (4) In question (3), the basic conditions I and IV are satisfied while II and III are violated. Though the basic conditions, II and III are violated, the additional conditions (IV) and (VI) are satisfied
- (5) In question (4), III and (VI) are violated but I, II and IV are satisfied
- (6) In question (5), No information is given about II or (V) but the basic condition I, III and IV are satisfied

STEP III

- (i) One by one, read the questions very carefully and compare the facts given with the various condition.
- (ii) Mark the appropriate sign or ‘✓’ or ‘×’ (✓) or (×)? As required
- (iii) When a ‘×’ or a (×) sign is obtained, then stop examining further and without any hesitation select the answer choice “not to be selected” for that particular question. In another words whenever you get ‘×’ or (×) sign, do not take any botheration to examine the remaining condition, select your answer as “not to be selected and quickly move on to the next question. It so happens because, if a condition as well as its additional condition is violated, it does mean that one necessary requirement is not being fulfilled. Hence, we reach at a conclusion that the selection is not possible even if other conditions are fulfilled.

STEP IV

Now, this is the time to select your answer choices on the pattern given below:

- (i) If find a ‘×’ or (×) below any condition, go for the answer choice “not to be selected”
- (ii) If you find no cross mark but there is a question mark below any condition, your answer choice would be “data are inadequate”.

(iii) If you find neither any cross mark nor any question mark, than compare the combination with the three answer combinations obtained in step II and select the answer choice accordingly.

After understanding the above steps, now we are at a position of solving the question given in the question format. Let us see the solution:

Solution:

Question No.		(i) / (vii)	(ii)	(iii)/ (vi)	(iv)
1	Mukesh Verma	(✓)	✓	✓	?
2	Karishma Tiwari	✓	✓	✓	✓
3	Brijesh Shankar	(×)	✓	(✓)	✓
4	Mansi Ranjan	✓	✓	(✓)	×
5	Subodh Saxena	✓	✓	(✓)	✓

Condition (V) is attached to II while the additional condition is VI attached with the basic condition III.

STEP WISE EXPLANATION OF ABOVE TABLE:

Step I

At the step I level, we read the question carefully and find out that there are four, basic conditions i, ii, iii and iv and two additional conditions vii and vi. further, it is clear that 'vii' is an exception of 'i' and 'vi' is an exception of 'iii'. Now we write the name of the candidates in extreme left and then put the basic conditions i, ii, iii and iv at the top-right of the candidate in question 1. Next, we write additional condition 'vii' below 'o' and additional condition 'vi' below 'iii'.

Step II

At the 2nd level, we look at the answer choices and prepare one answer combinations accordingly. This will be:

$$i + ii + iii + iv \Rightarrow b$$

$$vii + ii + iii + iv \Rightarrow c$$

$$i + ii + vi + iv \Rightarrow a$$

Step III

At the step III level, we read every question carefully and compare the facts given in it with the various conditions. Let us see the detailed analysis of every candidate question wise.

Q. 1 Mukesh Verma

He is an M.Tech in computer engineering with 70% marks. This fulfills condition C. Hence we write '✓' mark below C. Next, his date of birth is 31st July, 1985. Here, we do a mental calculation that on 31st July, 2013 he turned 28th. This is the reason that on 1st November 2013, he is more than 28 years. Therefore, (i) is violated, but the additional condition of (i) is (vii) which is fulfilled and we write (✓) mark here. Further, Mukesh Verma is having a programming experience of 7 years (more than 2 years). So we mark (✓) below (ii). Lastly, there is no information about marks of Mukesh in the interview. Thus the sign of question mark '?' is put below d.

Q. 2. Karishma Tiwari

Karishma is an MCA with 72% marks. This fulfills (iii), so we put the mark '✓' below (iii). Her date of birth is 14th August, 1990, So on 1st November, 2013, she is more than 23 years. This fulfills '(i)' and hence we put a (✓) mark below '(i)'. She is a computer teacher from last 4 years. This fulfills (ii) and we put (✓) mark below (ii), lastly, she has obtained 35 marks in the interview. This marks is more than the required 50% (25 marks out of 50 marks), therefore (iv) is also fulfilled and we put (✓) mark below (iv).

Q.3 Brijesh Shankar

He is an M. Tech. with 54% marks and this violates the basic conditions (iii). But it is also clear that an additional condition (vi) is attached to (iii) and we see that (vi) is fulfilled and thus a (✓) mark is put over there. This date of birth is 31st December, 1991, so he is certainly below 23 years in 2013. This violates basic condition '(i)'. We see that an additional condition (vii) is attached to '(i)' but (vii) too is violated. Hence we put a (×) mark here and stop our after for this question as we know that if a '×' or (×) is obtained then there is no need to go further and in this case we select our answer choice "not to be selected" and move on to the next question.

Q. 4 Mansi Ranjan

She is an M.Sc. with 55% marks. This violates the basic condition '(iii)' but fulfills the attached additional condition (vi). Hence we put a (✓) mark over here. She is born in 1968, so it is clear that she is roughly 25 years old. Thus '(i)' is fulfilled and we put (✓) below '(i)'. She has a programming experience of 6 years. This fulfills (ii) and thus we put ✓ mark below (ii). She has got 40% marks in interview which is less than required 50% and thus is violates 'd' and we put '×' mark below '(iv)'.

Q.5 Subodh Saxena

He is an MCA with 54% marks. This violates (iii) but fulfills (vi). Hence, we put (✓) mark here. He has a programming experience of 4 years. This fulfills (ii) and we put (✓) mark below '(ii)'. He was born in 1969, so he is roughly 24 years old. Here '(i)' is fulfilled and we put (✓) mark below '(i)'. As he has got 50% marks in the interview, therefore (iv) is fulfilled and we put (✓) mark below '(iv)'.

Step IV

At 4th level we select the answer choices.

Q.1 No cross mark. But a question mark is available. Hence data is inadequate.

Therefore correct answer is option d.

Q.2 $i + ii + iii + iv \Rightarrow b$ [step II]

Therefore, correct answer is option b.

Q.3 A cross mark is available, Hence "not be selected" therefore, option e is the correct answer.

Q.4 Option e is the correct answer as a cross mark exists.

Q.5 $i + ii + (vi) + iv \Rightarrow a$ [step II]

Hence correct option is option a.

EXERCISE

Directions(Qs.1-5): Study the following information carefully and answer the questions given below:

Following are the eligibility criteria for becoming member of an exclusive club:

- (i) The applicant should have annual income of at least ₹5 lakhs and should be able to pay one-time membership fee of ₹1 lakh.
- (ii) The annual income and one-time membership fee is relaxed up to 50% for former defence personnel.
- (iii) For the sons and daughters of the existing members the criterion of annual income is reduced to ₹ 3 lakhs and membership fee to ₹ 70 thousand.
- (iv) Serving court judges are offered membership free and also the stipulation of annual income is waived.
- (v) A national level sports personnel is eligible to become a member by paying ₹ 20 thousand as membership fee irrespective of annual income.

Below in each question, data/information about an individual is given. You have to decide, based on the information provided, under which criterion/criteria the individual is eligible to obtain membership. Please note that an individual can be eligible under more than one criteria. You are not to assume anything other than the information provided in each question.

1. Ashok Malhotra has been working in a Private Airlines Company as a pilot. His annual income is ₹ 10 lakhs. He is ready to pay ₹ 50 thousand as one-time membership fee. His father is a retired army officer.
 - (a) Not eligible
 - (b) Eligible under (ii) and (iii) only
 - (c) Eligible under (ii) only
 - (d) Eligible under (iv) only
 - (e) None of these
2. Navin Singh can pay ₹70 thousand as membership fee. He has been playing in the national football team and he works in a major public sector bank in the country. His father is a member of the club.
 - (a) Not eligible
 - (b) Eligible under (v) only
 - (c) Eligible under (iii) and (v) only
 - (d) Eligible under (iv) only
 - (e) None of these
3. Prabhu Sharma's annual income is ₹ 6 lakhs. He is a retired judge of the supreme court. He can pay ₹ 1 lakh as the membership fee. He played cricket for his home state.
 - (a) Not eligible
 - (b) Eligible under (i) and (v) only
 - (c) Eligible under (i) only
 - (d) Eligible under (i) and (iii) only
 - (e) None of these
4. Meena Jaswani is daughter of an existing member of the club. Her annual income is ₹ 4 lakh. She can pay ₹ 80 thousand as membership fee. She works in Indian Navy.
 - (a) Eligible under (i) and (iii) only
 - (b) Eligible under (i) and (iv) only

- (c) Eligible under (iii) only
- (d) Eligible under (iv) only
- (e) Eligible under (iii) and (iv) only

5. Shobha Patil works in a bank. She represents National Badminton team. Her father is retired judge of the local high court. Her annual income is ₹ 6 lakhs. She can pay ₹ 1 lakhs as membership fee.
 - (a) Eligible under (i) only
 - (b) Eligible under (v) only
 - (c) Eligible under (i) and (ii) only
 - (d) Eligible under (i) and (v) only
 - (e) None of these

Directions (Qs. 6-10): Study the following information carefully and answer the questions given below:

Following are the criteria for granting admission to the candidates in the Post-Graduate course in Software Technology:

The candidate must:

- (A) have engineering degree with 65% marks.
- (B) not be more than 28 years of age as on 1.12.2010.
- (C) have obtained at least 50% marks in the entrance test.
- (D) pay a sum of ₹ 1,00,000 at the time of admission as course fee.

However, if a candidate fulfils all the criteria except:

- (i) D above, but can pay the fee in two installments, the case may be referred to the Director of the Institute.
- (ii) B above, but he/she has passed post-graduation exam in science with 75% marks, his/her case may be referred to the Admission Coordinator.

Based on the above criteria and information provided against each candidate take a decision in each case. You are not to assume anything. If the data given are not adequate to take a decision mark your answer 'Data inadequate'. The following cases are given to you as on 1.12.2010. Give answer:

- (a) if the candidate is to be admitted
 - (b) if the candidate is not to be admitted
 - (c) if the case is to be referred to the director
 - (d) if the case is to be referred to the admission coordinator
 - (e) if data are inadequate
6. Sneha was 26 years old as on 3rd March, 2010. She has secured 75% marks in post-graduation in chemistry and she is ready to pay ₹ 1,00,000 at the time of admission. She has secured 72% marks in graduation in engineering and the entrance test.
 7. Ashutosh has secured 62% and 68% marks in the entrance test and graduation in engineering respectively. He was 27 years old as on 1 April, 2010. He can pay ₹ 1,00,000 at the time of admission.
 8. Rishikant was 26 years old as on 22 January. 2007. He has secured 65% marks in graduation in engineering and 83% marks in post-graduation in physics. He has secured 60% marks in the entrance test. He is ready to pay ₹ 1,00,000 at the time of admission.

9. Damodar was born on 19 May, 1985. He has secured 60% and 73% marks in the entrance test and post-graduation respectively. He is ready to pay ₹ 1,00,000 at the time of admission.
10. Khemchand has secured 69% and 65% marks in graduation in engineering and the entrance test respectively. He was born on 10 November, 1983. He is ready to pay ₹ 75,000 at the time of admission and the rest ₹ 25,000 after three months.

Directions (Qs. 11-17): A public charitable trust desires to select 'Medical Officers' for its rural hospital based on following criteria. The applicant must

- A. be holding MBBS degree with minimum 50% marks.
 B. have minimum 4 years of experience of full-time practice in rural areas.
 C. be ready to execute a bond of 3 years of service.
 D. have good knowledge of the local language.
- In case of the applicant who satisfies all other criteria except—
- (i) at (B) above, but has 4 years of full-time experience of either urban or semi-urban area and spent at least 5 years in rural area any time during his life, be referred to Secretary of the Trust.
 (ii) at (D) above, but has working knowledge of Hindi, be referred to Assistant Secretary of the Trust.
 (iii) at (A) above, but has minimum 45% of marks at MBBS and has done MS or MD with minimum 50%, be referred to the Chief Medical Officer (CMO).
 (iv) at (C) above, but is ready to give ₹ 25,000 as security money, be referred to the President of the Trust.
- Based on these criteria and the information provided below, decide the course of action in each case. You are not to assume anything. If the data provided is not adequate to decide the given course of action, your answer will be 'data inadequate'. All cases given to you fulfil criterion of age and therefore, no details of age are provided. The cases are given to you today.
11. Sidhant has studied in rural areas while doing his schooling. His father is a farmer. Sidhant completed his MBBS from Mumbai and has six years of experience of practice in a big city. He has good knowledge of the local language and working knowledge of Hindi. He is ready to execute 3 years bond of service. He has done MS with 53% marks.
 (a) To be selected (b) Data inadequate
 (c) Refer to the CMO (d) Not to be selected
 (e) Refer to the Secretary
12. Mangesh has secured 47% marks at MBBS and has done his MD with 62% marks. He has 5 years of experience of running a dispensary in a village and can read, write and speak the local language. He is ready to give a bond of only two years of service and is unable to give security money as he wants to start a rural hospital afterwards in Andhra Pradesh.
 (a) Data inadequate
 (b) To be selected
 (c) Not to be selected
 (d) Refer to the President of the Trust
 (e) Refer to the CMO
13. Romila is born and brought up in a big urban city. Her father is an industrialist. She has secured 87%, 56% and 48% at HSC, MBBS and MD respectively. She is willing to give a bond of 3 years of service. She has worked for 5 years in a

rural hospital but can hardly speak the local language. However, she has working knowledge of Hindi. After this experience she plans to settle abroad.

- (a) Refer to Asst. Secretary (b) Refer to President
 (c) To be selected (d) Not to be selected
 (e) Data inadequate
14. Dr Murthy has stood first at MBBS after having obtained 78% marks. He has also completed MS with distinction. As he is planning to go abroad he is unwilling to give three years bond of service. Dr Murthy is fluent in the local language. He has six years of experience of practice in a rural hospital and he is not in a position to give ₹ 25,000 as security money.
 (a) Refer to the President (b) To be selected
 (c) Not to be selected (d) Data inadequate
 (e) None of these
15. Jenifer did her MD after doing her MBBS. She is ready to execute three years bond of service. She has good command over local language as well as Hindi. She has practised for $5\frac{1}{2}$ years in a remote village out of her love for social service. She has obtained 77%, 88%, 47% and 56% at SSC, HSC, MBBS, and MD respectively
 (a) Refer to Assistant Secretary
 (b) Data inadequate (c) To be selected
 (d) Not to be selected (e) None of these
16. Iqubal Kureshi, son of a local politician, has been born and brought up in a village till SSC. Afterwards he studied in a big city and did his MBBS with 69% of marks followed by MS with 57% marks. He is ready to execute a bond of service for 3 years only. He has very good knowledge of the local language. He has done $4\frac{1}{2}$ years practice in the urban areas. He plans to start a rural hospital after this experience.
 (a) Refer to the Secretary (b) Refer to the CMO
 (c) Data inadequate (d) To be selected
 (e) Not to be selected
17. Durga, after obtaining her MBBS and MS, decided to practise in her native village for five years. She knows the local language very well. Her dispensary and small hospital were very popular in the nearby villages. She plans to go to USA and UK after spending 4 more years in India. She has secured more than 60% marks in all the examinations right from SSC to MS. She is ready to execute a bond of 3 years of service.
 (a) Refer to CMO (b) Not to be selected
 (c) Data inadequate (d) To be selected
 (e) None of these

Directions (Qs. 18-25): Study the following information carefully and answer the questions given below:

Following are the criteria for recruiting Managers in an organisation:

The candidate must

- A be a graduate with at least 60% marks or a post-graduate with 60% marks either at graduation or at post graduation.
 B not be less than 23 years and not more than 30 years as on 1.6.2013.
 C have secured at least 50% in the competitive written examination and at least 40% marks in the interview.

- D have at least three years' work experience after completing graduation and/or post-graduation.
In the case of a candidate who satisfies all the criteria except at
- (i) A above, but has obtained a PhD degree, his/her case, is to be referred to the Managing Director.
 - (ii) B above, but has, put in more than five years of work experience, his/her case is to be referred to the Chairman.

Now, based on the criteria and waivers given above and the information provided in each of the following questions, you have to decide a proper course of action as regards status of the candidates. You have are not to assume anything other than the information provided in each question. These cases are given to you as on 1.6.2013. You have to pick-up one of the following answers.

Mark answer (a) if the candidate is not to be recruited.

Mark answer (b) if the case is to be referred to the Chairman.

Mark answer (c) if the candidate is to be referred to the Managing Director.

Mark answer (d) if the candidate is to be recruited.

Mark answer (e) if the data provided is not adequate to take a decision.

18. Adesh Kulkarni has secured 65% marks in his post graduation. He was born on 21st April 1986. He has secured 55% and 45% marks in the competitive written examination and. interview respectively. He has been working for the last five years after his post-graduation.
19. Suresh Oberoi secured 65% marks in post-graduation at the age of 26 in the year 2007. He has been working since then. He has secured 55% and 40% marks in the competitive written examination and interview respectively.
20. Vidisha Ghosh has secured 65% and 60% marks in the competitive written examination and interview respectively. She has also obtained her PhD degree. She was born on 25th November, 1986. She has secured 55% marks in both graduation and post-graduation.
21. Jayant Desai was 28 years old as on 1.7.2011. He has secured 45% and 60% in graduation and post-graduation respectively. He has been working for the last three years after his post-graduation. He has secured 60% marks in the interview.
22. Joseph D'Souza is a first-class post-graduate in Economics. He has been working for four years since then. He has secured 50% and 40% marks in the competitive written examination and interview respectively. He was born on 11th May 1983.
23. Neha Khoobchandani was born on 27th October 1982. She has been working for the last seven years after her graduation in which she secured 65% marks. She has secured 45% and 55% marks in competitive written examination and interview respectively.
24. Arun Bhosle was born 2nd January 1989. He has been working for the last three years after obtaining his PhD in management. He has secured 50% and 55% marks in the competitive written examination and interview respectively; He has secured 55% marks in post-graduation.
25. Usha Agrawal has been working for the last eight years after her graduation, She, has secured 65% and 55% marks in competitive written examination and interview respectively. She was born on 10th August 1985. She is a first-class graduate.

Directions (Qs. 26-30) : Read the following information carefully and answer the questions given below

Following are several eligibility criteria for applying for the post of Manager, IT in an organization :

- (i) The candidate should be a postgraduate in Computer Science or information Technology with at least two years' work experience.
 - (ii) The candidate should be a postgraduate in Mathematics/Statistics with one-year post graduate diploma in Computer Science/Information Technology and at least five years' work experience.
 - (iii) The candidate should be an engineer with specialisation in Computer Science/Information Technology with at least six years' work experience.
 - (iv) The candidate should be a graduate having Mathematics as one of the subjects, Master's degree in Computer Applications and at least three years' work experience.
 - (v) The candidate should be a postgraduate engineer in Electronics and have work experience of at least one year.
- An applicant can be eligible under one or more of the conditions given above:
In each question below, details of a candidate are given. You have to study the information provided and decide under which criteria the candidate will be eligible and then find out the appropriate answer given below each question. You are not to assume anything other than the information provided.
26. Mrinal Awasthi has completed her postgraduation in Information Technology after completing her postgraduate degree in Engineering with Electronics. She has been working for the last fifteen months.
 - (a) Eligible under (i) and (v) only
 - (b) Eligible under (ii) and (v) only
 - (c) Eligible under (v) only
 - (d) Eligible under (ii) only
 - (e) Not eligible
 27. Jacob Mistry completed his postgraduation in Mathematics. He then completed his postgraduation in Information Technology. He has been working for the last two years.
 - (a) Eligible under (i) and (ii) only
 - (b) Eligible under (i) and (iii) only
 - (c) Eligible under (i) only
 - (d) Eligible under (ii) only
 - (e) Not eligible
 28. Ketan Shah is a graduate engineer in Information Technology. He then completed a postgraduate engineering course in Electronics. He has been working for the last eight years.
 - (a) Eligible under (i) only
 - (b) Eligible under (iii) and (v) only
 - (c) Eligible under (v) only
 - (d) Eligible under (i) and (ii) only
 - (e) Not eligible
 29. Arun Singh has completed his graduation in Computer Science. He has also obtained Master's degree in Computer Applications. He has been working for the last seven years.
 - (a) Eligible under (ii) only
 - (b) Eligible under (iv) only
 - (c) Eligible under (iii) and (v) only
 - (d) Eligible under (iii) and (iv) only
 - (e) Not eligible

30. Sushil Phandse is a first-class Science graduate. He then completed his Master's degree in Computer Applications. He has been working for the last four years. He has also obtained a diploma in Information Technology.
- Not eligible
 - Eligible under (iv) only
 - Eligible under (iii) and (iv) only
 - Eligible under (ii) and (iv) only
 - Eligible under (ii) only

Directions (Qs. 31-35): Read the following information carefully and answer the questions given below: Following are the conditions for shortlisting candidates for the post of Customer Relations Officers (CRO) for XYZ Ltd.

The candidate to be called for interview must

- be a graduate in Science, i.e., B.Sc., with minimum 55% marks.
- have at least 3 years experience in selling/marketing.
- have participated in debating or drama or sports at the intercollegiate level onwards.
- have secured minimum 60% marks in the Written Examination (WE).
- be ready to deposit ₹10,000 as security deposit. However, in case of a candidate who fulfils all these criteria except
 - (iv) above, but has secured minimum 60% at B.Sc., may be referred to the Chief Manager, Customer Relations (CR).
 - (i) above, but has passed M.Sc., i.e., Post-Graduation in Science, with minimum 50% marks, may be referred to DGM (CR).

Based on these criteria and information provided below, decide the course of action in each case. You are not to assume anything. If the data provided is not adequate to decide the given course of action, your answer will be 'data inadequate'. All the candidates given below fulfil the criterion for age.

Mark answer

- Selected for interview
 - Not to be selected
 - Data inadequate
 - Refer to the Chief Manager (CR)
 - Refer to the DGM (CR)
31. Rohan is the son of a marketing executive. Rohan has obtained many prizes in inter-university debates and drama events. He has worked as marketing executive for 5 years after completing his B.Sc. and M.B.A., with 62% and 70% marks respectively. He is ready to give security deposit of ₹10,000. He has obtained 65% marks in WE.
32. Kamal Kanchan has 6 years experience in marketing cosmetic products. She has done her B.Sc., M.Sc. and M.B.A. with 65%, 56% and 62% marks respectively. She is ready to pay the security deposit. She is good at debating and has won many prizes in inter-college/university events. She is interested in social work.
33. Dinkar has won many prizes in sports at the inter-college/university level. He has seven years experience in direct sales. He has scored 65%, 56%, and 53% marks in WE, B.Sc. and M.Sc. respectively. He is ready to give security deposit and desires to make a career in selling.
34. Krupa is a successful sportsperson having won several prizes in sports and debating at intercollegiate level onwards. At B.Sc., M.Sc. and WE, she has obtained 62%, 55% and 65% marks respectively. She has 5 years experience in sales. Her father is a successful businessman.

35. Jadunath is a Science graduate having done postgraduate diploma in Journalism. He is having 4 years experience of marketing consumer products. He is ready to deposit ₹10,000 as security deposit. He had been participating in dramas at the intercollegiate level and above and has won many prizes. He has secured 58% and 65% marks respectively at WE and B.Sc. respectively.
36. Chandrakant is a 30-year-old officer who has worked as sales representative for five years. He is a keen sportsman and actor and has won many prizes in college-university level events. He is ready to pay security deposit of ₹10,000. He has obtained 67%, 58% and 55% marks at B.Sc., WE and Diploma in Business. Management respectively.
37. Deepali is a 26-year-old girl having obtained 60% marks at post-graduation, i.e., M.Sc., and 53% and 64% at B.Sc. and WE respectively. Deepali has worked as sales executive for three-and-a-half years. She has obtained many prizes in inter-collegiate events in debating and is ready to deposit ₹10,000 as security deposit.

Directions (Qs. 38-44): Read the following information and answer the questions given below :

A business house desires to recruit Marketing Manager based on the following criteria.

The candidate must :

- be having an MMM (Master's degree in Marketing Management) with 55% or above marks
- have minimum 60% marks at graduation
- have at least 3 years experience as Assistant Marketing Manager
- provide a security deposit of ₹50,000

However, if a candidate fulfils all the other criteria except at

- 'C' but has at least five years of marketing experience out of which 2 years as Assistant Marketing Manager, be referred to Chief Manager.
- 'D', but can give a bond of service for 3 years, be referred to A.G.M.
- 'A', but has more than 70% marks at graduation and minimum 50% at M.M.M., be referred to DGM.

The age limit is between 27 years and 32 years and all the cases given below fulfil this requirement. Now, based on the above criteria and the information given below, you have to take decision in regard to each case. You are not to assume any information. No further information is available. Mark answer if

- to be referred to DGM
 - to be referred to AGM
 - to be referred to Chief Manager
 - the candidate is to be selected
 - the candidate is to be rejected
38. Punam Mitra is a dynamic lady having 7 years of marketing experience, out of which 4 years as Assistant Marketing Manager. She has less than 55 per cent marks at MMM but is a keen sportswoman. She has 65% marks at graduation and 72% marks at post-graduation in English literature. She can pay ₹50,000 as security deposit.
39. Mohan Balwani comes from a rich family. He has done his MMM with 60 per cent marks and has secured 57 per cent at graduation. He has 6 years of marketing experience, of which 3 years as Assistant Marketing Manager in a big company. He is ready to provide bond of service as well as security deposit of ₹50,000. His father was a reputed businessman.
40. Sneha Bhat is ready to pay ₹50,000 as security deposit. She has seven years of marketing experience but was

- promoted as Assistant Marketing Manager only two-and-a-half years ago. She has excellent academic record having 70 per cent and above marks right from graduation to MMM.
41. Mulayam Bahl has done his MMM after doing his B.Com. and M.Com. He joined as Marketing Trainee and after two years became Assistant Marketing Manager. After four years as Assistant Marketing Manager he has been promoted as Deputy Marketing Manager. He can give ₹ 50,000 as security deposit. He has 65 per cent, 50 per cent and 57 per cent marks at B.Com., M. Com. and at MMM respectively.
42. Ajinkya Deo has been securing 70 per cent and above marks right from SSC to graduation and at MMM also. He is ready to pay security deposit of ₹ 50,000. He has 5 years experience in marketing, out of which three-and-a-half years as Assistant Marketing Manager.
43. Chintan De Souza has done his B.Tech. (Engineering Degree) from I.I.T. Kharagpur and his MMM from a prestigious management institute. He joined as Marketing Trainee and in one year became Assistant Marketing Manager. After working for 3 years he was promoted as Deputy Marketing Manager two years ago. He desires to give bond of service for 3 years. His marks at graduation and MMM are 65 per cent and 60 per cent respectively.
44. Keval Sharma has 8 years of total marketing experience. For last four years he has been working as Assistant Marketing Manager. He is ready to give ₹ 50,000 as security deposit. He was sick at MMM examination and secured 53 per cent marks. His father is a lawyer. Keval has secured 75% and above marks at SSC, HSC as well as at graduation.

Directions (Qs. 45-50): Study the following information carefully to answer the questions given below:

The Institute of Technology runs BC college of Engineering. It applies following criteria for selection of students for admission to the BC College. The student should

- A have been born **before** 1.3.81 and **after** 28.2.78
- B have obtained minimum 80% marks in aggregate and minimum 90% marks in Maths and Science at HSC,
- C have passed intermediate drawing examination conducted by the State government.
- D be willing to pay a deposit of ₹ 15,000 as laboratory security
- E be found physically fit in the medical examinations being conducted by the institute.

- (i) However, if the student fulfills all other criteria except criteria B, but has obtained minimum 85% marks in aggregate as well as in Maths and Science his case may be referred to the Vice-President of the institute.
- (ii) criteria C, but has won award in inter-school drawing competition, his case may be referred to the Principal of the college.
- (iii) criteria D, but is a relative of a member of Board of Trustees of the institute, his case may be referred to the chairman of the admission committee.

Based on the above criteria and the information given in each case, you have to take a decision. You are not to assume anything. These cases are given to you as on 28.2.1999.

Mark Answer If

- (a) the student is to be admitted
 - (b) the student is to be referred to Vice-President of the Institute
 - (c) the student is to be referred to the Principal of college
 - (d) the student is to be referred to the chairman of the admission committee
 - (e) the student is not to be admitted
45. Ninad, the only son of a Chartered Accountant who is also a trustee of the Institute has passed the drawing examination of state and has just passed HSC examination securing more than 90% marks in aggregate as well as in Maths and Science. His date of birth is 15.6.1980. He is physically fit as per the medical examination report of the institute. He cannot pay more than ₹ 10,000 against the security deposit. He has passed the state level intermediate drawing examination with grade B.
46. Narendra, whose date of birth is 21.4.79, is a student of Electrical Engineering diploma course. He has scored 85% marks in aggregate and 89% marks in Maths and Science at HSC examination. He has done a part-time course in computer operating. He is medically fit as reported by the Institute's team. He has passed the state level intermediate drawing examination in 1994, obtaining 'A' grade. He has no problem in paying the amount of deposit.
47. Sunita has passed HSC examination with 82% marks in aggregate and 92% marks in Maths and Science. She is found fit in the medical examination and can pay the required amount of deposit. Her date of birth is 1.3.81. She has passed the state level intermediate drawing examination.
48. Virendra, born on 19th January 1980, has passed the HSC examination with 91% marks in Maths and Science and an aggregate score of 84%. He will manage to pay the amount of ₹ 15,000 as security deposit to the institute. He is medically fit as per the report of the institute's team of doctors. He has passed intermediate drawing examination of the state. However, he could never win a prize in any of the inter-school drawing competitions.
49. Ravi, an 18-year-old boy, is the nephew of an industrialist who is a trustee of the institute. Although he did not appear in the drawing examination of state he has won gold medal in an interschool drawing competition. His aggregate marks in HSC is 81% and the marks in Maths and Science are 91%. He is found to be physically fit by the team appointed by the institute. He is not in a position to pay any amount against deposit.
50. Sujit, a 20-year-old boy, has passed his HSC examination securing 87% marks in aggregate and 88% marks in Maths and Science. He is willing to deposit ₹ 15,000 as lab security deposit and is found fit by the team of doctors conducting medical examination. He has passed the intermediate drawing examination of the state.

ANSWER KEY

1	(a)	7	(a)	13	(a)	19	(b)	25	(d)	31	(a)	37	(e)	43	(d)	49	(e)
2	(b)	8	(d)	14	(c)	20	(e)	26	(c)	32	(c)	38	(e)	44	(a)	50	(b)
3	(c)	9	(e)	15	(e)	21	(e)	27	(c)	33	(a)	39	(e)	45	(d)		
4	(c)	10	(c)	16	(a)	22	(a)	28	(b)	34	(c)	40	(c)	46	(b)		
5	(d)	11	(b)	17	(e)	23	(a)	29	(e)	35	(d)	41	(d)	47	(e)		
6	(a)	12	(c)	18	(d)	24	(c)	30	(a)	36	(d)	42	(d)	48	(a)		

Hints & Explanations

(1-5) :

Q. No.	Person	i	ii	iii	iv	v	Answer
1.	Ashok	×	×	×	×	×	(a)
2.	Navin	×	×	×	×	√	(b)
3.	Prabhu	√	×	×	×	×	(c)
4.	Meena	×	×	√	×	×	(c)
5.	Shobha	√	×	×	×	√	(d)

(6 – 10)

	A	B/(ii)	C	D/(i)	Answer
6.	√	√	√	√	(a)
7.	√	√	√	√	(a)
8.	√	(√)	√	√	(d)
9.	—	√	√	√	(e)
10.	√	√	√	(√)	(c)

$A + B + C + D =$ Option a

$A + (ii) + C + D =$ Option d

$A + B + C + (i) =$ Option c

$A + (ii) + C + (i) or$

Anything not fulfilling = Option b

Anything not given = Option e

(11-17):

Q.No	A/(iii)	B/(i)	C/(iv)	D/(ii)	Answer
11.	—	√	(√)	√	(b)
12.	(√)	√	×	√	(c)
13.	√	√	√	(√)	(a)
14.	√	√	×	√	(c)
15.	(√)	√	√	√	(e)
16.	√	(√)	√	√	(a)
17.	√	×	√	√	(e)

$A + B + C + D =$ Selected

$(iii) + B + C + D =$ referred to CMO

$A + (i) + C + D =$ referred to Secretary

$A + B + (iv) + D =$ referred to President

$A + B + C + (ii) =$ referred to Assistant Secretary

Any other combination = not to be selected

Anything missing = Data inadequate

(18-25) :

Q. No.	A/(i)	B/(ii)	C	D	Answer
18.	√	√	√	√	(d)
19.	√	(√)	√	√	(b)
20.	(√)	√	√	—	(e)
21.	√	√	—	√	(e)
22.	√	×	√	√	(a)
23.	√	(√)	×	√	(a)
24.	√	√	√	√	(c)
25.	√	√	√	√	(d)

(26-30) :

Q.No	Condition Person	(i)	(ii)	(iii)	(iv)	(v)
26.	Mrinal	×	×	×	×	√
27.	Jacob	√	×	×	×	×
28.	Ketan	×	×	√	×	√
29.	Arun	×	×	×	×	×
30.	Sushil	×	×	×	×	×

26. (c) 27. (c) 28. (b) 29. (e) 30. (a)

(31-35) :

Q.No	i/(B)	ii	iii	iv/(A)	v	Answer
31.	√	√	√	√	√	(a)
32.	√	√	√	—	√	(c)
33.	√	√	√	√	√	(a)
34.	√	√	√	√	—	(c)
35.	√	√	√	(√)	√	(d)
36.	√	√	√	(√)	√	(d)
37.	(√)	√	√	√	√	(e)

$(i) + (ii) + (iii) + (iv) + (v) =$ Option (a)

$(i) + (ii) + (iii) + (A) + (v) =$ Option (d)

$(B) + (ii) + (iii) + (iv) + (v) =$ Option (e)

Anything missing = Option C

(38-44) :

Q.No	A/(iii)	B	C/(i)	D/(ii)	Answer
38.	(×)	√	√	√	(e)
39.	√	(×)	√	√	(e)
40.	√	√	(√)	√	(c)
41.	√	√	√	√	(d)
42.	√	√	√	√	(d)
43.	√	√	√	√	(d)
44.	(√)	√	√	√	(a)

(45-50) :

Q.No	A	B/(i)	C/(ii)	D/(iii)	E	Answer
45.	√	√	√	(√)	√	(d)
46.	√	(√)	√	√	√	(b)
47.	×	√	√	√	√	(e)
48.	√	√	√	√	√	(a)
49.	√	√	(√)	(√)	√	(e)
50.	√	(√)	√	√	√	(b)

$A + B + C + D + E =$ option a

$A + (i) + C + D + E =$ option b

$A + B + (ii) + C + D =$ option c

$A + B + C + (iii) + E =$ option d

any other combination = option e

Evaluating Inferences

This chapter makes you aware about a special type of question pattern which has become a regular trend of almost all type of competitive examination. An inference is a logical conclusion on evidence. A valid inference is believable and realistic. As per the pattern, a passage is given followed by some inferences (conclusions) and the examinee is asked to decide whether a given inference follows or not in the light of the given passage. Let us see the format below:

What is the problem like?

Problem Format/Sample Problem:- Directions (Qs1-5): Below is given a passage followed by several possible inferences which can be drawn from the facts stated in the passage. You have to examine each inference separately in the context of the passage and decide upon its degree of truth or falsity.

Mark answer:

- (1) If the inference is definitely true i.e., it properly follows from the statement of facts given.
- (2) If the inference is 'probably true' though not definitely true in the light of the facts given.
- (3) If the 'data are inadequate' i.e. from the facts given you can not say whether the inference is likely to be true or false.
- (4) If the inference is 'probably false' though not definitely false' in the light of the facts given.
- (5) If the inference is 'definitely false' i.e., it cannot possibly be drawn from the facts given or it contradicts the given facts.

PASSAGE

In its most ambitious bid ever to house 6 crore slum dwellers and realise the vision of a slum - free India, the government is rolling out a massive plan to build 50 lakh dwelling units in five years across 400 towns and cities. The programme could free up thousands of acres of valueable government land across the country and generate crores worth of business for real estate developers. Proliferation of slums has had an adverse impact on the GDP growth for years. Slum dwellers are characterised by low productivity and susceptibility to poor health conditions. The government believes that better housing facilities will address social issues and also have a multiplier effect and serve as an economic stimulus.

- Q 1.** Development of land occupied by slums in cities of India will not have any effect on the common public.
- Q 2.** Majority of the slums in cities and towns in India are on prime private properties.
- Q 3.** Per capita income of slum dwellers is significantly lower than that of those living in better housing facilities.
- Q 4.** Cities and towns of developed countries are free from slums.
- Q 5.** Health and sanitary conditions in slums are far below the acceptable norms of human habit in Indian cities and towns. Before solving the sample problem, we must see the pattern of the problem and find out what it put before the students to think.

A minute look will make you clear that the examiner has graded the choices very closely. He/she has given two positive choices instead of one.

- i. Definite true
- ii. Probably true

Further, he/she has also given two negative choices instead of one:-

- i. Definitely false
- ii. Probably false

This pattern requires a deeper thinking as it leaves before you following areas of confusion:-

1. Definitely true or probably true
2. Definitely false or probably false
3. Data inadequate or probably true
4. Data inadequate or probably false

- 1. Definitely true or probably true:** If the given inferences is a direct consequences of something given in the passage, then it falls under the category of definitely true. But the confusion may arise when the given inference is not directly stated in the passage but it appears 'almost' definitely true to you. But as it is not clearly stated in the passage, you may think that even 'Probably true' could be the answer. To get rid of this confusion, you have to recheck your reasoning. If the given inference has not been mentioned directly in the passage, then you must have assumed something 'extra' to draw this conclusion. Now, ask some questions from yourself. Such questions must be as the following:

- (a) Is the extra assumption as universal truth?
- (b) Can the extra assumption never be false?

If you find 'yes' for the question (a) and 'no never' for the question (b), then accept it as definitely true, otherwise pick 'Probably true'.

- 2. Definitely false or probably false**

If the given inference does not follow from the passage, it falls under the category of definitely false. But confusion may arise when the given inference is not given directly in the passage and seems 'almost' definitely false. But as related things are not mentioned clearly in the passage, you think that 'probably false' may be correct.

To get rid of this confusion try to recheck your reasoning. If the opposite of the inference has not been mentioned in the passage, then you must assume something extra to reach your conclusion. Just ask the following questions to yourself.

- (a) Is this assumption a universal truth?
- (b) Can this assumption never be false?

If you find 'yes' for question (a) and 'no, never' for question (b) then select your answer as definitely false, otherwise probably false will be your correct answer.

- 3. Data inadequate or probably true**

When an indirect inference is drawn from the passage, this confusion may arise. As the given inference is not explicitly mentioned, you think that data are inadequate and that

sufficient information has not been given to draw a conclusion. In such case you may go for 'Probably true'. To get rid of this confusion, recheck your general mental ability. You can declare the given inference as probably true, if with the help of some extra assumption, the given inference seems likely to be true. Thus, you can somehow convince yourself that the inference is likely to be true. On the other hand, you can declare that data are inadequate if no definite conclusion can be drawn from the passage even with the help of some extra assumption. Hence, in such case you can get convinced that the inference is likely to be true or false.

4. Data inadequate or probably false:

When the given inference is drawn indirectly from the passage, such confusion may arise. As it is not explicitly said in the passage, you come to the conclusion that data are inadequate because sufficient information has not been provided to draw a definite conclusion. However, the given inference appears to you in contradiction with the general 'tone' of the passage. Therefore, you are tempted to pick up 'probably false' as your answer.

To get rid of this confusion recheck your general mental ability. You can declare an inference probably false. Only if you are able to find out a reasonable assumption, combining which with what is said in the given passage the inference appears likely to be false.

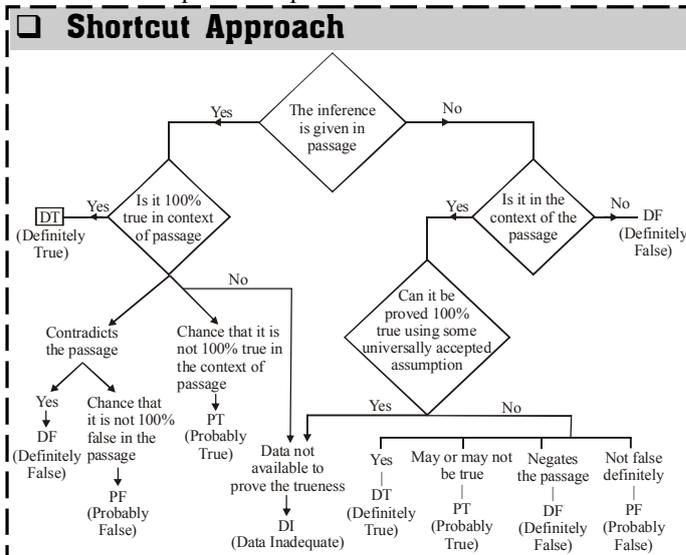
Thus, somehow, you can convince yourself that the given inference is likely to be false. On the other hand, you should pick up the choice 'data are inadequate' only if you can not find any acceptable assumption which, combined with what is said in the passage, may lead to some definite conclusion.

In such case, you can not get convinced whether the given inference is likely to be true or false.

Now, we have come to the end of the chapter and we are now in a position to solve the sample problem.

Solution to sample problem

- (3) As we have no information about how the freed up land will benefit the common public, hence data inadequate' will be our correct answer choice.
- (5) The passage says to the contrary getting rid of slums would "Free up valuable government land"
- (2) Low productivity is likely to lead to low income.
- (2) As slums have led to a lower GDP growth in India.
- (1) The passage says that the slums dwellers are susceptible "to poor health conditions".



EXERCISE

Directions : Below are given passages followed by several possible inferences which can be drawn from the facts stated in the passage. You have to examine each inference separately in the context of the passage and decide upon its degree of truth or falsity. Mark answer

- if the inference is 'definitely true', i.e., it properly follows from the statements of facts given.
- if the inference is 'probably true' though not 'definitely true' in the light of the facts given.
- if the 'data are inadequate', i.e., from the facts given you cannot say whether the inference is likely to be true or false.
- if the inference is 'probably false', though not 'definitely false' in the light of the facts given; and
- if the inference is 'definitely false', i.e., it cannot possibly be drawn from the facts given or it contradicts the given facts.

PASSAGE 1

One of the promising features of the current market is that domestic institutions seem to have turned buyers after a very long time. They have been net buyers this month with inflows exceeding by ₹ 80 crore till early this month. That's admittedly a small amount, but its significance lies in the fact that domestic institutions have been net sellers every

month this financial year except in September when their net purchases amounted to a microscopic ₹ 28 crore. This financial year's net sales by domestic institutions amounted to ₹ 2964 crore, which has substantially offset the net inflows of ₹ 3187 crore by FIIs. The net purchases by domestic institutions could indicate that money is once again flowing into equity funds, eager not to miss the widely expected rally. Part of this reason could be a shift in investor portfolios, as people lighten up on debt and put that money into equity.

- Domestic institutions have been consistently selling only in all the months in this financial year.
- FIIs bought more than what was sold by domestic institutions this financial year.
- The equity market is expected to experience a subdued activity in near future.
- The activities in equity market has direct relationship with the debt market.
- It is expected that in the early next financial year the gap between the net sales and net purchases will reduce substantially.

PASSAGE 2

One of the greatest advantages a company has over its competitors is system of distribution and product support, i.e., the dealer network. Dealers play a vital role in helping a

company build and maintain close relationships with customers and gain insights into how they can improve their products and services to fulfil customer needs. And a company can achieve customer loyalty through dealer loyalty. Therefore, it must make efforts to build their competence for more effective performance. Dealers who are long established members of a company can get close to customers, but to tap the full potential of such dealers, a company must forge extremely close ties with them and integrate them into its critical business systems. When treated this way dealers can serve as a source of market intelligence, as proxies for customers, and as consultants. Although these investments take the usual form of money, it also includes softer aspects such as training and development.

6. The customers are more forthright in giving their feed-back about a product or a service to the dealers, than to the staff of the company or a surveyor.
7. Trusted and loyal dealers are to be made an integral part of the chain of product launching.
8. A company which has a good chain of loyal dealers need not spend money on advertising.
9. The company should insist dealer loyalty to the extent that the dealer will not sell similar products of any other company.
10. Trusted dealers are the direct link between the company and the customers.
11. Developing a network of dealers is more useful while launching a new product or service.

PASSAGE 3

From the beginning of the new year, the good news continues on the economic front. Following on the heels of encouraging GDP growth figures for the second quarters, we now have happy tidings on the trade front as well. November 2002 saw the country's exports record a healthy 16% increase compared to the corresponding period last year. With this, the growth rate in exports for the first eight months of the current fiscal now stands at a robust 16%. Of course part of the reason for this apparently encouraging performance is because of the base effect—exports actually fell 0.8% during 2001-2002. But that is only part of the reason. For the rest, recovery in global trade and to give credit where it is due, concerted efforts by exporters have played no small role.

12. The percentage growth in exports during 2002-2003 was mainly due to the decreased volume of exports during 2001-2002.
13. The efforts put in by the Indian exporters were comparatively less than their counterparts in developed countries.
14. There has been substantial increase in the extent of trade all over the world during the last financial year.
15. During 2001-2002, the quantum of the country's exports was about three-fourths of that in 2002-2003.
16. There has been a consistent drop in quantum of exports during last three years.

PASSAGE 4

Logically these are rules of conduct. Every country has laid down comprehensive series of practical rules for citizens for resolving mutual contradictory rights and interests. Most of these rules have been laid down to sustain social activities. For instance, many countries have laid down rules

to protest against such unsocial activities as theft, attack and murder. These rules are backed by judicial system and executory institutions, which look after the people who obey the rules and also who violate the rules. Wherever the human behaviour is involved such rules are not only for namesake but are necessary also.

17. There is no need to have any machinery to ensure strict adherence to the rules by citizens.
18. There is no need of any rules if individuals do not have to interact with each other.
19. Human beings are susceptible to violate rules.
20. Without rules, human behaviour degenerates into anarchy.
21. There are no rules in countries where citizens' interests and rights do not contradict.

PASSAGE 5

In the initial years, trade policy in our country was primarily aimed at regulating imports having regard to the nascent stage of country's development and the need to encourage domestic production through import substitution measures. However, with the onset of liberalisation the importance of globalisation through trade and making exports the engine of growth of economy has been recognised. Export promotion is now a continuous and sustained effort and specific steps in this direction have been taken and achievements have been made in recent years.

22. Achievements made in the economic growth are attributable to maximum possible export and minimum or almost negligible import.
23. At present, there are no regulatory clutches on exports as exports is recognised as the main force behind economic growth.
24. It is not appropriate to give the credit of economic growth to export.
25. Before the implementation of the idea of liberalisation, our trade policy was not much in favour of free import / export.
26. Import used to affect domestic production in earlier years.

PASSAGE 6

According to the latest numbers, the core sector saw terrific (5.5 per cent) growth recently. This could be a statistical aberration or a flash in the pan. But steel prices are rising and this could be the sign of genuine core sector demand. It will be interesting to see if steel prices do maintain an upward trend. That would be a confirmation of sustainability. If steel is indeed in a situation of high demand, it is a given that downstream manufacturing will be doing well. Core sector industries such as heavy construction, mining, steel, etc. are classified as cyclicals. However, the downtrend has lasted so long that one was afraid that these industries were in permanent decline. One doesn't know whether the apparent improvement will translate into rising stock prices over the long term.

27. The downstream manufacturing units are expected to have a slowdown in near future.
28. For the last few years the core sector has projected a modest growth.
29. The growth in core sector in the recent past was much below 4 per cent.
30. The steel prices will show continuous increase during next few months.
31. The price of steel depends on the activities in the core sector.

PASSAGE 7

Construction industry in India has always enjoyed a special position. We have proved that India is in tune with the times and has not left any stone untouched to compete against the best in international market. Yet, it is the time when other powers are paying attention to developing this sector internationally status. Foundation of an economy lies on its infrastructure. Construction industry has to play a vital role in power, port, road, house construction, railways and industry. Labour-intensive Indian construction industry has to pass through acute changes although it is a bit late. It has to face challenges like advanced designing, odd decision and a growth of demand of work in time, greater mechanisation and intensive construction prevalent in developed countries. The emphasis is laid on modern techniques adopted in construction and high quality in less time.

32. Indian companies can put their gain to maximum by adopting modern equipment and by reducing the time of project.
33. The policy-makers of India have failed to understand the importance of construction industry.
34. The Indian construction companies have to establish themselves in international market.
35. Construction industry in India has been labour-oriented for years.
36. The construction industry of developed nations is of better quality compared to India.

PASSAGE 8

Cotton acreage in India during the current year has fallen by 10% as cotton growers have moved on cultivation of other cash crops. This is the result of the cotton glut in world markets post-September 11 and the consequent slowdown in the world economy. But this scenario brought with it benefits to one segment of the industry — yarn manufacturers as they get higher prices for their produce. Some yarn manufacturers had stocked up low-priced cotton last year. The combined effect of all this is evident in the rise in net profits and net margins of yarn manufacturers.

37. World economy witnessed an upward trend during pre-September 11 period.
38. The farmers will again grow cotton next year due to increased price of cotton yarn.
39. Land used for growing cotton in India is conducive to grow other cash crops.
40. The yarn manufacturers have marginally suffered during post-September 11 period.
41. There has been a huge drop in the supply of cotton during the current year.
42. There has been shortage of cotton in the world market last year.

PASSAGE 9

In India the asbestos industry is growing and employs more than 15,000 people in 75 units which are spread over several states like Gujarat, Madhya Pradesh, Maharashtra, Andhra Pradesh, etc. Surprisingly, advanced countries are banning cancer-causing asbestos products, but multinational companies are from those countries which are setting up units in developing countries like India. One reason is lack of awareness in the society and indifference of the government machinery of these countries. Prolonged exposure to asbestos dust and fibres can cause lung cancer but most workers in India are too afraid to protest for fear of losing jobs. Some of these factories are operating in Mumbai.

Quite a few of the factories in India are not known to take adequate precautions to protect workers from asbestos dust. The Government is taking several steps to provide medical inspection of workers. In fact it has amended Factories Act to extend the provision to even those factories employing less than 10 workers.

43. The asbestos industry is one of the largest industries in India.
44. The asbestos industries in India are located in a few metropolitan pockets only.
45. The advanced countries are concerned and careful to protect health of their people.
46. The demand for asbestos products appears to be growing in India.
47. The Governments of developing countries appear to be not taking appropriate measures while granting permission to set up production units of multinational companies in their countries.
48. The asbestos industry offers better salaries in India as compared to other hazardous industries.
49. The regular medical inspection and treatment of asbestos workers has improved the health status in advanced countries.
50. The workers from asbestos industries do not protest against the health hazards and lack of medical facilities as most of them do not suffer from asbestos dust.

PASSAGE 10

The prospects for the Indian economy this year will be influenced by the behaviour of the monsoon and expansion of commerce and trade. The Tenth Plan has envisaged the growth target of 8 per cent. If the agriculture sector does well and the world trade conditions improve, then it is possible to achieve a growth of 6-7 per cent. We need to improve our economy and aim at higher rate of growth in order to feed our population, maintain the standard of living and improve the quality of life. It is now more than 10 years we adopted reforms. We need to go forward in liberalisation but we cannot throw open the market for everything. There are sectors like village industries which need protection.

51. The economic growth last year was below 6 per cent.
52. Free market strategy is beneficial for India only in selected sectors.
53. The current trend of liberalisation is good enough to sustain about 6 per cent growth.
54. The economic growth in the current year will entirely depend on agricultural production.
55. The world trade conditions have major impact on Indian economy.

PASSAGE 11

Pollution amounts to slow murder. Regular exposure to industrial and vehicular pollution leads to life-threatening diseases like asthma, heart problems, cancer and various other disorders. Therefore, nobody has the right to pollute, rich or poor. Industrial and vehicular pollution are growing rapidly across the country. It is not just metropolitan centres that are heavily polluted today but also small and medium towns. Pollution is growing faster than the economy. This is because the western technological model, built on heavy use of energy and materials, is an inherently highly toxic model. It produces huge amounts of toxic pollutants, which can be controlled only if there is careful choice of technology and there is considerable discipline in its use.

56. The spread of pollution has gathered momentum in the recent past.
57. The pollution level in the western world is considerably more than that in India.
58. Proper planning in use of modern technology leads to less pollution in the environment.
59. The industries which use higher level of energy create more pollution.
60. The smaller industrial units contribute proportionately to higher pollution.

PASSAGE 12

The havoc of recurring famines and the subsequent impact of devastating floods are major impediments in the path of social and economic progress of India. No doubt, the nation has made great strides in the judicious use of water — whether it is irrigation to fulfil the objective of food security or water conservation for rain-fed crops or drinking water or groundwater for industrial and agricultural purposes. However, the demand for water is more than the available and sustainable supply. It is so because water resources are not managed by integrated suitable methods for multipurposes.

61. Management of water resources by integrated method is the need of the hour.
62. Unavailability of adequate water has adverse impact on the economic growth in India.
63. There is no shortage of sustainable water for different uses in India.
64. India has achieved success in channelising its water resources.
65. The practice of water conservation has been started in India recently.

PASSAGE 13

The Noon Meal Scheme (NMS) in Tamil Nadu has grown to gigantic proportions today covering students from pre-school to school children upto 15 years of age. Recent studies have seen positive impact in the nutritional status of the children due to the Noon Meal Scheme (NMS). Sample surveys in the high-literacy districts have concluded that NMS has a definite impact on school attendance and dropout rate.

On the employment front, the NMS is claimed as the single largest employment programme for the rural areas with more than 1.6 lakh of people, mostly women, employed as organisers, cooks and helpers.

66. The NMS is applicable to all the children in Tamil Nadu up to age of 15 years.
67. The NMS is run by only women and children.
68. In the high-literacy districts of Tamil Nadu, school attendance seems to have improved after introduction of NMS.
69. The NMS is also being run in big cities and towns of Tamil Nadu.
70. The food items supplied under NMS are very cost-effective.

PASSAGE 14

India suffers from five major problems in dealing with the disabled persons who account for 10 per cent of the country's total population.

One may not be aware that one in every six persons in the world is an individual with disability, that more severely disabled people live in developing countries, that daily 2300 persons are added to the global population of persons with disabilities due to trauma and injury; and that between 1992

- and 2025, the number of persons with disabilities in the world is expected to double. It is predicted that developed nations will record a 14 per cent decrease while developing countries will show 47 per cent increase by the end of 2025 A.D.
71. India has developed perspective plan to reduce by 10% the number of cases of disabled persons.
72. The number of disabled persons in developing countries is going to increase at an alarming rate.
73. Developed countries seem to be taking good preventive measures to control its number of disabled persons.
74. By the end of 2025 the developed nations may not have even one per cent of its population suffering from disabilities.
75. The number of cases of disabilities because of trauma and injury is quite negligible.

PASSAGE 15

Not only the smoker, but individuals surrounding him/her can be harmed by tobacco smoke. Children are put further at risk since they are three times more likely to smoke if their parents do.

As far as smokers are concerned one out of every two smokers, who start at a young age and continue smoking throughout their lives, will ultimately be killed by a tobacco related illness. With prolonged smoking, smokers have a death rate about three times higher than non-smokers at all ages.

Stopping smoking decreases health risks associated with tobacco use. It can decrease the burden of diseases such as heart or respiratory diseases. There are clear health benefits including longer life, even for those who quit smoking at the age of 60 and above.

76. Those smokers who start smoking regularly at a young age are less likely to stop it.
77. Non-smoking adults who surround smokers constantly are less likely to be harmed.
78. Non-smokers who are victims of passive smoking have one-third death rate as compared to smokers.
79. Stopping smoking at an old age does not reduce the chances of health risks.
80. If parents stop smoking when their children are young, then the children are less likely to give up smoking.

PASSAGE 16

The Indian economy, despite weak monsoons, is expected to be among the faster growing economies of the world. The Indian equity markets are currently attractively poised with the sensex at low P/E of about 12, making valuations very attractive. Interest rates are at a historic low and may probably go further down, with plenty of surplus liquidity in the system, improvement in business fundamentals and a growing interest in the disinvestment programme. However, despite these positive factors, the Indian equity markets have declined on account of concerns on the US economy and markets and also due to the persisting supply-demand mismatch in the market despite good liquidity in the system.

81. The low interest rates have resulted in availability of more funds to be deployed in the equity market.
82. Indian equity market has never been so attractive to foreign investors in the past.
83. Low interest rate regime has considerably weakened the strengths of business establishments in India.
84. The Indian economy is largely dependent on the status of US economy.
85. There have been few takers in the equity markets in the recent past.

ANSWER KEY

1	(e)	10	(a)	19	(a)	28	(b)	37	(c)	46	(b)	55	(a)	64	(b)	73	(a)	82	(c)
2	(a)	11	(a)	20	(a)	29	(a)	38	(d)	47	(a)	56	(b)	65	(d)	74	(c)	83	(d)
3	(d)	12	(e)	21	(c)	30	(c)	39	(b)	48	(c)	57	(c)	66	(a)	75	(d)	84	(c)
4	(b)	13	(c)	22	(e)	31	(a)	40	(e)	49	(c)	58	(a)	67	(e)	76	(c)	85	(b)
5	(c)	14	(a)	23	(b)	32	(a)	41	(b)	50	(e)	59	(a)	68	(a)	77	(c)		
6	(c)	15	(d)	24	(d)	33	(e)	42	(e)	51	(b)	60	(c)	69	(c)	78	(d)		
7	(a)	16	(d)	25	(a)	34	(e)	43	(c)	52	(a)	61	(a)	70	(c)	79	(e)		
8	(b)	17	(d)	26	(a)	35	(a)	44	(e)	53	(b)	62	(a)	71	(c)	80	(d)		
9	(c)	18	(b)	27	(d)	36	(c)	45	(a)	54	(e)	63	(e)	72	(a)	81	(a)		

Hints & Explanations

- (e) See the sentence "One of the... long time".
- (a) See the sentence "This financial... by FIIs".
- (d) Shift in investor portfolios and emerging positive scenario make the inference probably false.
- (b) See the last part of the passage.
- (c)
- (c) We have no such data on the basis of which such a comparison can be made.
- (a) From the fifth sentence it can be inferred.
- (b) As loyal dealers can be used as good agents to improve their product sale and consultants, it may be inferred. But as nothing is given about the benefits of advertising, we have categorised it as Probably True.
- (c) What the criteria to choose a loyal dealer are can't be inferred from the given passage.
- (a) From the second sentence it can be inferred.
- (a) From the given passage it can be directly inferred.
- (e) According to the passage, base effect was not the main cause behind the percent growth in exports during 2002-03.
- (c) The passage does not say anything about comparison of the efforts put in by Indian exporters and their counterparts in developed countries.
- (a) We are told about "recovery in global trade".
- (d) Though we do not have figures for the entire year, the 16% growth in the first eight months does not seem to lead us anywhere near this.
- (d) Robust growth in exports, and happy tidings on the trade front seem to make the inference probably false.
- (d) The passage says that the rules are backed by a machinery "judicial system and executory institutions". So it appears such a machinery is necessary.
- (b) Rules are necessary if there is interaction. So, it appears, from the tenor of the passage, they are not necessary if there is no interaction.
- (a) Why is there a need for rules of conduct for human beings? The assumption is that human beings are susceptible to violate rules. Hence, the inference is definitely true.
- (a) Why is there a need for rules? The objective is to ensure smooth and proper functioning of social life. What will happen in the absence of rule? A state of disorder due to lack of control. Hence, definitely true.
- (e) The second part—"minimum or almost negligible import"—makes the inference definitely false. Imports are inevitable in an era of globalisation.
- (b) It is clear from the passage that specific steps have been taken to promote export and achievements have been made in recent years. Hence, it appears that the presence of regulating clutches is not likely.
- (d) See the sentence "If steel is indeed in will be doing well". Since, price of steel and its demand are rising therefore, it is likely that downstream manufacturing units will do well in near future. Hence, inference is false. But we are not sure about it, hence probably false.
- (b) Since, the growth in core sector has been termed as 'terrific' growth, the possibility is that the last few years the core sector has projected modest growth. Hence, the inference is likely to be true, i.e., probably true. [Note that 'downtrend' does not necessarily mean negative growth].
- (a) The word "terrific" used in the passage makes the inference definitely true.
- (c) Rising steel prices at present do not necessarily mean that the trend will continue during next few months.
- (a) From the third and second last sentence it can be inferred.
- (e) It contradicts the first two sentences of the passage. Hence, it is definitely false.
- (e) The Indian construction companies have already established themselves in international market.
- (a) The passage talks of "labour-intensive Indian construction industry".
- (c) It can't be compared from the information given in the passage.
- (c) According to the passage, world economy witnessed a slowdown during post- September 11 period. But what was the trend of growth of the economy during pre-September 11 period is not known.
- (d) This will benefit the yarn manufacturers, not the farmers, unless the latter act as the former also.

39. (b) That is why the cotton growers seem to have switched over to other cash crops.
40. (e) Note that yarn manufacturers get benefited in post-September 11 scenario.
41. (b) The passage says nothing about the supply of cotton during the current year. But lack of enthusiasm in cotton growers, fall of cotton acreage and rise in the price of yarn makes the inference probably true.
42. (e) The price of the cotton was very low last year which attracted the yarn manufactures to store cotton. Therefore, the case of shortage is ruled out.
43. (c) As nothing is given about other industries, hence, comparison of asbestos industries with others can't be established.
44. (e) It is clearly given in the very first line of the passage that these industries are located in Gujarat, Madhya Pradesh,...
45. (a) It can be inferred from the second line of the passage.
46. (b) As it is given in the first line that asbestos industry is growing, we may infer that its demand too is growing in India. But it is possible that India is exporting asbestos to those countries where its manufacturing is banned. Hence, probably true.
47. (a) From the second line of para I, it can be inferred.
48. (c) Nothing is given about the salaries to these employees.
49. (c) Nothing regarding this is mentioned in the passage.
50. (e) From the clause *afraid to protest for fear of losing job* the given reason can be nullified.
51. (b) The passage does not say anything about last year's economy growth rate. But the sentences "If the agriculture sector quality of life" make the inference probably true.
52. (a) That is why protection is being sought for some industries like village industry.
53. (b) To adopt liberalisation as a measure for reforms makes the inference probably true.
54. (e) See the sentence, "This prospects commerce and trade. This sentence implies that contribution of commerce and trade is also necessary for the growth of economy of this year.
55. (a) See the sentence: "If the agriculture sector ... 6 - 7 per cent."
56. (b) From the fourth sentence it may be inferred. But we can't say it is definitely true.
57. (c) It is possible that Western countries practise discipline in the use of technology and choose it carefully. So nothing can be inferred about the pollution level in the western world on the basis of the given passage.
58. (a) From the last sentence it can be inferred.
59. (a) From the second last sentence it can be inferred.
60. (c) Pollution depends upon use of energy and materials and also on the technology used.
61. (a) To meet the demand of water, proper management of water is essential.
62. (a) Uses of water for different segments implies that proper supply of water is indispensable for these segments which have direct link with economic growth of the country.
63. (e) The core concern of the passage is the lack of proper management of water. Also, the passage clearly mentions that demand is more than sustainable supply. Hence, the inference is definitely false.
64. (b) The passage clearly mentions that the nation has made greater strides in the judicious use of water. Hence, the inference seems quite plausible.
65. (d) If the nation has made greater strides in water conservation, it is not expected to have started recently.
66. (a) From the first line of the passage it can be inferred.
67. (e) From the last line of the passage it can be derived. The term *mostly* used in that line confirms this.
68. (a) From the last line of the first para it can be inferred.
69. (c) Since the passage talks of employment being provided by NMS in rural areas, we know that NMS is being run in villages. But the passage says nothing about towns.
70. (c) The cost of these food items is nowhere mentioned in the passage.
71. (c) The passage simply depicts the disability scenario. Remedy plans are not suggested.
72. (a) 47 per cent increase must be an alarming rate.
73. (a) That is why the projected rate will decrease.
74. (c) We don't know what percentage of the population of developed countries in 1992 was disabled.
75. (d) We are not aware of absolute number of the total persons disabled. Yet, one assumes, an addition of 2300 persons a day from this particular group should not be negligible.
76. (c) We have no information regarding the likelihood of stopping smoking by those who start early.
77. (c) The comparison is not clear.
78. (d) True, we can't categorically refuse the statement. But, according to the passage, the "one-third" criterion applies to non-smokers in general. Here we are asked to pass our verdict in the case of "non-smokers *who are victims of passive smoking*." Now, passive smoking is also expected to contribute to death rate.
79. (e) The passage says "there are clean health benefits"
80. (d) The passage talks only about the chances of starting smoking being proportional to the fact that parents smoke. One can't say with conviction whether a similar relationship holds good in the case of *giving up* smoking. But a general idea of the passage suggests that such a relationship should hold good.
81. (a) Passage clearly says surplus liquidity in the system is the result of historic low interest rates.
82. (c) On the one hand, we are told that the "Indian equity markets are currently attractively poised" On the other hand, the passage ends on a negative note.
83. (d) No explicit relationship has been mentioned. However, low interest rate regime has been treated as a "positive factor".
84. (c) See the sentence, "However, despite ...liquidity in the system."
85. (b) Passage says about decline in Indian equity markets. This factor strengthens the possibility of few takers in the equity market.



Statement & Arguments

In this chapter, we are going to study arguments. In fact, this is the study what we call the basics of all logic. Do you know what do we do in logic? In logic, we advocate certain point of view with the help of some evidences and certain assumptions and that is called argumentation. This is a fact that almost all segments of analytical reasoning are somehow associated with argumentation and this is the reason why study of argumentation is so important for the examinees preparing for various competitive examinations.

Concept of Argument

A sequence of two or more sentences (or statements)/phrases/clauses that includes a conclusion (or claims), is called an argument. This conclusion of the argument is based on one or more than one statement and these statements may be called premises (propositions). Apart from this, arguments may also have some hidden premises, which may be called assumptions. Let us see the following example:

Example:

Mr. Sharma bought a large quantity of sweets, he must have celebrated some occasion.

Explanation: The foregoing example has two parts:

Part I: “Mr. Sharma bought a large quantity of sweets.”

Part II: “He must have celebrated some occasion.”

Here, ‘Part II’ is the conclusion part of the given argument. How has this conclusion (part II) been arrived at? In fact, this conclusion has come out with the help of supporting evidence or premise that is part I of the argument. Did you notice that in this argument part I and part II (Premise and conclusion) are connected by a hidden premise which is not explicitly stated. That hidden premise is “a Large quantity of sweets is bought only on occasions” and this premise may be called an assumption. Hence, in reality the given argument has three parts.

Part I: (Premise) Mr. Sharma bought a large quantity of sweets.

Part II: (Conclusion) He must have celebrated some occasion.

Part III: (Assumption or hidden premise) a Large quantity of sweets is bought only on occasions.

Point to be noted is that part III is an assumption (a hidden premise) that connects part I (premise) and part II (conclusion) and hence, it is a missing link between part I and part II of the given argument.

No doubt that above mentioned example brings to us the basic characteristics of argumentation but it also leaves some questions before us like:

(i) Is this assumption or hidden premise always present in an argument?

(ii) Is the number of premise only one is an argument?

Our answer for both the questions will be a big ‘No’. Why so? Let us see the explanations for both the questions given below:

(i) **Explanation for question:** Just consider an argument given as “Mr. Sharma bought a large quantity of sweets. A large quantity of sweets is bought on occasions only. Hence, he must have celebrated an occasion”.

Here, we see that this argument has no assumption (hidden premise) because the premise or supporting evidence (Mr. Sharma bought a large quantity of sweets) and conclusion (Hence, he must have celebrated an occasion) are connected by an explicit statement (A large quantity of sweets is bought on occasions only). Remember, an assumption is a hidden premise. It does mean assumption is a missing link in the chain of logic. Therefore, if an argument is complete in itself and does not have any missing link, then it will not have any assumption. In the given argument, the explicit statement (A large quantity of sweets is bought on occasions only) connects premise or supporting evidence and conclusion to make the argument assumptionless.

(ii) **Explanation for question:** Just consider the argument given as “Vandana is tall. She is slim and has beautiful eyes. She has long hair and charming face as well. So, Vandana is a beautiful girl.”

Here,

1st premise: Vandana is tall.

2nd premise: She is slim and has beautiful eyes.

3rd premise: She has long hair and charming face as well.

Conclusion: So, Vandana is a beautiful girl.

This proves that an argument can have more than one premises. Further this explanation is also a reply for question(i) as the given argument has no missing link. This argument is complete in itself and hence, it is free of hidden premise or assumption.

Ways of Argumentation: So far, you must have understood the basic concept of argumentation and come to the conclusion that an argument is usually made to make strong a particular point of view in order to convince someone about something.

(i) **Argument based on Analogy:** Analogy based arguments are often used to make strong a particular point of view. In fact analogy is an inference drawn out of a resemblance between particular things, occasion or events (that are known) to a further (unknown) resemblance. For example, if we find a fat-woman eating very much and meet in another woman who is also fat then, by analogy, we expect that

another fat woman would also be eating very much. We can say it in another way that if x, y, z, q are any entities and u, v, w are any attributes then the analogical argument may be represented in the following form :

x, y, z, q all have the attributes ' u and v '

x, y, z have the attribute ' w '

$\therefore q$ probably has the attribute ' w '

EXAMPLE 1. Sachin scored a century in the 1st test against Australia and so did Dhoni; Sachin scored more than 150 runs in the 2nd test against Australia and so did Dhoni; Sachin has scored a double century in the 3rd test against Australia. So, Dhoni will also hit a double century in this 3rd test match against Australia.

EXAMPLE 2. Australia and England have both lost to India in football and hockey. So, India should defeat both the countries in cricket.

Findings: In Example 1, Sachin and Dhoni performed very well in the 1st two matches against Australia. In fact, it seems that Dhoni did the same thing what Sachin did in the 1st and 2nd test. As Sachin has played a great inning scoring a double century in the 3rd test match, hence on the basis of similar situation the conclusion has been made that Dhoni will also make a double century. But we also know that performing good or bad is a matter of chance. It is also a matter of chance that two player (Sachin and Dhoni) performed equally good in the last two test matches. Therefore, we cannot say definitely that Dhoni will make a double century because Sachin has done so. In fact, we can say that he may or may not hit a double century. It can also be said that future performance can not be predicted on the basis of past performances. Thus, it is clear that this analogical argument does not seem strong. Similarly, in case of example (2) we can say that India should defeat Australia and England in the game of cricket only because India has defeated both the countries in two different games (Football and Hockey). Hence, the argument given in example (2) also seems weak argument.

Final comment: Analogy based arguments are weak arguments.

(ii) **Argument based on cause:** Such arguments relate a cause with a result. Let us see the examples given below:

EXAMPLE 1. India will win the world cup 2011 because it is the most balanced one day team in the world in present day cricket.

EXAMPLE 2. He came back home late night. He must have gone to watch a movie.

Findings: We see in the foregoing examples that effects have been related with causes. In example (1), the cause (the most balanced one day team) well supports the effect (India will win the world cup) and hence, it is a good argument. But in Example (2) it is argued that since the effect (coming home late night) has taken place, the cause (watching movie) must have occurred. But point to be noted that effect may occur (he may come home late night) because of the other reason as well. Hence, the argument given in the Example (2) is not a good argument or it may be called a weak argument.

Final Comment: Arguments based on causes may be strong or weak or fallacious.

(iii) **Argument based on example:** Sometimes an argument is given by citing some example/examples as premise/premises. Let us see the following examples that will illustrate the concept:

EXAMPLE 1. We should use X brand of cold cream because X brand is used by 'Madhuri Dixit' the famous bollywood actress.

EXAMPLE 2. We must like Roses because Chacha Nehru loved Roses.

Findings: In example (1) we have arrived at the conclusion (we should use X brand of cold cream) by using the premise as example (X brand is used by Madhuri Dixit). In example (2) the conclusion (we must like roses) has come out by using the premise as example (because Chacha Nehru loved it). Here, we can say in case of Example-1 that using certain brand by a particular actress, does not mean that X brand will be liked by all people as likes and dislikes are the personal choices. In example (2), the case is also the same. Everyone cannot like the roses only because Chacha Nehru loved roses.

Final comment: Example based arguments are either weak or fallacious.

Note: In Example-1 and 2, conclusion part is the start of the arguments. Sometimes you can also see that conclusion is given in the middle. It does mean that conclusion part is not always in the last. But it depends on the style of writing of different writers/authors.

(iv) **Argument based on blind advocacy:** Such argument is like a salesman's argument who argues only for the purpose of selling a particular product. He speaks of the advantages and the benefits of his product. Hence, a salesman argument is one where a conclusion comes out because of the positive points and the benefits that it leads to. Such types of arguments are very common in day to day life.

EXAMPLE 1. Exercise is good for health and students need good health to put hard labour in their studies. This is the reason why every educational institution must have a gym.

EXAMPLE 2. There should be a ban on strikes as they disrupt the normal life of the common people.

Findings: In example-1, the conclusion is that every educational institution must have a gym because exercise is good for health and students need good health. No doubt the good health ensures good mind but it is not practically feasible for every educational institution to have a gym. Hence, Example-1 will be a weak argument. In example-2, ban on strikes is being demanded and this demand is reasonable as argument has negative feature of strike. Hence, example-2 is a strong argument.

Final comment: Such arguments can be both weak or strong.

(v) **Argument based on chronology:** Very often we see that a conclusion is drawn only on the basis of chronological order of some events. Let us see the examples given below:

EXAMPLE 1 Computer was invented later than television. Therefore, television has a technology inferior to that of a computer.

EXAMPLE 2 Song 'B' was released two months earlier than song 'C'. So the former could not be the copy of the latter.

Findings: In example-1, it is assumed that a technologically inferior object always comes before the superior objects. This may be true most of the time but this is not true in 100% cases. Hence, the conclusion given in example 1 is questionable making the given argument a weak one. In 2nd case, it is the possibility that song 'C' was recorded earlier although released later than the song 'B'. Hence, in such a situation the possibility of copying can not be denied and this makes argument given in Example-2 a weak argument.

Final comment: This type of arguments are usually weak and unconvincing.

By now, all the standard ways of argumentation have been discussed in detail. We will now take a look at the key words so that you could easily take out the conclusion part from the given argument. The key words are given below:

So,	Hence,
Therefore,	Consequently
Thus,	

Apart from above given key words, the conclusion part can also be identified by the certain phrases given below:

As a result
It can be inferred that
Which means that
Which suggests that
Which proves that
Which shows that
It follows that

If you find one of these key words/phrases before any sentence then take that sentence as your conclusion. If the key words/phrases are absent, then apply your common sense and take out the sentences that can follow one of these key words/phrases and that sentence will be your conclusion.

After having concept of argument we can easily move on to the problems of reasoning which are asked in various exams wherein examinee is required to evaluate the forcefulness of the arguments. On the basis of a statement, arguments are given in the questions and the candidate is required to find out:-

- (a) Which argument is strong.
- (b) Which argument is weak.

We know that "strong" arguments are those which are both important and directly related to the question. "Weak" arguments are those which are of minor importance and also may not be directly related to the question or may be related to a trivial aspect of the question. To find out if a given argument is strong or not we will move according to the solution steps given below:

Solution steps

- Step I:** Do the preliminary screening of the given arguments.
- Step II:** Find out if the given arguments are really follow or not.

Step III: Find out if the given arguments are really desirable (in case of positive argument)/ harmful (in case of negative arguments)

Step IV: Find out if the argument and suggested course of action are properly related.

Now, we will discuss all the steps one by one.

Step I: Preliminary screening of the given arguments

At the very 1st level we test how weak an argument is. If at the very 1st level we find the argument weak, then there is no need to go for further steps. In many cases the weak arguments are very clearly visible and we do not need to think much before arriving at the conclusion that they are weak. Such type of arguments come under the following category:

- (i) **Doubtful/Ambiguous arguments:** Such type of arguments leave a confused and doubtful impression on our mind. In fact, these arguments do not make it clear that how they are related to a course of action. They also do not give the clear idea about what exactly the author or writer wants to say.

EXAMPLE 1

Statement: One should enjoy every second of one's life because everyone has to die one day.

Argument: No, because one must think about fulfilling one's ambition in life and should not think about death as one's goal.

Comment: Here, statement and argument are not properly related. Statement suggests to enjoy every second of life. Enjoying life does not mean that one should not follow the path of fulfilling one's ambition. In fact a person can enjoy his/her life in the course of fulfilling his/her ambition. Suppose ambition of a person is to be a cricketer and to achieve something extraordinary in this field. It does mean he will enjoy the every moment he spends in the process of being a cricketer and also the moments he spends after being an established cricketer. In fact, we can say without enjoying work of our own choice, we can not fulfill our ambition. Further the given statement does not give any indication that one should see death as one's goal. Hence, in this case statement and argument leave doubtful and confusing impression on our mind making the given argument very weak.

- (ii) **Useless/superfluous arguments:** Such arguments do not do a deep analysis of the given statement. They simply 'glance' at the statement and put them under the category of weak arguments.

EXAMPLE 2

Statement: Cricket must be banned in India.

Argument: Yes, it has no use.

Comment: Here, the argument does not go deep down into the matter making itself a weak argument.

- (iii) **Arguments in the form of question:** Such arguments are very weak in nature as the arguments given in the question form are without any substance and have no technique of argumentation. In fact, in such arguments arguers throw back the question.

EXAMPLE 3

Statement: Should import be banned in India?

Argument: Yes, why not?

Comment: Here, statement is given in the form of question and arguer throws back the question without giving any convincing statement in the form of argument. Hence, the given argument is very weak.

- (iv) **Very simple arguments:** Such arguments are very simple in nature. They are given in small sentences but do not get any support by facts or established notions. Further, such arguments are not ambiguous and they are properly related with the statement but because of their simple nature they come under the category of weak arguments.

EXAMPLE 4

Statement: Enjoying life should be the principle of our life.

Argument: No this thinking hardly enable us to do anything.

Comment: Here, the given argument is only a simple assertion which contains no substance. Here, it will come under the category of weak arguments.

Step II: Finding out if the given arguments really follow or not.

If the arguments are rejected at the preliminary step then we do not need to test them further. But, if the preliminary step has been cleared, then we move on to step II.

Case I: When the result follows

At the step II, the result will follow in the cases given below:

- (i) **Established fact:** An established fact does mean that it must be universally acknowledged/scientifically established. A result will follow a course of action if it is an established fact that this particular result follows this particular course of action.

EXAMPLE 1.

Statement: Should drinking be avoided?

Argument: Yes, it contributes to bad health.

EXAMPLE 2.

Statement: Should Tendulkar be selected in the team even after 10 years from now?

Argument: Yes, Tendulkar is one of the greatest cricketers in the world.

EXAMPLE 3.

Statement: Married people should live separate from their parents.

Argument: Yes, living separate will give married people a greater freedom.

EXAMPLE 4.

Statement: Should smoking be promoted?

Argument: No, smoking is injurious to health.

Comment: In the foregoing examples, all the given arguments are expected to follow as they all are established facts. No doubt it is an established fact that drinking badly affects our health (Argument in Example 1)

Further, no one can deny the fact that through his great performances Tendulkar has been recognised by the world cricket as one of the greatest cricketers in the world (Argument: Example 2) and it is now an established fact.

Similarly, living separate from parents ensures greater freedom for married people (Argument: Example 3) and it is an established fact. Its also a truth or established fact that smoking is injurious to health (Argument: Example 4). Therefore, all the arguments presented can be said to pass the test of step II.

NOTE : Point to be noted that arguments given under Example 1, Example 2, Example 3 & Example 4 have passed the step II only so far but it has not yet been determined whether these arguments are forceful or not (strong or not). They will be called strong only when they will pass step III and step IV.

- (ii) **Prediction on the basis of experience:** Such arguments are very near to established facts type of arguments. But, in reality, they are not established facts as they are not yet so universally acknowledged as to be treated as established fact. In fact, such arguments are given on the basis of experiences. Just see the following example:

EXAMPLE 5.

Statement: Captains should not have given their say in selection of national sports teams.

Argument: Yes, it discourages favouritism towards some particular players.

Comment: The result or consequences given in the foregoing example will be a probable result as our experiences suggest this. Hence, this will go for further test.

- (iii) **Logically given arguments:** Such arguments are given on the basis of logic. It does mean that the emphasis here is on the logic and not on the established fact or experience. If we see such type of arguments we can easily predict that such cases have occurred in practice. But when we think over such situations with proper logic and reasoning then we arrive at the conclusion that such an argument may be true. Let us see the example given below:

EXAMPLE 6.

Statement: World leader must try for complete disarmament.

Argument: Yes, complete disarmament will make a war free world.

Comment: The foregoing example gives an argument that is logically convincing: The argument is probable as the logic behind it is that if there will be armless world then there will be a war free world. Hence, the argument passes the step II test and will go for further test.

- (iv) **Notions of truth:** Such arguments are unquestionable truth because of the simple reason of universal acceptance. It does mean that they are the ideas or thoughts already acknowledged by society. This is the reason why they are very similar to established facts in many ways. The following example illustrates this point:

EXAMPLE 7.

Statement: Should marriages between blood relatives be promoted?

Argument: No, it will promote incest which is a sin.

Comment: No, doubt, the given argument seems strong as it is based on prevailing notion of truth that our society does not allow marriages between blood relatives and consider such marriages as a sin. As, the given argument is likely to be strong it will go for next step test.

Case II (When the result does not follow argument will be rejected).

Following are the cases when results do not follow and arguments are rejected at 2nd level test in step II only.

- (i) **Established fact:** If it is an established fact that a particular result will not follow a particular course of action, then the argument will be rejected at step II. Let us see the example given below:

EXAMPLE 8.

Statement: Should smoking be discouraged in the country?

Argument: No, it give relaxation when one get tired and this way contributes to health.

Comment: It is an established fact that smoking is injurious to health and thus, we can say that this argument is incorrect and weak enough to be rejected at step II.

- (ii) **Prediction on the basis of experiences:** If the experiences say that the result will not follow then the given argument will be rejected at the step II. Let us see the example given below:

Statement: Should cricketer A be appointed the next captain of the Indian cricket team?

Argument: Yes, it will end the favouritism in selection of team as cricketer A has made allegations of favouritism against the current captain.

Comment: In the foregoing example, the argument suggests that cricketer A should be appointed captain of the Indian cricket team because it will end the favouritism in the team selection. This suggestion has been given on the basis that A has made allegation of favouritism against the current captain. But the experiences say that there have been so many cases when people did the things what they opposed. Hence, saying one thing and doing other is very common. This is the reason why it can not be made sure that A will not do favouritism in team selection only because he has criticised the current captain for this. It is clear that the given argument is weak enough to be rejected in step II.

Note : This is the exactly opposite to point (ii) in step II (Case I).

- (iii) **Argument with faulty logic:** This is exactly opposite to the point (iii) in step II (case I). Let us see the following example:

Statement: Should the culprits behind the fodder scam in Bihar be punished?

Argument: No, a political vaccum will be created if the culprits get punishment.

Comment: As per the logic, punishing culprits behind the fodder scam in Bihar would please the public and improve the image of the Bihar government. How can it create a political vaccum? This argument has been given with a faulty logic and hence will be rejected in step II only.

- (iv) **Argument violating prevailing notions of truth:** Argument that violates unquestionable notions (Ideas that are universally accepted and acknowledged by society) will be rejected in step II. Let us see the example given below:

Statement: Should marriage in blood relations be promoted in India?

Argument: Yes, if the two mature blood relatives are willing to do so, then they can not be prohibited from doing it.

Comment: In our society, it is widely accepted truth (or universally accepted truth) that the marriages between blood relatives are considered to be a sin as it promotes incest. The given argument violates this prevailing notion of truth and is weak enough to be rejected in step II.

- (v) **Arguments based on examples/analogies:** Very often it is seen that an example or a precedent is made the basis of an argument. But point to be noted that analogy or example based arguments come under the category of bad arguments. It must be cleared that just because someone did something in the past, the same can not be said as pursuable. Let us see the example given below:

Statement: Should everyone be optimistic in Life?

Argument: Yes, Indira Gandhi was optimistic and this is the reason why she became the prime minister of India.

Comment: Here, the example of Indira Gandhi is given that makes the argument very weak. Thus, such type of arguments are rejected in step II.

- (vi) **Arguments based on individual perceptions (or assumptions):** In some cases it is seen that an assumption or view of the author is the substance of an argument. Such arguments neither have proper logic nor substance of established fact. These arguments are called bad arguments and they can be rejected in step II.

Statement: Should India be declared a Hindu Rastra?

Argument: No, it will lead to chaos.

Comment: What message author gives through the argument is view of the author. In fact, declaring India a Hindu Rastra may or may not lead to the result given in the argument. It means that assertion made by argument may or may not follow in actual practice and if the author has a rigid stand on this assertion, it is his/her individual perception or assumption which makes the argument weak enough to be rejected in step II.

Step III: Given arguments are really desirable/harmful

In step II, we come to the conclusion that Example 1, Example 2, Example 3, Example 4, Example 5, Example 6 and Example 7 have passed the 2nd level test and qualified for the step III (3rd level test). Hence, we will take the examples to be qualified for step III one by one:

EXAMPLE 1. Here, the argument is positive and therefore, we have to check the desirability. As, it is a established fact that drinking contributes to bad health and thus it is desirable to avoid it. It is clear how that Example 1 passed the 3rd level test.

EXAMPLE 2. No doubt that at present Tendulkar is one of the greatest cricketers in the world. He will also remain in the list of great ones in the history of the game of cricket. But it is also a truth that he has spent more than 20 years in this game and in three four years he will be a retired cricketer. This is the reason that after 10 years he will definitely not be in team as his selection is impossible. Hence, despite being an established fact the argument is not desirable and is rejected in step III. (Example 2 is a weak argument)

EXAMPLE 3. Here, it is true that living separate from parents gives married people more freedom but at the same time getting freedom at cost of separation from parents is undesirable. Further, separating from parents does mean avoiding duty of taking care of parents. Hence, argument given in example 3 is not desirable and is weak enough to be rejected in step III.

EXAMPLE 4. Marriages in blood relatives promote incest which is a sin and hence harmful for the established norm of society. On the basis of this logic argument given in Example 7 is strong enough to pass the 3rd level test step III.

Now, we have,

Examples qualified for step IV test: Example-1, and Example-4. Rejected examples in step III: Example-2, Example-3.

Note : How to decide a positive argument is really desirable or a negative argument is really harmful, is only the matter of common sense. Just apply your common sense, think over the argument, try to go by proper logic and general norms of society.

Step IV: Finding proper relation between argument and suggested course of action.

What does proper relation between statement and argument mean? In fact, it does mean that argument must be pinpointed on the main issue involved and it should not focus on any irrelevant, insignificant or minor issues. Now, we move on to step IV or final test. As Example-1 and Example-4 have qualified for this test, let us check the three examples one by one:

EXAMPLE 1. Drinking and bad health are properly and directly related. Hence, the given argument “Yes, it contributes to bad health” is a strong argument and this is the final conclusion.

EXAMPLE 2. Smoking and bad health (injurious to health) are directly and properly related. Hence, the given argument “No smoking is injurious to health” is a strong argument and this is the final conclusion.

EXAMPLE 3. Marriages in blood relatives and promotion of incest is directly and properly related. Hence, the given argument “No, it will promote incest which is a sin” is a strong argument and this is the final conclusion.

Now, we have come to the end of this chapter. For the understanding of students, below is given a question format for the examination.

Question format:

Direction: Each question given below is followed by two arguments numbered I and II. You have to decide which one of the arguments is a ‘strong’ argument and which is a weak argument.

Give answer (a) If only argument I is strong.

(b) If only argument II is strong.

(c) If either I or II is strong.

(d) If neither I nor II is strong.

(e) If both I and II strong.

Statement: Should smoking be promoted?

Argument: I: No, smoking is injurious to health.

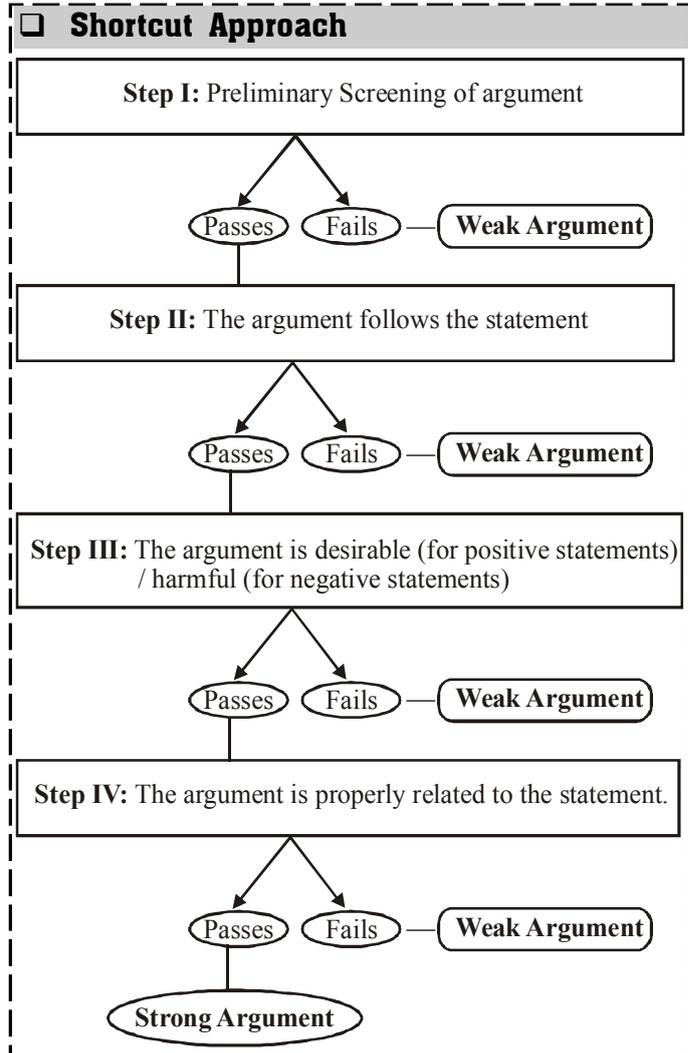
II: Yes, why not?

Solution:

I will follow (the reason already given see Example 4)

II will not follow as it is a question back type of argument and such type of arguments are very weak.

Hence, option (A) is the correct answer.



EXERCISE

Directions (Qs. 1-73):

Each question below is followed by two arguments numbered I and II. You have to decide which of the arguments is a 'strong' argument and which is a 'weak' argument.

Give answer (a) if only argument I is strong.

Give answer (b) if only argument II is strong.

Give answer (c) if either argument I or II is strong.

Give answer (d) if neither argument I nor II is strong.

Give answer (e) if both argument I and II are strong.

1. Should all beggars on the roads in the big cities in India be forcibly sent to villages?

Arguments:

I No, this is grossly unfair and these people may die of hunger if they are sent to villages.

II Yes, these people create a bad impression of our country in the eyes of the foreigners who visit our country and hence, should be removed.

2. Should all the criminals convicted for committing murder be awarded capital punishment?

Arguments:

I Yes, this will be a significant step towards reducing cases of murder in future.

II No, nobody has the right to take any person's life irrespective of the acts of such individuals.

3. Should all the professional colleges in India be encouraged to run their own courses without affiliation to any university?

Arguments:

I Yes, this is only way to create more opportunities for those who seek professional training.

II No, this will dilute the quality of professional training as all such colleges may not be equipped to conduct such courses.

4. Should there be a maximum ceiling imposed on the earnings of an individual in an organisation?

Arguments:

I Yes, this will help equitable distribution of earnings to all the employees.

II No, the organization should have free hand to decide the pay packets of its employees.

5. Should there be a compulsory military training for each college student in India?

Arguments:

I No, this goes against the basic democratic right of an individual to choose his/her own programs.

II Yes, this is the only way to build a strong and powerful nation.

6. Should all such political parties which have less than ten elected members of parliament be derecognised and be debarred from contesting Lok Sabha seats?

Arguments:

I No, this is against the very basic tenet of our constitution.

II Yes, this will make the elections more meaningful as there will be fewer competing candidates in a constituency.

7. Should more smaller states be formed from the remaining bigger states?

Arguments:

I No, a lot of public money will be wasted in the whole process.

II Yes, this will help in better governance and maximising production in both industrial and agricultural sectors.

8. Should the subsidy on petroleum products be further reduced?

Arguments:

I Yes, the present subsidy is a drain on national resources; let the consumer share the burden.

II No, this will have a cascading effect and the prices of all the commodities will sharply increase, creating higher rate of inflation.

9. Should the term of the elected members of parliament be reduced to two years in India?

Arguments:

I Yes, even otherwise the elections are generally held every alternate year in India.

II No, every round of parliament election needs huge amount of money and it's a national waste.

10. Should the course fees of all post-graduate courses run by the universities be increased to the level of IITs and IIMs?

Arguments:

I Yes, this will weed out non-serious students out of higher education.

II No, the poor brilliant students will not be able to join post-graduate courses.

11. Should all students passing out from the government run colleges and desirous of settling abroad be asked to pay back the cost of their education to the government?

Arguments:

I Yes, such students who study on the resources of the exchequer should be discouraged to leave the country.

II No, every citizen has the right to select their place of further study or work and therefore, such a condition is unjustified.

12. Should India support all the international policies of United States of America?

Arguments:

I No, many other powerful countries do not support the same.

II Yes, this is the only way to gain access to USA developmental funds.

13. Should there be a complete ban on use of pesticides in agricultural sector?

Arguments:

I Yes, this the only way to save the underground water from getting polluted with such dangerous chemicals.

II No this will adversely affect the agricultural production and the pests will damage the crops.

14. Should labour reforms be immediately introduced in India?

Arguments:

I Yes, this will help increase the productivity in all the sectors in general and in the public sector in particular.

- II.** No, many other countries have not implemented this so far.
15. Should the subsidy on kerosene be immediately increased further?
Arguments:
I. Yes, this will bring considerable relief to the poorer section of the society as they will be the major beneficiary.
II. No, our economy is otherwise in a difficult stage and it will not be able to withstand any further burden on it.
16. Should all those who have come in contact with the patients suffering from the dreaded infectious respiratory disease be quarantined in their house?
Arguments:
I. No, nobody should be quarantined unless they are tested and found to be infected by the virus causing the disease.
II. Yes, this is the only way to control the spread of the dreaded disease.
17. Should there be only one rate of interest for term deposits of varying durations in banks?
Arguments:
I. No, people will refrain from keeping money for longer duration resulting into reduction of liquidity level of banks.
II. Yes, this will be much simple for the common people and they may be encouraged to keep more money in banks.
18. Should there be a cap on maximum number of contestants for parliamentary elections in any constituency?
Arguments:
I. Yes, this will make the parliamentary elections more meaningful as the voters can make a considered judgment for casting their vote.
II. No, in a democracy any person fulfilling the eligibility criteria can contest parliamentary elections and there should be no such restrictions.
19. Should all those who are found guilty of committing homicide or abetting homicide be either given capital punishment or kept in jail for the entire life?
Arguments:
I. Yes, only such severe punishments will make people refrain from committing such heinous acts and the society will be more safe.
II. No, those who are repentant for the crime they committed should be given a chance to lead a normal life outside the jail.
20. Should there be a restriction on the migration of people from one state to another in India?
Arguments:
I. No, any Indian citizen has a basic right to stay at any place of their choice and hence they cannot be stopped.
II. Yes, this is the way to effect an equitable distribution of resources across the states in India.
21. Should the school teachers be necessarily involved in the census activities?
Arguments:
I. No, this will adversely affect the quality of teaching programme.
II. Yes, the teachers are the best fit for this job.
22. Should India engage into a dialogue with neighbouring countries to stop cross-border terrorism?
Arguments:
I. Yes, this is the only way to reduce cross-border terrorism and stop loss of innocent lives.
II. No, neighbouring countries cannot be relied upon in such matters; they may still engage in subversive activities.
23. Should all the utility services be immediately brought under essential services to avoid frequent agitation and strikes by the employees?
Arguments:
I. No, otherwise how the employees may voice their grievances and demands?
II. Yes, the employees are becoming more and more greedy and they take the general public for ride by striking.
24. Should all the unauthorised structures in the city be immediately demolished?
Arguments :
I. No, where will the people residing in such houses live?
II. Yes, this will give a clear message to general public and they will refrain from constructing unauthorised buildings.
25. Should the railways in India be privatised in a phased manner like other public sector enterprises?
Arguments :
I. Yes, this is the only way to bring in competitiveness and provide better service to the public.
II. No, this will pose a threat to national security of our country as multinationals will enter into the fray.
26. Should the TV channels depicting sex and violence be banned?
I. No. Any ban is against the fundamental right of citizens of a democratic set-up.
II. Yes. Parents feel awkward while watching such serials along with their children.
27. Should promotions in the armed forces be made on the basis of seniority?
I. No. Patriotism is the most important attribute for such promotions.
II. No. It would be an injustice to those juniors who are more deserving and suitable for higher positions.
28. Should automation be restricted only to industrial sector in our country?
I. Yes. In other labour-intensive sectors, our vast unemployed population can be beneficially deployed.
II. No. The automation in other sectors will also yield commendable result to boost our country's economy which will, in turn, take care of unemployment.
29. Should the freedom of press be curbed in a democratic country?
I. Yes. Press, if not curbed, may go to any extent to lead the public astray.
II. No. Why should we do that?
30. Should sex education be included in the syllabus of junior college as a compulsory subject?
I. Yes. It would certainly help in eradicating the existing misunderstanding and make the younger generation physically and mentally healthier.

- II.** No. It will destroy the moral fibre and the highly esteemed value system which we have inherited from our forefathers.
31. **Statement:** Should one close relative of a retiring government employee be given a job in government in India?
Arguments:
I. Yes, where else will the relative get a job like this?
II. No, it will close doors of government service to competent and needy youth.
32. **Statement:** Should purchase of gold by individuals be restricted in India to improve its foreign exchange position?
Arguments:
I. Yes, interference on customers' right and freedom is desirable.
II. No, business interest has to be guarded first.
33. **Statement:** Should teaching of 'Sanskrit' be made compulsory at school level in India?
Arguments:
I. No, where are the trained teachers to teach this language?
II. Yes, we should be proud of our ancient language.
34. **Statement:** Should all education be made free for girls and women of all ages in India?
Arguments:
I. No, this will weaken our present social structure.
II. Yes, this is the only way to bring back glory to Indian womanhood.
35. **Statement:** Should private colleges offering professional courses like Engineering, Medical, Management be banned in India?
Arguments:
I. Yes, such courses should be run by Government Colleges only.
II. Yes, no other country allows private colleges to run professional courses.
36. **Statement:** Should slum-dwellers be provided free houses in big cities and metropolises?
Arguments:
I. No, most of the slum dwellers are poor and illiterate.
II. Yes, providing food and shelter to every citizen is the responsibility of any welfare state.
37. **Statement:** Should polythene bags be banned in India?
Arguments:
I. No, the polythene bags are very cheap and are very convenient.
II. Yes, that is what many countries are doing.
38. **Statement:** Should military service for short duration be made compulsory to all eligible youth in India?
Arguments:
I. Yes, Indian defence forces are badly in need of jawans and officers.
II. Yes, it will inculcate discipline and national pride in youth.
39. **Statement:** Should India switch over to capitalist economy from the present mixed one?
Arguments:
I. No, for this to happen there will be a need of constitutional amendments and our prestige will lower.
II. Yes, this is the only way out adopted by developing countries.
40. **Statements:** Should admission in schools be controlled by the state government concerned?
Arguments:
I. Yes, it will reduce the importance of the members of the school management.
II. No, this will result in delays, compromise with the quality of schools, and give rise to corruption.
41. **Statements:** Should corporal punishment be fully restricted in schools?
Arguments:
I. No, in low age and formative years punishment helps develop the standard of discipline and values.
II. Yes, physical punishment hurts the self-respect of an individual and such person turns to violent ways of life.
42. **Statements:** Should metropolitan corporations be changed to public limited companies to enhance their efficiency and reduce expenditure?
Arguments:
I. Yes, it will bring in commercial management and citizens would expect good service at reasonable rates.
II. No, it will end the local elections because there will be no elected corporator.
43. **Statements:** Should the joining of college students in National Cadet Corps (NCC) be made mandatory?
Arguments:
I. Yes, it is in vogue in many countries.
II. No, it will distract attention and those who are weak in studies will fail.
44. **Statement:** Should government-established higher level Institutes of Technology (IITs) be privatised?
Arguments:
I. Yes, privatisation will make these institutes financially healthy, competitive and quality-conscious.
II. Yes, privatisation is the key of the new era - can we survive without it?
45. **Statement:** Should vacations of court judges be reduced?
Arguments:
I. Yes, it will speed up judicial process and many people are likely to get justice in reasonable time.
II. Yes, it is a sign of British legacy, why should we carry it further?
46. **Statement:** Should the practice of transfers of clerical cadre employees from one city to another government office be stopped?
Arguments:
I. No, transfer of employees is a routine administrative matter and we must continue it.
II. Yes, it involves lot of governmental expenditure and inconvenience to many compared to the benefits it yields.
47. **Statement:** Should higher qualification be the only criteria for internal promotions in any organisation?
Arguments:
I. Yes, why not? In fact only higher qualification is more important than other factors.
II. No, quality of performance and other factors are more important than mere higher qualification in case of internal promotion.

48. **Statement:** Should Indian scientists working abroad be called back to India?
Arguments :
I Yes, they must serve the motherland first and forget about discoveries, honours, facilities and all.
II No, we have enough talent, let them stay where they want.
49. **Statement:** Should getting primary education be incorporated as a fundamental right in India?
Arguments:
I No, what is the use? Have we fulfilled our duties regarding other fundamental rights?
II Yes, this is what all the developed countries have done.
50. **Statement:** Should scheme of lotteries be completely stopped in India?
Arguments:
I No, many state governments will have to stop some of their developmental activities which they fund from surplus generated by their lottery scheme.
II No, many unemployed youth who sell lottery tickets to earn their livelihood will face hardship.
51. **Statement:** Should dependents of India's freedom fighters be given benefits of reservation in jobs?
Arguments:
I Yes. We should keep the dependents happy as the freedom fighters have fought for a noble cause.
II No. We already have too many reservations; let us not add to it.
52. **Statement:** With the opening of the economy in India, should all workers unions be banned?
Arguments:
I No, workers unions are not banned in other economically advanced countries.
II No, a level-headed workers union can really do wonders both for workers and economy.
53. **Statement:** Should we grant permission to reputed private companies to construct civil air ports for general use in India?
Arguments:
I Yes, why not? It would be both economical and effective.
II No, it may pose danger to security and safety of India.
54. **Statement:** Should 'computer knowledge' be made a compulsory subject for all students at secondary school certificate (S.S.C.) examination in India?
Arguments:
I No, our need is 'bread' for everyone, we cannot follow western models.
II Yes, we cannot go ahead without equipping our children with computers.
55. **Statement:** Should 'literacy' be the minimum criterion for becoming a voter in India?
Arguments:
I No, mere literacy is no guarantee of political maturity of an individual.
II Yes, illiterate people are less likely to make politically wiser decision of voting for a right candidate or party.
56. **Statement:** Should schemes of voluntary retirement be introduced in all sick public sector units in India?
- Arguments:**
I Yes, excess and inefficient staff is one of the reasons of sickness of public sector organisations.
II Yes, this is what private and multinational companies do in developed countries.
57. **Statement:** Should postal services be privatised in India?
Arguments:
I Yes, it will make life easy for the citizens of India.
II No, privatisation is not a panacea for all the problems, even private service can be equally bad.
58. **Statement:** Should system of offering jobs only to wards of government employees be introduced in all governments offices in India?
Arguments:
I No, it denies opportunity to many deserving individuals and government may stand to loose in the long run.
II No, it is against the principle of equality and does government not owe responsibility to all its citizens?
59. A supplement of Vitamin A and Zinc may boost children's resistance to Malaria (Observation from one experiment conducted last year in a village 'X'). Which of the following, if true, would weaken the statement?
(a) No adult in village 'X' has fallen sick because of Malaria.
(b) For the last three years, there has hardly been any case of a child being affected by Malaria from village 'X'.
(c) The experiment with Vitamin A and Zinc is being duplicated in other nearby cities adjacent to village 'X'.
(d) Vitamin A and Zinc are readily available in village 'X'.
(e) Villages adjacent to 'X' have reported substantial cases of Malaria affecting mostly children.?
60. After establishment of industrial estate 5 years ago at village 'D' the economic condition of its villagers has improved considerably. Which of the following, if true, contradicts the statement?
(a) A branch of a bank has been opened at village 'D' during last three years.
(b) The shops of village 'D' report increase in the sale of entertainment items during last two years.
(c) Very recently hotels with beer bars have come up in village 'D'.
(d) Money-lenders and the branches of banks report demand for second loan to return earlier loan.
(e) Number of buses run by private and state government agencies halt at village 'D'.
61. If statements 'Wealthy persons are not necessarily happy' and 'Dashrath is not happy' are assumed to be true then which of the following is definitely **True**?
(a) Dashrath is not wealthy
(b) Dashrath is wealthy but not happy
(c) Dashrath is not wealthy and therefore not happy
(d) Other wealthy persons are not as unhappy as Dashrath
(e) None of these
62. "Forty per cent of our products are sold in rural area, fifty-three per cent are sold in semi-urban area, sixty per cent of employees are from rural area." Which of the following statements is **definitely true**?
(a) The company's products are purchased only by its employees and their family.

- (b) The company does not desire to recruit urban employees.
- (c) The company's products are required in big urban cities and metro areas.
- (d) The company holds approximately 90% of the market share in its product line.
- (e) None of these
63. "We do not advertise, our product speaks for itself." - Statement of manufacturer of two-wheeler 'BJA'. Which of the following, if true, would support and strengthen this statement?
- (i) The prices of BJA two-wheelers are on higher side.
- (ii) 'BJA' has won award for Quality Control Systems.
- (iii) The BJA two-wheeler is sleek-looking and has good colours.
- (iv) The salaries of BJA employees are better than government services.
- (a) Only (i) and (ii) (b) Only (ii) and (iii)
- (c) Only (iii) and (iv) (d) Only (i), (ii) and (iii)
- (e) None of these
64. 'All trees bear fruits'. 'Fruits of some trees are not good for human health'. If the two statements are assumed to be true, then which of the following statements is definitely TRUE?
- (a) All fruits are not sweet and tasty.
- (b) Some fruits are healthy for some human beings.
- (c) Some trees do not bear fruits.
- (d) Human beings should eat fruits for remaining healthy.
- (e) None of these
65. Nikhil remembers that his sister Kranti had certainly been in Pune for one day after 16th February but before 21st February. While his mother remembers that Kranti had certainly visited Pune before 20th February but after 17th February. If both of them are correct, then on which day in February had Kranti visited Pune?
- (a) Either 18th or 19th (b) 19th
- (c) 18th (d) Data inadequate
- (e) None of these
66. "Cases of food poisoning have been reported from village 'X'. After a dinner party arranged for 100 people, 68 have been admitted to the hospital, 36 cases are reported to be out of danger. The food, which was cooked and stored in open space for almost 12 hours earlier was served after reheating it. Investigation is going on." A news report. Which of the following can be **hypothesized** for the above information?
- (a) Late night dinner parties for large number of people result in food poisoning.
- (b) Stale food is likely to be the cause of food poisoning.
- (c) Cases of food poisoning need to be handled carefully.
- (d) Cases of food poisoning are not reported in urban dinner parties.
- (e) Food poisoning is a matter of chance and no preventive measure can be suggested.
67. A study reveals that families where parents cannot give sufficient time for their children report disturbed behaviour of children and poor performance of the child at school. Which of the following, if true, would **weaken** the statement?
- (a) Studies regarding behaviour of children of single parents have reported similar findings.
- (b) A good and healthy child-parent relationship helps the child adjust at home and school.
- (c) A high correlation has been found between good adjustment of the child with his peers/ friends and good performance in the school.
- (d) Schools have now started counselling parents to spend happy and meaningful time with their children.
- (e) Well adjusted children show lot of love and respect for their parents.
68. "If you want hassle-free holiday package for city 'M' then join only our tour. Hurry up, only few seats available." An advertisement of 'XYZ' Tourist Company. If the above statement is **true** then which of the following has been **assumed** while making the statement?
- (a) Travel packages offered by other tour operators are neither cheap nor comfortable.
- (b) Now-a-days people have lot of money to spend for their comforts.
- (c) No seats may be available with other tour operators for city 'M'.
- (d) Many people desire convenience and comfort while going for a holiday.
- (e) The XYZ Company strictly follows the concept of 'first come first serve'.
69. The state government's agency 'HOUSEWELL' has constructed 500 flats for middle class but in spite of shortage of houses it has not even received hundred applications. Each of the following, if true, could explain this **exception**:
- (a) The quality of construction of 'HOUSEWELL' is reported to be very poor.
- (b) The location of the flats is not convenient either by bus or from railway station.
- (c) A private builders scheme which has come up on the adjacent plot is overbooked inspite of higher cost and 100% advance payment.
- (d) The cost and conditions of payment are quite demanding and are slightly higher than usual government housing schemes.
- (e) School and market facilities are yet to come up.
70. In order to qualify in an examination having six subjects, one has to get at least 50% and above marks separately in any four subjects and minimum 35% and above in each of the six subjects. If the total of 25% candidates have qualified in the examination, then which of the following is definitely **true**?
- (a) 25% of the students have secured 50% and above in all the six subjects.
- (b) 75% of the students could not get at least 35% marks in all the six subjects taken together.
- (c) 50% of the students got 50% and above in four subjects but only half of them could get 35% and above in all the subjects.
- (d) Only 25% of the students could get at least 35% and above marks in each of the subjects.
- (e) None of these
71. "A non-resident Indian trust of the US has finalised a project to provide training for the new techniques on the basis of 'no profit no loss' to Indian doctors." — A statement by trustees. If this statement is true, then which of the following expresses truly the above statement?
- (a) It is not possible even for rich doctors of India to go to the US for training.
- (b) Indian doctors are capable but they do not want to learn new techniques.

- (c) The non-resident Indian trust is being run by renowned Indian doctors settled abroad who have acquired skills in the US.
- (d) To save the life of patients, new medical knowledge and skills are required.
- (e) It is necessary for the trust to do social work in order to earn repute.
72. The government of state *G* has banned spitting and smoking at public places from Jan 1, 2016. In case of violation the guilty will be either fined a sum of ₹ 1000 or jailed. — Notification of the government of state *G* on Dec 31, 2015. Which of the following, **if true**, would weaken the statement?
- (a) State *G* is known as an important tourist destination among all states of India.
- (b) Legal implementation machinery is neither aware of this notification nor it has adequate manpower and resources to implement it.
- (c) There is a possibility of increase in the number of tourists coming to this state.
- (d) Many foreigners and tourists have expressed their unhappiness and surprise at the lack of cleanliness at public places of state *G*.
- (e) Public cooperation is possible for the measures initiated by the government of state *G*.
73. The government of state *B* has now decided to form a department for information and technology so that coordination between information and technology is made easier. — A news
If the above statement **is true**, then which of the following has been **assumed** in the statement?
- (a) State *B* is regarded as lax in implementing public welfare measures.
- (b) Compared to other states, state *B* has achieved tremendous success in information and technology.
- (c) There is a need to coordinate and regularise the work of information and technology of all states.
- (d) State *B* has enough money to spend for such purposes.
- (e) It is necessary for state *B* to demonstrate its anxiety over information and technology.

ANSWER KEY

1	(e)	9	(b)	17	(a)	25	(d)	33	(b)	41	(e)	49	(d)	57	(b)	65	(a)	73	(d)
2	(b)	10	(e)	18	(e)	26	(d)	34	(d)	42	(a)	50	(e)	58	(e)	66	(b)		
3	(b)	11	(e)	19	(e)	27	(b)	35	(d)	43	(b)	51	(a)	59	(b)	67	(c)		
4	(d)	12	(d)	20	(a)	28	(e)	36	(d)	44	(a)	52	(d)	60	(d)	68	(d)		
5	(a)	13	(b)	21	(a)	29	(a)	37	(a)	45	(a)	53	(b)	61	(e)	69	(c)		
6	(b)	14	(a)	22	(b)	30	(a)	38	(a)	46	(b)	54	(b)	62	(e)	70	(e)		
7	(e)	15	(e)	23	(e)	31	(b)	39	(d)	47	(d)	55	(e)	63	(b)	71	(d)		
8	(e)	16	(a)	24	(e)	32	(d)	40	(b)	48	(d)	56	(a)	64	(b)	72	(b)		

Hints & Explanations

1. (e) I is strong on humanitarian grounds. II is strong because it is not desirable to compromise on the picture of ourselves that we project to the world.
2. (b) I is weak because it advocates an extreme action. It does not take into account the cost incurred. II is strong on humanitarian grounds.
3. (b) Argument I is not strong because of two reasons: (i) it is not the only way to create more opportunities for those who seek professional training; (ii) opportunity to get professional training is not enough, quality of the training is equally important. Argument II is strong because chances of degrading of the standard of training can't be ruled out.
4. (d) In reality, a maximum ceiling will reduce the scope of getting higher salary for those who work hard and contribute very much in an organisation's profit. Hence, I is not true. Therefore, I is not strong. II is not strong because it does not add sufficient reasons to imposing maximum ceiling on the earnings of an individual in an organisation.
5. (a) I is strong on the basis of Constitutional provisions. II is a weak argument because it is not true that only compulsory military training for each college student of a country will make it strong and powerful.
6. (b) If I were strong then the provision to amend the constitution would not have been there. Hence, I is not strong. Certainly, the number of candidates will be reduced and it will be easier for the electorate to decide about them. Hence, II is a strong argument.
7. (e) Here both arguments are strong.
8. (e) I is strong because it does not make sense to penalise the rest of the country for something I uses. II is strong because it will lead to inflation.
9. (b) Reducing the term is not a good alternative. Suppose the parliament gets dissolved every six months, will you then say the term be reduced to six months? Clearly, I is bad logic. II is strong in a country where fiscal deficit is of paramount concern.
10. (b) I is not strong because there are otherways to weed out non-serious students. II is strong because merit should not be allowed to rot for want of money.

11. (e) Both the arguments I and II are strong. Argument I is strong because optimum use of the resources of the exchequer is desirable. Discouraging such people will lessen the problem of brain drain. Argument II is strong on the basis of the powers equipped by the Constitution to the citizens.
12. (d) Argument I is not strong because India should take its stand according to *its* needs. Argument II is not correct because of the word 'only'. Hence, argument II is not strong.
13. (b) Argument I is not correct because of the word 'only' used in the argument. Hence, argument I is not strong. Argument II is strong because adverse impact on agriculture will debilitate the backbone of the economy.
14. (a) Argument I is strong. No doubt, labour reforms will encourage the labour to work more efficiently, which will be helpful in increasing the productivity. Argument II is not strong because it is not a right way of arguing. Basic needs of India may be different from those of other countries.
15. (e) Both the arguments I and II are strong. Argument I is strong on the basis of its benefit to the real beneficiary. Argument II is strong because of the adverse impact of subsidy on the economy of the country.
16. (a) I is strong because it will save people from unnecessary inconvenience. II is not strong because it is not true. There are other ways also to control the dreaded disease.
17. (a) I is strong because higher rates attract people to deposit money for longer duration. If there be only one rate of interest for term deposits for varying durations, this will adversely affect deposit of money in bank for longer duration and also the liquidity levels of banks. II is not strong because only one rate of interest does not imply an encouragement for more savings.
18. (e) I is strong because it will make the election process more meaningful and purposeful. II is strong on account of the tenets of democracy.
19. (e) I is strong because mass murderers must be treated with stringent punishment. II is also strong because it is judicious to eliminate evils, not evildoers, from the society.
20. (a) I is strong on the basis of Constitutional rights. II is not true. Hence, it is a weak argument.
21. (a) When a single person is given so many responsibilities, it is possible that he may not concentrate 100 per cent on all of them. Hence I is strong. II is weak because "Best fit" does not specify a cause.
22. (b) Argument I does not go into the reason while argument II does.
23. (b) I is not strong because it throws a question back. II is strong because the employees are abusing their rights sometimes.
24. (e) Both arguments are strong - I on humanitarian grounds and II on legal grounds.
25. (d) I is strong because "competitiveness" and "better service" are desirable. II is weak because the argument has a flawed assumption that MNCs are a threat to national security.
26. (d) I is not strong because "any ban" covers too wide an area. II is also not strong because it assumes the serials (depicting sex and violence) are necessary to be watched.
27. (b) I is not strong because promotion should be based on different factors which evaluate the efficiency of an individual. Patriotism may be one of the factors but one's efficiency can't depend only on this factor. II is strong because it advocates for efficient persons who must not be ignored.
28. (e) Both I and II are strong arguments and promote employment in their own ways.
29. (a) I is strong because it pinpoints the possible negative effect. II is weak as there is no logic.
30. (a) I is strong because education leads to abolition of malpractices carried in a hush-hush manner. II is not strong because the argument confuses education with titillation.
31. (b) I is weak because we can't vitiate the system for one individual. II is strong as the seats will be filled by close relatives of government employees, competent and other needy youths won't get entry for govt. services.
32. (d) I is weak because such interference cannot be desirable in a democracy. II is weak because it gives priority to business interest on foreign exchange position, which would not be in the interest of the country.
33. (b) Argument I is weak because it presupposes the absence of trained teachers which is not true. II is strong because cultural ground can't be neglected.
34. (d) I is weak because of the term social structure in that argument. Free education may weaken the economic condition of a country. Talking about weakening of social structure by giving free education to women and girl is senseless. II is weak as there is no logic.
35. (d) II is an example. Example is generally a weak argument. All countries may have different constitutions, different financial status, difference in population etc. Hence I is weak argument. I suggests only alternate arrangement. The reasons of ban are not given. Hence I, too, is weak argument.
36. (d) I is weak. On the contrary, poverty and illiteracy should induce us to bestow favour upon slum-dwellers. II is weak because the question here is not only providing shelter but providing it *free*.
37. (a) Economic advantage and user-friendliness are strong reasons. Hence I is strong. II is weak because it is tantamount to following other countries blindly.
38. (a) I is strong. Such a binding will definitely compensate for the lack of regulars in our armed forces. II is weak. Discipline and pride can be *inculcated* through other, less expensive, less rigorous means, such as NCC, Scouts, etc.
39. (d) Whenever it has been required, we have amended our constitution. It is illogical and foolish to relate it to our prestige. Hence, I is a weak argument. Every developing country is the product of its own circumstances. Hence, it is not necessary that India also go on the path of other developing countries. So, II is also a weak argument.

40. (b) The main purpose of decentralisation of power is to run all units properly. You can't concentrate on all units if you have so many departments to watch over. Hence, II is strong. I is weak because it does not relate to the statement.
41. (e) I is strong because discipline forms the basis of one's life. II is also strong because the society needs to be protected from violence.
42. (a) Since, public limited companies are established to run government organisations on business lines, I is strong. Good service is more important than elections. Hence, II is weak.
43. (b) Since, cadets have to devote a fair degree of time on learning physical and moral disciplines, argument II is strong. Every thing can not be imitated from others' experience. Hence, I is not strong.
44. (a) Argument I is advantageous. Argument II has lack of any theme.
45. (a) I is a strong argument. If we have more working days, it is natural that more work can be done. Good qualities or system of even our enemy can be adopted. Hence II is weak.
46. (b) It is not necessary that any practice which has been continued for a long time be right. Hence, I is a weak argument. Argument II is strong.
47. (b) Neither the reason nor other factors are given in argument I. Hence, it is weak. On the same grounds II is strong.
48. (d) I is not strong. The individual's demands are as important as the motherland's. II is weak because of its complacent attitude.
49. (d) I is distorting the argument. II is based on an example which may not apply to India.
50. (e) Both are strong because from the economic point of view we can't ignore either unemployment or revenue loss.
51. (a) I is strong because it will bolster patriotic sentiments. II is not strong because it is not necessary that an extra reservation quota be created. The new category may be adjusted within earlier limits.
52. (d) I is based on example, Hence, does not follow. II is a vague argument.
53. (b) II is strong because national security is a priority area.
54. (b) I is weak because bread and education are two different things. Comparison of these two has no sense. Both should go parallel. II is strong. In this hi-tech world it should be compulsory for our children to know about computers.
59. (b) Children are not being affected by malaria. This implies they are already resistant to the disease. Why then should we need the supplements?
60. (d) If the economic condition of the village has improved, why should the villages borrow further to repay earlier loans?
63. (b) Both (ii) and (iii), speak positively for the product.
65. (a) According to Nikhil: 17, 18, 19 or 20 ... (i)
According to mother: 18 or 19 ... (ii)
From (i) and (ii), either 18th or 19th.
66. (b) As mentioned, 'food was cooked and stored in the open space for almost 12 hours earlier'. Now, this may be the cause of food-poisoning.
68. (d) This is why the tourist company has mentioned the term 'hassle-free holiday package' in the advertisement, assuming that people will prefer to tour by their company.
69. (c) Except (c), all may be reasons for not going for the flats by the people. Option (c) has no connection with the statement.
71. (d) The no-profit-no-loss basis points to this.
72. (b) Any law will become ineffective without the support of the implementation machinery.
73. (d) It must be assumed; otherwise they can't take such decisions.



Statement & Assumptions

INTRODUCTION

Assumption are essential part of analytical reasoning. This is the reason why in various competitive examinations, examinees are asked to identify assumptions. Particularly, in examinations to be conducted for the recruitment of probationary officers in banks at least five such questions are surely given. In this chapter, we will see how to identify assumptions. Before we go ahead, we must have a look at a common format of the problem as it will give you a clear idea of the questions to be asked in the examination.

PROBLEM FORMAT (SAMPLE PROBLEM)

Directions: In every question given below a statement (or a passage) is followed by two assumptions number I & II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and then decide which of the assumptions is implicit in the statement.

Mark answer:

- (1) If only assumption I is implicit.
- (2) If only assumption II is implicit.
- (3) If either assumption I or assumption II is implicit.
- (4) If neither of the assumption is implicit
- (5) If both the assumptions are implicit.

Statement: “A” television — the largest selling name with the largest range” — an advertisement.

Assumptions: **I.** There is a demand for televisions in the market.
II. ‘A’ television is the only one with wide variations.

The given statement in the problem format is an advertisement. This is the one form of statement. But the statement may be in different forms like it can be in the form of a passage; in the form of a single line; in the form of a notice; in the form of an appeal; in any other different forms.

WHAT DOES AN ASSUMPTION MEAN?

In the chapter “Argumentation: Basics of analytical reasoning,” it has all ready made clear that assumption is the hidden part of an argument. It does mean that an assumption is something which is assumed, supposed and taken for granted. In fact, when a person says something, he does not put everything into words and leaves some part unsaid as why does he ? so?

He does so because he takes this unsaid part for granted. In other words he thinks this unsaid part will be understood without saying and hence there is no need to put this (unsaid part) into

words. It does mean this unsaid part is hidden in the given statement and this hidden part is called assumption. Let us understand it another way. Just remember your childhood days when you were used to solve the given arithmetic problem without leaving any single step. But what you do today? Today your approach is totally different. Today you leave easier steps as you assume that the person who see your solution, is very much aware of these elementary operations. Therefore, this is an example of assumption. Suppose, we have given the following arithmetical problem:-

$$\frac{24}{8} + 5 + 9 \times 2 + 4 = ?$$

Childhood Approach (Case I)

$$\begin{aligned} \frac{24}{8} + 5 + 9 \times 2 + 4 & \text{———— step I} \\ = 3 + 5 + 18 + 4 & \text{———— step II} \\ = (3 + 5) + (18 + 4) & \text{———— step III} \\ = 8 + 22 & \text{———— step IV} \\ = 30 & \text{———— step V} \end{aligned}$$

Today’s Approach (Case II)

$$\begin{aligned} \frac{24}{8} + 5 + 9 \times 2 + 4 & \text{———— step I} \\ = 30 & \text{———— step II} \end{aligned}$$

What did you notice in the above two cases? In case I, there are five steps and in case II, there are only two steps. It does mean, in case II, three steps of case I (step II, step III & step IV) have been left. Hence, in case II these steps of case I (step II, step III & step IV) are hidden and thus come under the category of assumptions.

To get the concept of assumption more clearly just suppose a thrilling one day international cricket match is going on between India and Australia. The Australian team has scored 300 runs but while chasing the score India has made 280 runs in 48 overs and now, the situation is India has to score 21 runs to win the match in remaining two overs. As Yuvraj Singh is batting, you say your friend - “No need to worry as Yuvraj is a big hitter. India will win the match”. What you find in this statement. In fact this statement has two parts:-

- (i) No need to worry as Yuvraj is a big hitter.
- (ii) India will win the match.

Now, this is the time to think over these two parts. How do you relate them? Obviously, by assuming that a big hitter may score

21 runs in remaining two overs. Therefore, this is another example of assumption. The above statement can be written in three parts as follows:-

- (i) No need to worry as Yuvraj is a big hitter.
- (ii) A big hitter may score 21 runs in 2 overs (Hidden part/ Assumption)
- (iii) So, India will win the match.

Let's get more ideas about assumption with some simple examples given below:-

EXAMPLE 1.

Statement: Of all the mobile sets manufactured in India M brand has the largest sale.

Assumption: The sale of all the mobile sets manufactured in India is known.

Comment: The given assumption is valid. Here the statement makes a claim that of all the mobile sets manufactured in India, M brand has the largest sale. In fact, without knowing sale figures of all mobile brands manufactured in India, No such claim about M brand could be made. Hence, it must have been implicitly assumed in the given statement that sale figure of all brands is known.

EXAMPLE 2.

Statement: Tendulkar is in great form and therefore, India is going to beat Australia in upcoming test series.

- Assumption:**
- I. Tendulkar will give a good performance in upcoming series against Australia.
 - II. Tendulkar will score a triple century in the upcoming series against Australia.

Comment: Assumption I is valid as the statement says that Tendulkar is in great form and therefore, India is going to beat Australia in the upcoming test series. It does mean that it is assumed in the statement that Tendulkar will perform well in the upcoming test series against Australia and on the basis of that good performance India will beat Australia. But II is invalid because if Tendulkar is in great form, that does not mean he will surely hit a triple century. He may or may not do so. Hence, assumption II is not hidden in the statement.

EXAMPLE 3.

Statement: The next meeting of the governing body of the society X will be held after one year.

Assumption: Institute X will remain in function after one year.

Comment: The given assumption is valid as we know that the common practice is to hold meetings of only those bodies that are functional. Hence, if in the given statement, it is said that the next meeting of the governing body of the society X will be held after one year, it does mean that the announcer must be assuming that the society will remain functional after one year.

EXAMPLE 4.

Statement: The student is too clever to fail in the examination.

Assumption: Very clever students do not fail in the examination.

Comment: This is a valid assumption. As per the given statement the student will not fail (This is an effect) as he/she is very clever (This is a cause). Clearly, it has been assumed in the statement that very clever students do not fail.

HOW DOES A SINGLE WORD OR PHRASE MAKE DIFFERENCE?

A. Definitive Words Cases:

Just consider the words like 'all', 'only', 'best', 'strongest', 'certainly', 'definitely', etc. These are some words that put a greater degree of emphasis or more weight on the sentence than some others. In fact, these words impart a kind of exclusiveness to the sentence and thereby reduce the scope/range of the sentence. In fact, some kind of certainty are associated with all these words. Let us consider the following examples:-

EXAMPLE 5.

Statement: The crisis of onion has worsened and the government should make every effort to boost import of onion.

Assumption:

- I. Import are the best solution to avert the onion crisis.
- II. Import are a reasonably good solution to the onion crisis.
- III. Import are the only solution to overcome the onion crisis.
- IV. The onion crisis will definitely be averted by boosting import of onion.
- V. The onion crisis will probably be averted by boosting import of onion.

Comment: In the above mentioned example, the assumption II and V are valid. But I, III and IV are not valid. The reason is that there is use of definitive words (best, only and definitely) in case of I, III and IV. The given statement mentions a fact that crisis of onion has worsened and then makes a suggestion that imports of onion should be boosted. In fact the statement assumes that import should help to overcome onion crisis or that import is a good/reasonably good solution to the onion crisis. But, there is no any hint that import is the only solution/best solution/ a definitely effective solution.

Therefore, the example given above illustrates how a definitive word may give a different 'tone' to a sentence.

B. Cases of Conjunctions:

The words like 'because', 'therefore', 'in spite of', 'despite', 'so', 'after', 'even', 'although' 'as', 'as a result of' are some significant conjunctions. When a statement has two clauses and the clauses are connected by a conjunction, then the nature of conjunction helps in detecting the assumption that the author suggests in his statement. Suppose 'x' is one clause of a sentence that mention an event (or fact/suggestion) and 'y' is the another clause of the same sentence which mentions another event (or fact/suggestion), that depending upon the conjunction. We can conclude the following assumption.

- (i) x (because / as a result of) $y \Rightarrow$ It is assumed that 'y' leads to x.

EXAMPLE 6.

Statement: You will find improvement in your English after taking classes in institute M.

Valid Assumption: An institute may help in improving English.

- (ii) x (therefore/hence) $y \Rightarrow$ It is assumed that 'x' leads to 'y'.

EXAMPLE 7.

Statement: The Indian batsman Sachin Tendulkar has become the 1st man to score 50th test century, therefore all Indians must be feeling very proud on his achievement.

Valid Assumption: An achievement by a fellow countryman makes other citizens proud.

- (iii) x (even after / despite / in spite of) $y \Rightarrow$ It is assumed that usually x does not occurs when y occurs.

EXAMPLE 8.

Statement: There was a theft in the city mall last night inspite of the maximum security arrangement made by the police.

Valid Assumption: Maximum security arrangement is usually sufficient to prevent theft.

- (iv) Not 'x' (even after / in spite of / despite) 'y' \Rightarrow It is assumed that usually x occurs when y does.

EXAMPLE 9.

Statement: There was no out break of any epidemic even after the continuous deposition of rain water for six days.

Valid Assumption: Deposition of rain water usually leads to epidemic.

C. Cases of Connotive Phrases:

Sometimes words used by the author is slightly indirect or unconventional. This is the reason you may miss the thing

what author want to say. Such indirect or unconventional words are called connotative or connotive phrases. For example "It is true that" can be put / written as.

- (i) It can be claimed with reasonable degree of truth that...
 (ii) It would be correct to say that...
 (iii) Even the most sceptic of men would agree that....

Similarly, "It is false" is put / written by the author as

- (i) It is baseless to say that ...
 (ii) It would be highly misleading to say that....
 (iii) Nothing could be farther from truth than...

Note:

These days, the role of connotative phrases is very limited in the questions asked because they are given so that they do not escape your eyes whenever one come across them.

Condition for Invalidity of Assumptions

(a) Restatement

If the given assumption is a restatement of the given statement, then the given statement will be invalid. In fact, in such case, same thing is put in different words.

EXAMPLE 10.

Statement: Of all the computer brands manufactured in India, brand M has the largest sale.

Invalid Assumption: No other brand of computer has as high a sale as brand M.

- (b) **Long-drawn Conclusion:** If an assumption makes too far fetched logic or long drawn conclusion, then it will be considered as invalid assumption.

Shortcut Approach	
Assumption will be implicit if	Assumption will not be implicit if
• it is in context of passge	• not in context of statement or passage
• it is not directly mentioned	• it is directly mentioned in the statement
• it is a mandatory factor condition for the statement to be correct.	• it is not an accepted fact or cannot be truly inferred
	• there is use of definitive words
Note : The assumption must follow all the above rules for it to be implicit.	• it is a restatement or a long-drawn conclusion or negative rephrasing or a converted syllogism form.

EXERCISE

Directions (Qs.1-80): In each question below is given a statement followed by two assumptions numbered I and II. An assumption is something supposed or taken for granted. You have to consider the statement and the following assumptions and decide which of the assumptions is implicit in the statement. Give answer

- (a) if only assumption I is implicit.
 (b) if only assumption II is implicit.
 (c) if either assumption I or II is implicit.
 (d) if neither assumption I nor II is implicit.
 (e) if both the assumptions I and II are implicit.
- Statement:** The Union Government has decided to withdraw existing tax relief on various small savings schemes in a phased manner to augment its tax collection.

Assumptions:

 - People may still continue to keep money in small savings schemes and also pay taxes.
 - The total tax collection may increase substantially.
 - Statement:** The Government has decided to levy 2 per cent surcharge on the tax amount payable for funding drought relief programmes.

Assumptions:

 - The Government does not have sufficient money to fund drought relief programmes.
 - The amount collected by way of surcharge may be adequate to fund these drought relief programmes.
 - Statement:** The 'X' Housing Finance Company has offered its services to search a suitable home at no extra cost for those who avail housing loan from it.

Assumptions:

 - The customers may prefer to take housing loan from 'X' Housing Finance Company as they can save a lot of their time and money spent in searching a suitable home.
 - No other Housing Finance Company has offered any such extra services along with housing loan.
 - Statement:** World Health Organisation has decided to double its assistance to various health programmes in India as per capita expenditure on health in India is very low compared to many other countries.

Assumptions:

 - The enhanced assistance may substantially increase the per capita expenditure on health in India and bring it on par with other countries.
 - The Government funding is less than adequate to provide basic medical facilities in India.
 - Statement:** The managing committee of Galaxy Housing Society has requested all its members to segregate the biodegradable garbage and put them in different containers.

Assumptions:

 - Other housing societies may follow the same practice as this will help conserve environment equilibrium.
 - The members of Galaxy Housing Society may respond positively to the request made by the managing committee.
 - Statement:** The Government should engage the army for the rapid rehabilitation of people affected by the cyclone.

Assumptions:

 - Only the army can rehabilitate the people affected by the cyclone quickly.
 - The Army can take up works other than war also.
 - Statement:** His recent investment in the shares of Company 'A' is only a gamble.

Assumptions:

 - He may incur loss on his investment
 - He may gain from his investment.
 - Statement:** Government should deploy the Army at least this year for the rehabilitation of people affected by cyclone because cyclone visits suddenly.

Assumptions:

 - The Army should be deployed for all such sudden incidents.
 - Some precautionary plan is being made to prevent destruction caused by cyclone.
 - Statement:** It is not true always that the adoption of latest technology ensures increased productivity and capacity.

Assumptions:

 - It is possible to prove that increased productivity and capacity are due to adoption of latest technology.
 - The productivity and capacity can be increased by discarding latest technology.
 - Statement:** If you could not collect the required amount by oral call you must publish an advertisement in a widely read newspaper.

Assumptions:

 - People rarely respond to oral call.
 - Generally people are reluctant to read an advertisement in a newspaper.
 - Statement:** The regulatory authority has set up a review committee to find out the reasons for unstable stock prices.

Assumptions:

 - The investors may regain confidence in stock market by this decision.
 - The review committee has the expertise to find out the causes for volatility in the stock market.
 - Statement:** "Get rid of your past for future, get our new-generation fridge at a discount in exchange of old."—An advertisement

Assumptions:

 - The sales of the new fridge may increase in the coming months.
 - People prefer to exchange future with past.
 - Statement:** The multinational fast food chains are opening up a large number of Plus Coffee Shops with piped modern music in different cities of India and these are serving various snacks with coffee.

- Assumptions:**
- I** A large number of persons may become regular customers of these coffee shops.
- II** The people will like to enjoy the comfortable environment while drinking coffee with snacks.
14. **Statement:** Railway officials have started ten new trains and increased the frequency of fourteen running trains.
- Assumptions:**
- I** The existing trains are not sufficient to provide accommodation to all passengers.
- II** The new and additional trains would have sufficient passengers so that they will be economically viable.
15. **Statement:** The Government has decided to overhaul the structure of school fee by linking the school fee with the incomes of parents.
- Assumptions:**
- I** Parents will furnish correct information about their incomes to schools.
- II** Parents will agree to pay the fee after the overhauling of the fee structure.
16. **Statement:** The government has decided to hold the employers responsible for deducting tax at source for all its employees.
- Assumptions:**
- I** The employers may still not arrange to deduct tax at source for its employees.
- II** The employees may not allow the employers to deduct tax at source.
17. **Statement:** The *X*-Airlines has decided to increase the passenger fare by 15 per cent with immediate effect.
- Assumptions:**
- I** The demand for seats of the *X*-Airlines may remain unchanged even after the hike of fare.
- II** Other airline companies may also hike the passenger fares.
18. **Statement:** "Our bank provides all your banking requirements at one location." — An advertisement of a bank
- Assumptions:**
- I** Customers prefer to carry out all banking transactions at one place.
- II** People may get attracted by the advertisement and carry out their transactions with this bank.
19. **Statement:** Bank '*A*' has announced reduction of half percentage on the interest rate on retail lending with immediate effect.
- Assumptions:**
- I** Other banks may also reduce the retail lending rates to be in competition.
- II** The Bank '*A*' may be able to attract more customers for availing retail loans.
20. **Statement:** The '*M* Cooperative Housing Society has put up a notice at its gate that salespersons are not allowed inside the society.
- Assumptions:**
- I** All the salespersons will stay away from the '*M* Cooperative Housing Society.
- II** The security guard posted at the gate may be able to stop the salespersons entering the society.
21. **Statement:** 'Country *A* would explore all channels to diffuse current tensions with country *B* and bring peace on its borders.' — Statement of spokesperson of country *A*.
- Assumptions:**
- I** Country *A* is desirous to diffuse current tension and restore peace with country *B*
- II** It is desirable to use more than one channel when complex issues are to be settled amicably.
22. **Statement:** Two months ago, it was announced that central government pensioners would get dearness relief with immediate effect but till date, banks have not credited the arrears.' — A statement from a Pensioners' Forum.
- Assumptions:**
- I** Most of the banks normally take care of the pensioners.
- II** Two months' time is sufficient for the government machinery to move and give effect to pensioners.
23. **Statement:** 'The bridge was built at the cost of ₹ 128 crores and even civil bus service is not utilising it. What a pity to see it grossly underutilised!' — A citizen's view on a new flyover linking east and west sides of a suburb.
- Assumptions:**
- I** The building of such bridges does not serve any public objective.
- II** There has to be some accountability and utility of money spent on public projects.
24. **Statement:** 'Use our product to improve memory of your child; it is based on natural herbs and has no harmful side-effects.' — Advertisement of a pharmaceutical company.
- Assumptions:**
- I** People generally opt for a medical product which is useful and has no harmful side effects.
- II** Improving memory of child is considered as important by many parents.
25. **Statement:** The traders of State *K* would observe a statewide bandh as the state has failed to meet their demand to resolve sales tax and other issues.
- Assumptions:**
- I** The traders of State *K* have earlier 'tried other usual procedures to get their problems solved.
- II** State *K* is not keen to solve the problem of traders.
26. **Statement:** The government has decided to pay compensation to the tune of ₹ 1 lakh to the family members of those who were killed in railway accidents.
- Assumptions:**
- I** The government has enough funds to meet the expenses due to compensation.
- II** There may be reduction in incidents of railway accidents in near future.
27. **Statement:** The *X*-Airlines has temporarily suspended flights to a few destinations for the next four days due to, the strike call given by the Pilots' Association.
- Assumptions:**
- I** The airlines may be able to restore all the flights after four days.
- II** The Pilots' Association may withdraw the strike call within four days.

28. **Statement:** The civic authority has appealed to the citizens to cooperate in curbing rampant power theft in the locality.
Assumptions:
I. The local citizens group may respond to the request and form groups of people to detect such cases of power theft.
II. Those who are engaged in stealing power may stop doing so for fear of social castigation.
29. **Statement:** The Parent Teacher Association (PTA) of a school has informed the Principal that they will not send their children to the school unless the school authority reduces the fees with immediate effect.
Assumptions:
I. Majority of the parents may agree with the PTA and may not send their wards to the school.
II. The school authority may accede to the demand of the PTA and reduce the fees.
30. **Statement:** 'If you are first class graduate, our organization is the best place for you to work.'— An advertisement.
Assumptions:
I. No other organisation may require first class graduates as they may not get adequate number of applications.
II. First class graduates may get attracted and apply to this organization.
31. **Statement:**
The 'X' group of employees' association have opposed Voluntary Retirement Scheme to the employees of some organisations.
Assumptions:
I. Only those employees who are not efficient may opt for the scheme.
II. The response of the employees may be lukewarm towards the scheme and it may not benefit the organisation to the desired level.
32. **Statement:**
In view of the statement on the on going strike of work by the employees, the government has agreed to work out an effective social security programme.
Assumptions:
I. The striking employees may not be satisfied with the announcement and continue the agitation.
II. The striking employees may withdraw their agitation with immediate effect and start working.
33. **Statement:**
The head of the organisation congratulated the entire staff in his speech for their sincere effort to bring down the deficit and urged them to give their best for attaining a more profitable position in future.
Assumptions:
I. The employees may get motivated and maintain and if possible enhance their present level of work.
II. The employees may now relax and slow down in their day-to-day work as there is no immediate threat of huge deficit.
34. **Statement:**
"Private Property, trespassers will be prosecuted" — A notice on a plot of land.
Assumptions:
I. The passerby may read the notice and may not trespass.
II. The people are scared of prosecution and, therefore, never trespass.
35. **Statement:**
The government has set up a fact-finding mission to look into the possible reasons for the recent violence in the area.
Assumptions:
I. The mission may be able to come up with credible information about the incidents.
II. The people in the area may cooperate with the mission and come forward to give de tailed information related to the incidents.
36. **Statement:**
An advertisement: If you want to follow the footprints of an ideal leader, wear 'X' brand of shoes.
Assumptions:
I. Most people like to become ideal leaders.
II. One can't become ideal leader unless one wears 'X' brand of shoes.
37. **Statement:**
Every citizen must be committed to the social cause; if he is not, his citizenship should be cancelled.
Assumptions:
I. It is possible to find out whether a citizen is committed to the social cause or not.
II. Citizenship of any citizen can be cancelled.
38. **Statement:**
An advertisement: Now you can own a new car in just ₹ 1,999 per month.
Assumption:
I. People do not want to buy used cars.
II. Most people can afford to pay ₹ 1,999 per month for a new car.
39. **Statement:**
Beware of dogs. Our dogs do not bark but they are trained to distinguish between genuine guests and intruders.
Assumptions:
I. Barking dogs rarely bite.
II. Our dogs could be dangerous for intruders.
40. **Statement:**
Without reforming the entire administrative system, we cannot eradicate corruption and prejudice from the society.
Assumptions:
I. The existence of corruption and prejudice is good.
II. There is enough flexibility to change the administrative system.
41. **Statement:** Since the First Five-Year Plan, the Indian policy-makers have acknowledged the services rendered by the voluntary agencies.
Assumptions:
I. Voluntary agencies have been in existence in India even before the First Five-Year Plan.
II. Voluntary agencies have contributed in designing of the First Five-Year-Plan.
42. **Statement:** As a nation we are committed to protect and promote the interests of all those who are socio-economically vulnerable.
Assumptions:
I. It is possible to protect and promote interests of socio-economically weak people.
II. A nation should have certain commitments for its people.

43. **Statement:** ‘This book has been written for every one and does not require readers to have any experience in handling computers.’ - An author of a book on computers.
Assumptions :
I. It is possible to learn computers with the help of a book only.
II. It is possible to learn to handle computers only after reading the book.
44. **Statement:** Health is the foundation of well-being, virtue, prosperity, wealth, happiness and salvation.
Assumptions :
I. Happiness results in health and well-being.
II. People desire to be happy, prosperous and virtuous.
45. **Statement :** Authorised Indian Edition — illegal for sale or distribution outside India’ – A publisher’s note on the cover page of a book.
Assumptions :
I. Indian editions may be in demand in nearby countries.
II. It may be possible to sell or distribute this book outside India.
46. **Statement:** Pollution is a slow poison, and therefore social scientists and the media must work together to create sensitivity among people.
Assumptions:
I. Media is well informed and aware about the effects of pollution.
II. Media is likely to influence people to raise their sensitivity towards various problems.
47. **Statement:** In country ‘X’ a public servant cannot claim immunity from prosecution for any objectionable act committed while performing his official duty.
Assumptions:
I. A public servant is likely to commit an objectionable act while performing his official duty.
II. Every one is equal before law.
48. **Statement:** The entry of multinational companies in India has led to higher efficiency of the Indian companies who are competing with them.
Assumptions:
I. Employees of multinationals may serve as models for Indian company’s employees.
II. Competition will reduce many Indian companies to ashes.
49. **Statement:** ‘Only candidates having B. Tech., B.E., MBA and MCA with at least one year’s exposure to software will be considered for admission to our course’ - Admission criterion of a reputed software training institute.
Assumptions:
I. The candidates having requisite background are likely to complete the course successfully.
II. The institute is choosy about admitting candidates to its courses.
50. **Statement:** ‘If you would like to have any more information of XYZ credit card, call us between 8.00 am and 8.00 pm 365 days of the year’ -An advertisement of ‘XYZ credit card company’.
- Assumptions:**
I. Competition produces more friendly customer service.
II. The company values and appreciates the need of the customers.
51. **Statement:** “Learn computer at no cost and make your life more meaningful.”—An advertisement
Assumptions:
I. People prefer to join courses without any fees.
II. Knowledge in computer makes life more meaningful.
52. **Statement:** The government has decided to launch food-for-work programme in all the drought-affected areas.
Assumptions:
I. The government has the machinery to implement the food for work programme in all the drought affected areas.
II. There is enough food in stock to implement the programmes successfully.
53. **Statement:** The head of the organisation has decided to reward those employees who will help reducing expenditure substantially by suggesting innovative techniques.
Assumptions:
I. The employees may be able to come out with innovative ideas.
II. The employees may be encouraged to apply their mind to earn the reward.
54. **Statement:** The civic authority has advised the residents in the area to use mosquito repellents or sleep inside nets as a large number of people are suffering from malaria.
Assumptions:
I. Local residents have enough money to arrange for the repellents or nets.
II. People may ignore and continue to get mosquito bites as they have other pressing needs.
55. **Statement:** “If you are intelligent, we are the right people for improving your performance.” — An advertisement of a coaching class.
Assumptions:
I. Brilliant students prefer to join coaching classes.
II. Coaching classes help the students improve their performance.
56. **Statement :** “I have not received telephone bills for nine months in spite of several complaints.” – A telephone customer’s letter to the editor of a daily.
Assumptions:
I. Every customer has a right to get bills regularly from the telephone company.
II. The customers complaints point to defect in the service which is expected to be corrected.
57. **Statement:** Greater public participation results in good civic governance.-Statement of Municipal Commissioner of city W.
Assumptions:
I. The municipal office is not competent to effect good civic administration.
II. Good civic governance is a matter of collective will and effort of the people and administration.

58. **Statement:** To investigate the murder of the lone resident of a flat, the police interrogated the domestic servant, the watchman of the multistoried buildings and the liftman.
Assumptions:
I. The domestic servant, watchman and the liftman can give a clue about the suspected murder.
II. Generally in such cases the persons known to the resident is directly or indirectly involved in the murder.
59. **Statement:** If the city bus which runs between Cheka Naka and Vande Park is extended to Shramnagar, it will be convenient. Appeal of residents of Cheka Naka to the city bus company.
Assumptions:
I. The convenience of the city bus company is much more important than the needs of the consumers.
II. The city bus company is indifferent to the aspirations of the residents of Shramnagar.
60. **Statement:** Desirable and qualified candidates should submit their application form along with the requisite qualifications and their biodata. An advertisement for admission.
Assumptions:
I. Merely having qualification and aptitude for the job does not make a person suitable for it.
II. Many candidates shall apply because they are interested in the job.
61. **Statement:** It has been felt that at a time when the airline faces tough competition and is passing through critical economic conditions, the remaining higher posts should be opened for outside professionals instead of filling them up with insider applicants.
Assumptions:
I. The internal applicants only aspire for promotion without contributing much to the organisation.
II. It is most likely that problems of the airline would be solved by experienced professionals.
62. **Statement:** KLM company has decided to issue debentures to mop up resources.
Assumptions:
I. KLM company has already explored other sources to collect resources.
II. There are very few competitors in the market for the products of KLM company.
63. **Statements:** "Tenders are invited from reputed contractors for pre-qualification." —The tender notice of a public sector company
Assumptions:
I. The company seeks to do quality business.
II. The company expects contractual and competitive rates for its work.
64. **Statements:** The state government 'X' is committed to restrict smoke levels on the roads of the metropolis as per the desired parameters.
Assumptions:
I. It is possible to determine the smoke levels.
II. A committed government can carry forward welfare measures for its people.
65. **Statement:** Last century was the century of fundamental rights and let the forthcoming century become that of excellence. —An appeal from a noted lawyer
Assumptions:
I. Every century should be marked for a particular purpose.
II. The human race is ready to focus its attention on aiming at excellence in every sphere of life.
66. **Statement:** 'You are expected to be frank and objective while writing your self appraisal report'. -An instruction for writing self-appraisal report
Assumptions:
I. Unless cautioned, people may tend to be a little shy and less objective while writing their self-appraisal report.
II. Every self-appraisal report helps the person in his further development.
67. **Statement:** The higher echelons of any organisation are expected to be models of observational learning and should not be considered as merely sources of rewards and punishments.
Assumptions:
I. Employees are-likely to be sensitive enough to learn by observing the behaviour of their bosses.
II. Normally bosses are considered as sources of reward and punishment.
68. **Statement:** 'But, out of A, B, C and D products, you buy 'B', which alone is based on international technology. - A shopkeeper tells a customer.
Assumptions :
I. The customers normally accept the recommendation of the shopkeeper.
II. Use of international technology is supposed to ensure better quality standards.
69. **Statement:** The organisation should promote employees on the basis of merit alone and not on the basis of length of service or seniority.
Assumptions:
I. Length of service or seniority does not alone reflect merit of an employee.
II. It is possible to determine and measure merit of an employee.
70. **Statement:** Highly brilliant and industrious students do not always excel in the written examination.
Assumptions:
I. The written examination is good mainly for mediocre students.
II. The brilliant and industrious students cannot always write good answer in the exam.
71. **Statement:** This book is for those who are interested to know more about 'Indian History'.
Assumptions:
I. People who are interested to know about the author may read books.
II. Every book may attract some readers.
72. **Statement:** Helping the poor is the real service to humanity.
Assumptions:
I. Poor people are in need of help from others.
II. If we do not help poor, we will not be called human beings.

73. **Statement:** The police in India have to cope with tremendous stress and strain while having to maintain security and order.
Assumptions:
I. In other countries, the police do not have to undergo stress and strain while doing their duty.
II. The police are expected to do their duties without stress or strain.
74. **Statement:** If children are to manage our world in future, then they need to be equipped to do so.
Assumptions:
I. The world has always educated children.
II. It is possible to educate children.
75. **Statement:** There is no shopping complex for this colony; people have to go to the main market.
Assumptions:
I. This colony may be far from main market.
II. The people do not want to go to the main market.
76. **Statement:** Take this 'oven' home and you can prepare very tasty dishes which you were unable to prepare earlier. An advertisement of X brand oven.
Assumptions:
I. The user knows the procedure recipe of tasty dishes but does not have the proper oven to cook.
II. Only 'X' brand oven can cook very tasty dishes.
77. **Statement:** "Please note that the company will provide accommodation to only outside candidates if selected." A condition in an advertisement.
Assumptions:
I. The local candidates would be having some or other arrangement for their stay.
II. The company plans to select only local candidates.
78. **Statement:** Traffic police be given anti-pollution masks while manning traffic signals.
Assumptions:
I. The traffic police will be able to carry out their work after wearing the mask.
II. The masks are safe for wearing and there is no other adverse side-effect.
79. **Statement:** Please do not use lift while going down an instruction on the top floor of a five-storey building.
Assumptions:
I. While going down the lift is unable to carry any load.
II. Provision of lift is a matter of facility and not of right.
80. **Statement:** You can win over new people by your warm smile.
Assumptions:
I. It is necessary to win over new people.
II. It is possible for us to smile warmly at unknown people.
- Directions (Qs. 81-85):** In each question below is given a statement followed by three assumptions numbered I, II and III. An assumption is something supposed or taken for granted. You have to consider the statement and the assumptions and decide which of the assumptions is implicit in the statement. Then decide which of the answers (a), (b), (c), (d) and (e) is the correct answer.
81. **Statement:** "A rare opportunity to be a professional while you are at home." An advertisement for computer-literate housewives by a computer company
Assumptions:
I. Some housewives simultaneously desire to become professional.
II. Computer industry is growing at a fast pace.
III. It is possible to be a professional as well as a housewife.
(a) Only I and II (b) Only II and III
(c) Only I and III (d) Only II
(e) None of these
82. **Statement:** India's economic growth has come at a terrible price of increased industrial and vehicular pollution.
Assumptions:
I. Pollution is a part of industrial society.
II. Indian economic growth is based on only industrial growth.
III. A country desires economic growth with manageable side-effects.
(a) Only I (b) Only II
(c) Only I and III (d) Only III
(e) None of these
83. **Statement:** Efforts to develop technologies more appropriate to the needs of the poorest sections of society need to be further intensified.
Assumptions:
I. Nothing is impossible if proper efforts are made.
II. Technology needs are different for different sections of society.
III. It is possible to develop appropriate technologies for various economic sections of the society.
(a) Only I (b) Only III
(c) Only II (d) Both II and III
(e) None of these
84. **Statement:** "We have the distinction of being the only company in India as well as the second in the world to have won an ISO 9002 quality certification in our line of business" - Statement of Company X's Chairman.
Assumptions:
I. There were not many companies in the line of business of Company 'X'.
II. Getting ISO 9002 in the line of business of Company 'X' is not easy.
III. The Company 'X' desires to expand its business.
(a) Only I (b) Only II
(c) Only III (d) Only II and III
(e) None of these
85. **Statement:** Co-operative social relationships contribute to develop individual potentialities.
Assumptions:
I. Every society desires to prosper.
II. Individuals desire to develop their potential.
III. It is possible to create and maintain co-operative environment in a society.
(a) Only II and III (b) Only II and I
(c) Only I and III (d) Only II
(e) None of these

ANSWER KEY

1	(b)	11	(e)	21	(e)	31	(d)	41	(a)	51	(e)	61	(b)	71	(b)	81	(c)
2	(e)	12	(e)	22	(b)	32	(b)	42	(e)	52	(e)	62	(a)	72	(a)	82	(c)
3	(a)	13	(e)	23	(b)	33	(a)	43	(d)	53	(e)	63	(e)	73	(b)	83	(d)
4	(b)	14	(e)	24	(e)	34	(a)	44	(b)	54	(a)	64	(e)	74	(b)	84	(d)
5	(b)	15	(e)	25	(a)	35	(e)	45	(e)	55	(e)	65	(b)	75	(e)	85	(a)
6	(b)	16	(d)	26	(a)	36	(a)	46	(e)	56	(e)	66	(a)	76	(a)		
7	(c)	17	(a)	27	(a)	37	(e)	47	(a)	57	(b)	67	(e)	77	(a)		
8	(d)	18	(e)	28	(b)	38	(b)	48	(c)	58	(e)	68	(e)	78	(e)		
9	(a)	19	(b)	29	(e)	39	(b)	49	(e)	59	(d)	69	(e)	79	(d)		
10	(d)	20	(e)	30	(b)	40	(d)	50	(b)	60	(d)	70	(b)	80	(b)		

Hints & Explanations

- (b) I is not implicit. It is assumed that people will pay taxes. That is why II is implicit. But the Govt does not necessarily assume that people will continue with these schemes. May be it is discouraging people from being mere savers rather than investors.
- (e) No government decides to impose extra taxes unless it assumes that the amount it has is insufficient to serve its purpose. Hence, I is implicit. II is also implicit; otherwise the government would have increased the levy from the targeted 2%.
- (a) I is implicit from the tone of the offer of the 'X'. Housing Finance Company. But II is not implicit.
- (b) The real concern of WHO is the low per capita expenditure on health in India. Now, how will the initiative taken by WHO minimize the concern? The assumption is that the enhanced assistance may substantially increase the per capita expenditure on health in India. But, assumption I is not implicit due to the last part of it, i.e., and bring it on par with other countries.
Again, no one provides help to others unless one assumes that the other needs it. Hence, assumption II is implicit.
- (b) The Managing committee's request to the members of Galaxy Housing Society is to create awareness about the environmental hazards due to biodegradable garbage and therefore suggest an initiative to segregate and dispose them differently. However, there is no evidence in the passage to support assumption I, whether this move will encourage other housing societies to implement a similar protocol.
- (b) Engaging the Army for the rehabilitation work by the government implies that the government assumes that the Army possesses the required ability to rehabilitate the affected people rapidly. Hence, II is implicit but I is not implicit because of the word 'only'.
- (c) Investment in the shares of Company 'A' has been termed as 'a gamble'. This implies the speaker must be assuming that the investment may **either** incur loss or bear profit.
- (d) I is not implicit (note the word 'at least this year'). II can't be correlated. Hence, II is also not implicit.
- (a) The words 'not true always' implies that sometimes the move bears positive results. Hence, the speaker must be assuming I. II is obviously not implicit.
- (d) The tone of the statement only implies that the speaker assumes that newspapers are more effective than oral call. The given assumption I is not implicit because of the word 'rarely'. II is also not implicit because it contradicts the valid assumption. Note that here the valid assumption is "people will read an advertisement in a newspaper".
- (e) Why a review committee to find out the reasons for unstable stock prices? Concerned authority must have assumed I. Hence, I is implicit. One does not entrust a work to another unless the former assumes that the latter has the efficiency to do that work. Hence, II is also implicit.
- (e) Assumption I is implicit. Why has such advertisement been published by the advertisers? Definitely, the advertiser is assuming I. II is also implicit; that is why advertiser advocates doing so.
- (e) Based on the statement indicating an increase in the number and the frequency of the trains, both the assumptions are implicit. In fact this is actually referring to a noble initiative by the railway officials to bridge the gap and address issues regarding lack of connectivity through trains. Also, as more passengers would use the services, it would lead to better revenues and hence, the ticket pricing will go down. A win-win situation !
- (e) In reality, due to disparity in the fee structure of various educational institutions, merit is often looked down upon and weightage in given to the financial condition. Today, degrees and certificates could be availed by money. The Government's initiative of linking the school fee with the parents' incomes will actually motivate parents to furnish authentic information regarding their incomes to the school authorities besides there will be no delay in the fee payment protocol, as it can be easily done by the parents.

16. (d) When decisions are taken, the assumptions are positive. It is assumed that various sections would facilitate the implementation of the decision. Hence, neither is implicit.
17. (a) The step taken by the airlines must have been aimed at earning more revenue. The desired result can't be obtained without assuming I. Hence, I is implicit. II may or may not be an assumption.
18. (e) Generally an advertisement is given to attract customers. Hence, assumption II is implicit. The advertisement mentions some feature. Why will the mentioned feature attract customers? Hence, I must be assumed.
19. (b) Why did bank 'A' reduce the interest rate on retail lending? The step taken by the bank must be aimed at generating more revenue. Hence, II must be assumed. I may or may not be an assumption. Hence, I is not implicit.
20. (e) When a notice is given by an organisation to a group of persons, the former assumes that the latter will follow it. Hence, I is implicit.
21. (e) I is implicit. If the desire were not there, why the statement? II is also implicit; hence the emphasis is on "explore all channels".
22. (b) I is not implicit. The grievance is against the govt, not against the banks. Banks serve only as a medium for transfer of money. II is implicit from the phrase "two months ago".
23. (b) I is not implicit in its present form. The author assumes that it is unproductive unless utilised. II is implicit; hence the lament on its underutilisation.
24. (e) The company is assuming II, that is why it has manufactured the medicine. Why has the company stressed on the constituents and the effect in its advertisement? Definitely because the company management is assuming I.
25. (a) Failure to meet the demands is possible only when the demands have been raised in the first place. Hence, I is implicit. II may be a conclusion but not an assumption.
26. (a) The decision taken by the government implies that the government must be assuming I. Note that no organisation/government/person takes decision to compensate the victim unless it assumes that it has adequate fund to satisfy the expenses. II can't be correlated. Hence, II is not implicit.
27. (a) Why has the suspension of flights been made for a limited period of four days? It must have been assumed by the authorities of X-Airlines that the crisis may be over after this limited period. Hence, assumption I is implicit. II may or may not be an assumption. Hence, II is not implicit.
28. (b) Request made by civic authorities to the citizens implies that the authorities must be assuming that the citizens will respond positively. Now look at assumption I. It may or may not be an assumption because the way of responding by the citizens may not necessarily be the same as mentioned in the assumption.
- Hence, assumption I is not implicit. Again, request made by the authorities implies that the authorities must be assuming that their effort will reduce the problem of power theft. Now, how can they assume this? Obviously, II is an assumption.
29. (e) Why did PTA take such a harsh decision? They must be assuming that its decision may compel the principal to reconsider the school fees. Hence, assumption II is implicit. Again, how can the decision usher such result? Obviously, PTA must be assuming that parents of the students will cooperate. Hence, assumption I is also implicit.
30. (b) Assumption I can't be correlated with the statement. Hence, assumption I is not implicit. Now, why did the authority go for the advertisement? Obviously, II must be assumed. Hence, only II is implicit.
31. (d) The employees' association is generally concerned with the welfare of employees and not with the benefit of the organisation. Hence II is not implicit. I, also, is not an assumption.
32. (b) Assuming II only, the government has agreed to work out an effective social security programme.
33. (a) To motivate the employees and hence for the enhancement of their work, the head of the organisation congratulated the entire staff in his speech and appreciated their effort.
34. (a) Whenever such notices are displayed it is assumed that those who are concerned with the notice will read the notice and follow the messages in it. Hence I is implicit. If II were true, it is not necessary to display such notices.
35. (e) Here both the assumptions are valid. If it were not so, there would be no benefit of setting up such mission.
36. (a) I is implicit; that is why the advertisement has been given. Second one is absurd.
37. (e) I is obviously implicit. II is also implicit; that is why cancellation of citizenship has been talked about.
38. (b) I is vague. But II is implicit because the fixation of amount as ₹ 1999 per month must have been done after assuming II.
39. (b) The wording "Beware of dogs" makes II implicit.
40. (d) I is not implicit. The valid assumption is that the existence of corruption and prejudice is not desirable. II is also not implicit. The statement is silent on whether the administrative system can be reformed.
41. (a) I is implicit. Because of I, the policy-makers have acknowledged the services rendered by the voluntary agencies. II is not implicit. Designing and service contribution are two different things.
42. (e) If it is impossible then why would a nation commit so? Hence I is implicit. The term *As a nation* used in the statement and then about its commitment for its people confirms II. Hence II also implicit.
43. (d) As *only* is used in both the assumptions, none is implicit.
44. (b) I is not implicit. The statement puts it the other way round. That is, health results in happiness. II is implicit, hence the statement.

45. (e) Definitely because of assumption I and II the publisher has warned in the cover page of the book.
46. (e) Sensitivity can be created by the media only when it possesses both these attributes.
47. (a) I is implicit. The provision would not have existed if there were no likelihood of such an act being committed. II is not implicit. Merely debarring public servants from immunity does not ensure equality for all.
48. (c) Higher efficiency will be brought about in either the case. When you have good models, the environment improves. On the other hand, even if this not be case, fear of being eliminated leads to adaptation in the Darwinian fashion.
49. (e) I is implicit. That is why the demand for qualification and experience. II is also implicit. Unless the institute were choosy, it would have welcomed one and all, without imposing any restrictions.
50. (b) I is not implicit: Competition from whom? There are no such hints in the statement. II is implicit: it is this appreciation that has propelled the credit card company towards such an excellent customer service.
51. (e) The idea behind facilitating learning computer at no cost is aimed at attracting learners. Hence, I is implicit. II is also an assumption; that is why the advertisement advocates learning computer.
52. (e) Both I and II are implicit. The government does not launch its programme unless it assumes that it has the basic infrastructure to implement it.
53. (e) Why a reward for a good suggestion? Obviously, authorities are assuming that the reward will enthuse employees to evolve innovative techniques. Hence, II is implicit. On the other side, seeking help from employees in order to evolve an innovative techniques implies that employees may have the required calibre. Hence, I is also implicit.
54. (a) I is implicit; that is why the civic authorities are advising so. II is not implicit. No one gives advice to another unless the former assumes that the latter will follow the advice.
55. (e) This advertisement seems to be a perfect destination (as a coaching class) for upskilling talent and improving performance. The advertisement is focussed on both the assumptions as firstly, brilliant students always prefer more practice, sharing and learning, based on a classroom modal and look forward to receiving additional information, tips and tricks for cracking competitive examinations, besides creating appropriate avenues for better scores, improved understanding of the concepts and implamentation of knowledge.
56. (e) The customer is assuming I that is why he has lodged several complaints of not receiving his telephone bills. As he has informed about this to the editor of a daily, he expects to correct the system. Hence, II.
57. (b) The statement does not point to the competence of anybody. It merely hints at the power of co-operation.
58. (e) The police is assuming I that is why they have interrogated them. Hence, I is implicit. II is a more generalised form of I. Hence, implicit.
59. (d) We are in no position to pass any judgment at present. We may assume these only if the appeal is rejected
60. (d) I is not implicit because this is an ad for *admission*, not for a *Job*. II is also not implicit for the same reason. You don't seek *admission*.
61. (b) The intention of internal applicants can't be assumed from the given statement. II is implicit; that is why they want to recruit outside professionals.
62. (a) Whenever a decision is taken by the company it goes through every aspect threadbare. Hence, I is implicit. Debentures can be issued even when there are a large number of competitors. Hence, II is not implicit.
63. (e) The company's authority is assuming both that is why they have invited tenders from *reputed* contractors. The term *reputed* confirms I. II is a universal assumption as the principal reason of inviting tenders.
64. (e) The govt has promised to bring down the smoke level because it is possible to determine the level. Hence, I is implicit. II is implicit because containing pollution is also a welfare measure.
65. (b) The legal appeal hints at the requirement of excellence and perfection in every sphere of life. This spirit would foster healthy competition in the society and give rise to mutual respect and overall growth and development.
66. (a) An organization might receive loads of self-appraisal applications during the appraisal season. For timely and efficient evaluation, the self-appraisal forms should refrain from being too lengthy or subjective. Also framing to-the point responses, an objective approach showcases maturity and the asility to present information coherently. Also, shyness might create a negative impression on a particular employee and there could be biasness. so, it is essential to be frank; yet precise.
67. (e) I is implicit; that is why the talk of "observational learning". II is also implicit; note the use of the word *merely*.
68. (e) I is implicit: it is with this belief that the shopkeeper makes the recommendation. II is also implicit; that is why the shopkeeper emphasises on "international technology".
69. (e) I is implicit. Note that the statement makes a distinction between merit and seniority. II is implicit: only when you can determine something that you make it the basis for further decision.
70. (b) What we are being told about brilliant students does not have anything to do with mediocre students. Hence I is not implicit. But II is implicit. This must be the reason why the brilliant students do not always excel.
71. (b) I is not implicit because it talks about a subject, not the author. II is implicit because when we say that a book is for a particular target segment, we assume that such a target segment exists.

72. (a) I is implicit: how else can helping the poor be a service? II is not implicit because not all human beings are in the "service" business.
73. (b) I is not implicit because the statement is based only on what happens in India. II is implicit because of the concern shown by the statement.
74. (b) I is not implicit because we don't know whether the statement is based on past experience. II is implicit because education is very important in equipping the children.
75. (e) Both the assumptions are implicit because of the need felt for a shopping complex in the colony itself.
76. (a) The term 'which you were unable to prepare earlier' clearly means even though the user knows the procedure of some special preparation, he does not have a proper oven to cook. Hence, I is implicit. The statement assumes that 'X' can cook tasty dishes but does not rule out *all other* ovens from doing so. Hence II does not implicit.
77. (a) Accommodation to only outside candidates clearly indicates that local candidates will be having their own arrangement for stay. Hence, I is implicit. It is nowhere mentioned that outside candidates will not be selected. Hence II is not implicit.
78. (e) Providing anything for a solution automatically leads to the fact that the provider has assumed that neither it will disturb while working nor it has any adverse side effect, and that it will rather promote the work.
79. (d) From the above statement suggesting people not to use the lift in a particular situation, both the assumptions are irrelevant and vague.
80. (b) Although India unfortunately does not exhibit such stronger-friendly culture, western countries are very amicable and showcases excellent illustrations of smiling warmly at unknown people. In this process, there is a huge probability that the hearts of people can be won over and increases social network.
81. (c) Assuming I, the company has advertised for housewives. If it were not possible, the company would not go for such anad. Hence III is implicit.
82. (c) I is implicit in the phrase "industrial ... pollution." II is not implicit because of the word *only*. III is implicit from the concern shown at the "terrible price".
83. (d) The term 'nothing' has a broad range of connotations. Hence I is not implicit. Since the speaker is talking of sectional need-based technology development, he is assuming both II and III.
84. (d) Since, it is hard to get ISO 9002 certification, he is trying to highlight company's achievement and by doing that expansion of his business is in his mind.
85. (a) It is a fact that individuals, whether self-employed or salaried desire to develop their skills, ability and expertise in their daily assignments. Sometimes self-actualization can score over remuneration. Also, as we dwell in a civilized society, with proper efforts, it is possible to create fellow-feelings and maintain cooperative environment in the society option (a) is thus appropriate to the context of the statement.



Statement & Conclusions

INTRODUCTION

In this type of questions, a statement is given followed by two conclusions. We have to find out which of these conclusions definitely follows from the given statement.

WHAT IS A 'CONCLUSION'?

'Conclusion' means a fact that can be truly inferred from the contents of a given sentence. Conclusion is the art of judging or deciding, based on reasoning.

DIRECTIONS (for Examples 1 to 3) : In each of the following questions, a statement is given followed by two conclusions I and II. Give answer :

- (a) if only conclusion I follows;
- (b) if only conclusion II follows;
- (c) if either I or II follows;
- (d) if neither I nor II follows;
- (e) if both I and II follows;

EXAMPLE 1.

Statement : The oceans are a storehouse of practically every mineral including uranium. But like most other minerals, it is found in extremely low concentration – about three gms per 1000 tonnes of water.

Conclusions : I. The oceans are a cheap source of uranium.
II. The oceans harbour radiation hazards.

Sol. (d) I can not be concluded as most of the minerals are available in similar concentration levels in oceans. II is out of context of the sentence.

EXAMPLE 2.

Statement : Today, out of the world population of several thousand million, the majority of men have to live under government which refuse them personal liberty and the right to dissent.

Conclusions : I. People are indifferent to personal liberty and the right to dissent.
II. People desire personal liberty and the right to dissent.

Sol. (b)

EXAMPLE 3.

Statement : It has been decided by the Government to withdraw 33% of the subsidy on cooking gas from the beginning of next month—A spokesman of the Government.

Conclusions : I. People no more desire or need such subsidy from government as they can afford increased price of the cooking gas.
II. The price of the cooking gas will increase at least by 33% from the next month.

Sol. (d)

DIRECTIONS (for Examples 4 to 5) : In each of the following questions, a statement is given followed by two conclusions I and II. Give answer :

- (a) if only conclusion I follows;
- (b) if only conclusion II follows;
- (c) if either I or II follows;
- (d) if both I and II follow.
- (e) if neither I nor II follows;

EXAMPLE 4.

Statement : Interest rate will be fixed on the basis of our bank's rate prevailing on the date of deposit and refixed every quarter thereafter.

Conclusions : I. It is left to the depositors to guard their interest.
II. The bank's interest rates are subject to change on a day-to-day basis depending on market position.

Sol. (b)

EXAMPLE 5.

Statement : The government of country X has recently announced several concessions and offered attractive package tours for foreign visitors.

Conclusions : I. Now, more number of foreign tourists will visit the country.
II. The government of country X seems to be serious in attracting tourists.

Sol. (d)

Shortcut Approach

For a adhere conclusion to follow a statement must to the following 4 GOLDEN RULES.

1. The conclusion must be in context of the statement. If out of context than it does not follow.
2. The conclusion must support the contents of the statement. If it negates than it does not follow.
3. The conclusion must be truly inferred. If there is some doubt that it may or may not be correct or truly inferred, than it does not follow.
4. The conclusion must not repeat or rephrase the statement. If so, it does not follow.

Now let us apply these rules to the 5 examples solved above.

Ex.1 I. Rule 2 applies as it negates the statement.

II. Rule 1 applies as it is out of context.

Ex.2 I. Rule 2 applies as it negates the statement.

II. Fulfils all the conditions in Rule 1-4.

Ex.3 I. Rule 1, 2 & 4 follow but 3 does not as there can be various reasons to withdraw subsidy.

II. Rule 1, 2 & 4 follow but 3 does not as the price increase is actually 49%

Ex.4 I. Rule I applies as it is out of context.

II. Follows all the 4 rules perfectly.

Ex.5 Both I & II follow all the 4 rules and hence follow the statement.

EXERCISE

Directions (Q. 1-40): In each questions below is given a statement followed by two conclusions numbered I and II. You have to assume everything in the statement to be true, then consider the two conclusions together and decide which of them logically follows beyond a reasonable doubt from the information given in the statement. Give answer

- (a) if only conclusion I follows.
- (b) if only conclusion II follows.
- (c) if either I or II follows.
- (d) if neither I nor II follows; and
- (e) if both I and II follow.

1. **Statement:** Many people and media alleged that Mr. X, the opposition leader, met the Chief Minister yesterday to seek certain favours, an allegation which was strongly rejected by Mr X.

Conclusions:

- I Mr X did meet the Chief Minister yesterday to seek certain favours.
- II Mr X did not meet the Chief Minister to seek certain favours.

2. **Statement:** For over three decades company 'X' has been totally involved in energy conservation, its efficient use and management.

Conclusions:

- I The company has yet to learn and acquire basic things in this area.
- II It is dedication that is more important than knowledge and expertise.

3. **Statement:** This book 'Z' is the only book which focuses its attention on the problem of poverty in India between 1950 and 1980.

Conclusions:

- I There was no questions of poverty before 1950.
- II No other books deals with poverty in India during 1950 to 1980.

4. **Statement:** Applications of applicants who do not fulfil eligibility criteria and/or who do not submit applications before last date will be summarily rejected and will not be called for the written test.

Conclusions:

- I Those who are called for the written test are those who fulfil eligibility criteria and have submitted their applications before last date.
- II Written test will be held only after scrutiny of applications.

5. **Statement:** On metro section of railways, the motormen are frequently required to do overtime during May and June though all vacancies are completely filled as per requirement of this section.

Conclusions:

- I Many motormen take leave of shorter or longer duration during this period.
- II Some motormen desire to earn overtime whenever possible.

6. **Statement:** The President of XYZ party indicated that 25 independent Members of Legislative Assembly (MLA) are seriously considering various options of joining some political party. But in any case all of them collectively will join one party only.

Conclusions:

- I The 25 independent MLAs will join XYZ party in a short period of time.
- II The 25 independent MLAs will join some other political party in a short period of time.

7. **Statement:** 'Our approach of fund management is based on science as much as on common sense and discipline because our goal is consistent performance in the long term. – Advertisement of a mutual fund company.

Conclusions:

- I Only the approach of science of investment can lead to high gains in short-term investment.
- II It is not necessary to go for long-term investment when low-return short-term investment is available.

8. **Statement:** 'We follow some of the best and effective teaching learning practices used by leading institutes all over the world.' — A statement of a Professor of MN Institute.

Conclusions:

- I The MN Institute is one of the leading institutes of the world.
- II Whatever is being followed by world's leading institutes will definitely be good and useful.

9. **Statement:** The Bank of England's move to auction 25 metric tons of gold drew plenty of bidders looking for a bargain, but was criticised by major gold producers worldwide.

Conclusions:

- I The Bank of England should not auction gold which it possesses to keep steady international prices of gold.
- II Bidders should quote higher gold prices to retain present value of gold in the international markets.

10. **Statement:** The oceans are a storehouse of practically every mineral including uranium. But like most other minerals, it is found in extremely low concentration—about three gms. Per 1000 tonnes of water.

Conclusions:

- I The oceans are a cheap source of uranium.
- II The oceans harbour radiation hazards.

11. **Statement:** The minister questioned the utility of the space research programme and suggested its replacement by other areas of felt national needs.

Conclusions:

- I Exploring the space does not contribute to critical national needs.
- II Research should be oriented to national needs.

12. **Statement:** The laws and statutes framed by the Government for the purpose of providing equal treatment to every citizens, on implementation perpetuate corrupt working system.

- Conclusions:**
- I** the laws and statutes should be framed but they should not be implemented to avoid corrupt working system.
- II** There should be obvious method to investigate corrupt working system.
13. **Statement:** Mrs X is nominated for one of the two posts of which one post is reserved by the Managing Committee for the female of other religious minority community and the other for the female of scheduled Castes or Scheduled Tribes.
- Conclusions:**
- I** Mrs X is the member of religious minority community.
- II** Mrs X is the member of Scheduled Castes or Scheduled Tribes.
14. **Statement:** We do not need today in India extraordinary specialists but those trained ordinary doctors who are dedicated to their profession.
- Conclusions:**
- I** We should promote medical profession with dedicated ordinary doctors rather than promoting high specialised medical education.
- II** Extraordinary specialists are not dedicated to their profession.
15. **Statement:** The maximum number of vacancies for the clerical cadre is 40, which will be filled through this recruitment round – An advertisement of Company W.
- Conclusions:**
- I** The Company 'A' may appoint less than 40 clerks in this round.
- II** The Company 'A' may appoint 40 clerks in this round.
16. **Statement:** Global ecological issues have eclipsed local environmental problems which are being faced by the poor societies.
- Conclusions:**
- I** Poor societies always have to suffer because of their poverty.
- II** Global ecological issues are not so important. Rich societies can bear with it.
17. **Statement:** People in metropolitan city 'X' have welcomed the recent Supreme Court order banning the registration of private vehicles that do not conform to Euro II emission norms with immediate effect for metropolitan city 'Y' only.
- Conclusions:**
- I** City 'X' has quite lower level of vehicular pollution than city 'Y'.
- II** Public vehicles do not contribute to the vehicular pollution.
18. **Statement:** '70% of the world's data is processed on XYZ company's platforms' – An advertisement of XYZ – a computer manufacturing company.
- Conclusions:**
- I** There is no other company in the world which produces platforms of data processing.
- II** Company XYZ has to make more efforts to market its platforms.
19. **Statement:** The government of State 'A' has sought a waiver of outstanding Central loans of ₹ 4,000 crores and a moratorium on repayment pending the waiver.
- Conclusions:**
- I** Unlike other states, State 'A' has no desire to make repayment of its loans.
- II** State 'A's' financial condition does not appear to be satisfactory.
20. **Statement :** The cabinet of State 'X' took certain steps to tackle the milk glut in the state as the cooperatives and Government dairies failed to use the available milk. - A news report
- Conclusions :**
- I** The milk production of State 'X' is more than its need.
- II** The Government and co-operative dairies in State 'X' are not equipped in terms of resources and technology to handle such excess milk.
21. **Statement :** My first and foremost task is to beautify this city. If city 'X' and 'Y' can do it why can't we do it? Statement of Municipal Commissioner of city 'Z' after taking over charge.
- Conclusions :**
- I** The people of city 'Z' are not aware about the present state of ugliness of their city.
- II** The present Commissioner has worked in city 'X' and 'Y' and has good experience of beautifying cities.
22. **Statement:** Women's organisations in India have welcomed the amendment of the Industrial Employment Rules 1946 to curb sexual harassment at the workplace.
- Conclusions:**
- I** Sexual harassment of women at workplace more prevalent in India as compared to other developed countries.
- II** Many organisations in India will stop recruiting women to avoid such problems.
23. **Statement :** It has been decided by the Government to withdraw 33% of the subsidy on cooking gas from the beginning of next month. A spokesman of the Government.
- Conclusion :**
- I** People now no more desire or need such subsidy from government as they can afford increased price of the cooking gas.
- II** The price of the cooking gas will increase at least by 33% from the next month.
24. **Statement:** "The Government will review the present policy of the diesel price in view of further spurt in the international oil prices". - A spokesman of the Government.
- Conclusions:**
- I** The Government will increase the price of the diesel after the imminent spurt in the international oil prices.
- II** The Government will not increase the price of the diesel even after the imminent spurt in the international oil prices.
25. **Statement :** The eligibility for admission to the course is minimum second class master's degree. However, the candidates who have appeared for the final year examination of master's degree can also apply.
- Conclusions:**
- I** All candidates who have yet to get their master's degree will be there in the list of selected candidates.
- II** All candidates having obtained second class master's degree will be there in the list of selected candidates.

26. **Statement:** The government-run company had asked its employees to declare their income and assets but it has been strongly resisted by employees union and no employee is going to declare his income.
Conclusions:
I. The employees of this company do not seem to have any additional undisclosed income besides their salary.
II. The employees' union wants all senior officers to declare their income first.
27. **Statement:** The 'Official Secrets Act' (OSA) enacted by the XYZ government during the war seems to be the source of much corruption in the country 'P'.
Conclusions:
I. The Official Secrets Act has to be abolished immediately to stop corruption in country 'P'.
II. The XYZ government wanted to encourage corruption in the government offices.
28. **Statement :** After collision of two vessels in the sea all the crewmen and passengers are declared as missing. A news report
Conclusions:
I. No one from the two vessels has survived after the collision.
II. A few persons from the two vessels may have survived and are missing.
29. **Statement:** Good health is a luxury in country 'P' where rate of death is very high compared to other nations of that region.
Conclusions:
I. People in country 'P' cannot afford to have many luxuries of life.
II. Good health is a gift of nature.
30. **Statement:** Although we have rating agencies like Crisil, ICRA, there is demand to have a separate rating agency of IT companies to protect investors.
Conclusions :
I. Assessment of financial worth of IT Companies calls for separate, set of skills, insight and competencies.
II. Now the investors investing in IT companies will get protection of their investment.
31. **Statement:** Company "Y" will improve the manufacturing facilities for the production of shaving kits as a result of which capacity would increase and cost would be reduced. A spokesperson of the Company "Y"
Conclusions :
I. The products of Company "Y" will compete the market norms in the quality and cost factor.
II. There will be demand of shaving kits of Company "Y".
32. **Statement:** During 1997-98 the total loss incurred by the 111 Public Sector Units was to the tune of ₹ 6809 crore which was converted into paid capitals by the Government of its total investment of ₹ 5129 crore.
Conclusions :
I. The Government is left with only one option, that is, to privatise these units.
II. The Government did not take care in the matter of investments in these public sector units.
33. **Statement:** Population increase coupled with depleting resources is going to be the scenario of many developing countries in days to come.
Conclusions :
I. The population of developing countries with not continue to increase in future.
II. It will be very difficult for the governments of developing countries to provide its people decent quality of life.
34. **Statement:** Mr. X is one of the probable candidates shortlisted for the post of Director of KLM Institute.
Conclusions :
I. Mr. X will be selected as Director of KLM Institute.
II. Mr. X will not be selected as Director of KLM Institute.
35. **Statement:** An advertisement / Interest rate will be fixed on the basis of our bank's rate prevailing on the date of deposit and refixed every quarter thereafter.
Conclusions:
I. It is left to the depositors to guard their interest.
II. The bank's interest rates are subject to change on a day-to-day basis depending on market position.
36. **Statement:** In order to enforce discipline on transport operators, the state government has decided to impose a fine of ₹ 5,000 for the first excess tonne loaded in transport vehicle and ₹ 1,000 for each subsequent tonne.
Conclusions :
I. People will follow some discipline when severe fine is imposed.
II. The state government has failed to understand the problem of transport operators.
37. **Statement:** Research has proved that people eating high fat diets coupled with decreased level of exercises are prone to heart diseases.
Conclusions:
I. People should reduce their high-fat diet as a preventive method.
II. People must have sufficient level of exercise to reduce their chances of having heart disease.
38. **Statement:** Only those candidates with exceptional talent and strong motivation should apply. An advertisement.
Conclusions:
I. Candidates not fulfilling these criteria will not be considered.
II. It is possible to decide clearly who is talented and motivated.
39. **Statement:** Book your flat before 15th June and avail *interest free* loan from the builders. An advertisement
Conclusions:
I. No flat will be booked afterwards.
II. After 15th June, no loan will be provided.
40. **Statement:** Society is organised to provide the opportunity for personality development and society at its best promotes the personality of its members.
Conclusions:
I. Individuals brought up in total isolation from any human contact cannot get an opportunity for development of their personality.
II. Development of personality has no implication for any society.

ANSWER KEY

1	(c)	6	(c)	11	(d)	16	(d)	21	(d)	26	(d)	31	(a)	36	(a)
2	(d)	7	(d)	12	(d)	17	(d)	22	(d)	27	(d)	32	(d)	37	(e)
3	(d)	8	(d)	13	(c)	18	(d)	23	(d)	28	(b)	33	(b)	38	(e)
4	(e)	9	(d)	14	(a)	19	(b)	24	(c)	29	(a)	34	(c)	39	(d)
5	(a)	10	(d)	15	(c)	20	(e)	25	(d)	30	(a)	35	(b)	40	(a)

Hints & Explanations

- (c) In such a context, surrounded by allegations and refusals, it is difficult to estimate the authenticity of any of the options. henceforth, neither the fact of Mr. X meeting the Chief Minister for certain favours, nor Mr. X's refutation of the allgations can be ascertained.
- (d) Both these alternatives are inappropriate with regards to the statement. The first conclusion speaks about expertise acquisition. However the statement contradicts the same as company 'X' is already having thirty years of expertise in energy conservation, utilisation and management. The second conclusion holds no relevance absolutely.
- (d) From the statement, conclusion (I) is irrelevant as it is ambiguous and has no relation to the flow of information. Even the second conclusion also provides partial information to testify the aforementioned statement.
- (e) Both the conclusions follow. Even if we consider being practical, those who are called for any written test are provisionally the applicants who fulfill eligibility criteria and have submitted applications within deadlines; also written test will be held after verification of the applications.
- (a) It is clearly given that manpower is complete as per requirement of the section. Because there is no hint of heavy rush and introduction of new trains, we can consider conclusion I exhaustive. Because of the term *required to do*, nothing can be concluded about their desire. Hence, II does not follow.
- (c) As the independent members will join one party only they may join either XYZ party or any other existing party. Hence, I and II together are exahustive.
- (d) Neither option (I) nor (II) follows. The statement highlights the concept of fund management as science, common sense and discipline. Only a scientific approach would not work out, nor there is any information provided about duration to investment vis-a-vis returns.
- (d) II may be an assumption which the professor is assuming before passing his statement. Hence, II does not follow. I may or may not be possible. Hence, I does not follow.
- (d) Neither of the two conclusions throw light on justifying the statement. Bidding for higher prices would prove futile. Also, the first option does not leverage relevant information related to the statement.
- (d) Option (I) cannot be concluded as most of the minerals are available in similar concentration level in the oceans. The second option (II) has no relevance to the statement.
- (d) Space research definitely is a priority for most of the countries globally. It may be postponed but cannot be eradicated from government projects, as has been the Minister's opinion. However, there is no mention of the fact that space research does not contribute to economy or that research should be need-based.
- (d) Both the conclusions are irrelevant. Option (I) suggests framing of laws and statutes, but avoiding implementation to avoid corruption. This is a contradiction and meaningless. Also, there is no suggestion about investigation to eradicate corruption, as far as the original statement is concerned.
- (c) Since there is a mention of two posts, one reserved for the minority community and the other for the scheduled caste or scheduled tribes, Mrs. X (the nominee) could either belong to the religious minority or a member of the SC/ST category.
- (a) There is a huge dearth of medical professionals in India. Today, the WHO reports have projected a 1 : 1000 (doctor : patient) ratio which is below the benchmark for that of a developing country. The country does not need specialists. Rather, the peoploe wish to have better medical amenities, besides ordinary doctors, with an attitude for serving the society with dedication. Beggars cannot be choosers.
- (c) The maximum no. of vacancies is 40. Mathematically, we may represent this as < 40 , i.e. either less than 40 or 40. Hence, either I or II.
- (d) The statement does not say why the poor societies suffer. Hence I does not follow. II also does not follow because the statement merely states a fact; it does not go into the merits of the fact.
- (d) I does not follow. It is probable that city 'X' welcomed the order with the expectation that the order would soon be extended in some manner to city 'X' as well. II also does not follow. That public vehicles have been left out of the order is probably due to other reasons. For example, causing inconvenience to the commuters. For example, causing inconvenience to the commuters.
- (d) I does not follow. After all, the remaining 30 per cent is processed on other company's platforms. II also does not follow. It is true company XYZ has to make efforts. But why *more* efforts? When it enjoys such a large market share, the efforts should rather be less.

19. (b) I does not follow because it makes a comparison with "other states". Now, in the statement, other states are nowhere in the picture. II follows because seeking such loan waivers indicates poor financial condition.
20. (e) From the phrase 'milk glut' conclusion I can be determined. As it is given to the statement that these dairies have failed to use the available milk, hence II can be concluded.
21. (d) The public awareness about city Z can't be extracted from the given statement. Hence, I does not follow. II also does not follow because the information given in the statement may be obtained even without having work experience.
22. (d) Comparison with developed countries can't be inferred from the given statement. Hence, I does not follow. The follow-up step to be taken by organisations can't be predicted. Hence, II does not follow.
23. (d) I does not follow because a govt's policy is not determined merely by people's needs. II does not follow because we do not know amount of subsidy.
25. (d) Eligibility criteria are necessary conditions. They can't be treated as sufficient.
26. (d) I does not follow. On the contrary, it must be their "additional undisclosed income" which is causing hesitation on their part to declare their income. II also does not follow. The question of seniority simply does not arise.
27. (d) I does not follow. We can't abolish something without examining both the pros and cons. II does not follow because in all probability corruption was not intended; it emerged as a wasteful product.
28. (b) Missing does not necessarily mean "dead". It is quite possible that the persons are alive.
29. (a) I follows. A country where even good health is considered to be a luxury certainly can't afford luxuries. II does not follow. Man may strive towards good health.
30. (a) II may be an assumption of the speaker. But certainly it is not a conclusion.
31. (a) Improvement in the manufacturing facilities will automatically enhance the quality of its product and reduce the cost. These two things are important to compete in the market. Hence, I follows. II may be an assumption but is it not a conclusion.
32. (d) Both the conclusions do not fit as there is no reference of privatizing the PSUs and it is not a feasible or plausible approach either. We cannot also say that the Government hasn't taken any worthwhile measure, as it is stated that there has been an investment of ₹ 5129 cr.
33. (b) With the limited resources and overpopulation it is very hard to provide decent quality of life. Hence, II follows.
34. (c) As Mr. X is one of the candidates for the post of Director, he will either be selected or rejected.
35. (b) I does not follow because the statement is silent about the depositors. II follows from the phrase "bank's rate prevailing on the date of deposit". Which means the rates are subject to day-to-day changes.
36. (a) I follows from the policy laid down and the reason given thereof. II does not follow because the decision is expected to have been taken after a proper assessment of the problem.
37. (e) Both follow because they together take care of the two problems leading to heart diseases.
38. (e) I follows as the ad itself is a screening procedure. II also follows because only such a decision can help a candidate judge his fitness.
39. (d) Neither follows. From the statement, it is clear that 15th June is a deadline only for interest free loans. But booking will continue even afterwards. And even loans will be provided, on interest though.
40. (a) Man is a social animal. As per this proverb, it is obvious that society is actually a platform for networking, building acquaintances and gaining experience of life. For somebody, reared up in isolation, the world will always be morose devoid of love and emotions. Such people become skeptical, and will always be like a frog, in the well with no chances of personality development or behavioral traits.



Courses of Action

INTRODUCTION

In many objective, competitive examinations questions related to courses of action are frequently asked. Particularly for getting job in banking sector, one must have a command over such type of problems, such problems have become a regular feature of the question papers of various exams to be conducted for recruiting bank employees.

Why such questions are asked?

The basic reason behind asking such questions is to test your ability to judge a problem correctly in order to determine the root of the given problem and then finding out a proper course of action for that particular problem.

What is the format of the problem?

Directions: In the question given below is given a statement followed by two suggested courses of action number I and II. A course of action is a step or administrative decision to be taken for improvement, follow up, or further action in regard to the problem, policy etc. On the basis of the information given in the statement. Read the situation carefully and then decide which of the given courses of action follow/ follows.

Mark answers:

- (a) If only I follows (b) If only II follows
(c) If either I or II follows (d) If neither I nor II follows
(e) If both I & II follow.

Statement: The sale of a particular product 'A' has gone down considerably, causing great concern to company 'X'.

Courses of action :

- I** Company 'X' should mark a proper study of the rival products in the market.
II The price of product 'A' should be reduced.

NOTE : *In the examinations more than two courses of actions may also be given.*

As we have started the chapter right now, we will not solve the questions given in the format in the very beginning. But the questions given in the format will be solved after all the discussion get completed. In other words, the problems in the given format will be solved when we will reach at the conclusion of this chapter.

Types of Problems.

- (1) Problems based on problem and solution relationship.
- (2) Problems based on fact & improvement relationship.

Now, this is the time to discuss both the types of problems one by one:

1. PROBLEMS BASED ON PROBLEM AND SOLUTION RELATIONSHIP

This is a case when the given statement talks of a problem and the suggested course of action talk of a solution. It is very easy to find out when a suggested course of action is acceptable and when it is not. In fact, the suggested course of action will be acceptable if:

- (a) It solves/ reduces or minimises the given problem
- (b) It gives a practical and solution.

Now, what to do? Just see the given problem with a serious eye; think over that; apply your day to day experiences; apply your common sense and use your general knowledge to judge whether a suggested course of action solves/ reduces or minimises the problem given in the statement. After this step, the next step is checking the practicality. Here, you have to check if the solution suggested by given course of action is wise enough and applicable in practical way in day to day life.

In a fact. (a) is the 1st step test and after passing the step I test, the given course of action will have to pass step II (which is (b)). If the given course of action passes both the tests [step I (a) and step II (b),] only then it will be called a correct action.

Step I test

To pass the step I test a suggested course of action must be

- (i) based on established fact or
- (ii) based on logical prediction or
- (iii) based on experiences
- (iv) based on prevailing notions of truth

Let us discuss all the conditions mentioned above:-

(i) Action based on established fact: -

In some of the cases an action taken is an established fact which suggests that the given problem can be reduced or solved by this particular solution. It does mean that the solution suggested by the given course of action is universally acknowledged to the given problem. Let us see the examples given below:

EXAMPLE 1.

Statement: Southern part of India has been coming rapidly into the grip of malaria.

Courses of action:

- I** The Southern Indian population must be instructed not to come out of their houses [wrong action]
- II** Anti- mosquito liquids should be sprayed in the southern part of India [correct action]

EXAMPLE 2.

Statement: A child was caught while stealing money of a respectable person of society.

Courses of action:

- I The child should be sent to child welfare society. (correct action)
- II The child should be put in jail and severely beaten (wrong action)

Comment: In example I, I is rejected as it is an irrelevant action. It does not make it clear how instructing population for not coming out of their houses will solve or reduce the problem of spreading malaria. But II is a proper course of action as it is an established biological fact that malaria can be prevented by using safeguards against mosquitoes. This is the reason that II will go for further test (step II test) proving itself a proper course of action in 1st level test (step I test).

In example 2, II is rejected on the basis that it is totally illogical to beat a child and put into jail as a child is not mature enough to decide what is right and what is wrong further, this is an established fact (socially established fact) that child criminals must not be treated as punishable wrong deer but they should be made to mend their ways and on the basis of this I is the correct course of action. Hence, I will qualify for the 2nd round test (Step II test)

Now we can say, that following will go for step II (practicality) test :

(ii) Action based on logical prediction :

In such type of cases solutions provided for the given problems are neither an established fact nor they can be considered as proper action on the basis of our past experiences. Hence, in such cases examinees are required to apply certain logic and reasoning to find out if the given course of action solves/reduces or minimises the problem. Let us see the example given below:

EXAMPLE 3.

Statement: Jammu & Kashmir is experiencing again the rise of terrorism and it is obvious that Pakistan is encouraging it.

Course of action: India must go to the international bodies with all the proof of Pakistani involvement in Jammu & Kashmir and demand that Pakistan must be declared a terrorist nation. [correct action]

Comment : Here, the given course of action is the correct one at step I test. In fact, it is a matter of simple logic of diplomacy that in case of disturbances created by a hostile nation within our country, we put this issue before international bodies so that the hostile nation stands at disadvantage. Thus Ex. 3 will qualify for the next step test (step II or practicality test).

(iii) Action based on experiences: In certain cases, while deciding if a given course of action solves or reduces or minimises the given problem, our experiences work. In fact, in such cases the given problem may be a relatively new one. It will not be totally new but it will not be very old

either. This is the reason that the solution can not be said as an established fact. However, based on our past experiences, in the similar kind of situation, we can reach the conclusion that the given problem can be solved/ reduced/ minimised by this particular action. Let us see the example given below:

EXAMPLE 4.

Statement: Several foreign powers having expansionist thinking are threat to India.

Course of action: Efforts should be made that the Indians remain united for any eventuality. [correct action]

Comment: Our past experiences say that we (India) became a sufferer several times because of the foreign powers and at that time we lacked our unity. In another words, India has fallen victim to foreign powers only when our country (India) has not remained united. Hence, on the basis of our past experience, we can conclude that the given course of action solves or reduces the problem making its entry for 2nd level (step II) test.

(iv) Action based on prevailing notions of truth: In such type of cases solutions provided for the given problem is as per the social norms. In other words, the given course of action suggests a solution that is prevailing notion of truth. In fact, they are the ideas that are universally accepted and acknowledged by the society and hence in many ways they are similar to established fact. Let us see the following examples:

EXAMPLE 5.

Statement: Mr Sharma got angry and beat his son mercilessly.

Course of action : Mr.Sharma should be caned publicly [wrong action]

EXAMPLE 6.

Statement : Most of manufacturing companies in India are running in losses.

Course of action: Prospects of privatisation of these companies must be explored. [correct action]

Comment: In example 5, the given solution is against the societal norm as the public beating is not considered a good punishment. In other words, it is prevailing notion of truth that public beating is not good. Hence, on the basis of this the given solution is rejected and will not go for 2nd level test (step II test).

In example 6, the given course of action suggests privatisation for less making manufacturing and no doubts, it is a prevailing motion of truth that privatisation can make loss making companies strong ones and chances of their loss making can be reduced or minimised. There is also a chance that privatisation can convert a loss making company into a profitable one. Hence, we conclude the given solution is correct one and will qualify for further test (2nd level test or step II test). Now, we can move on to step II test.

Step II (Test of Practicality)

This is the 2nd part of test. In the 1st part we just found out whether a suggested action really solves/ reduces/ minimises the given problem. But an important part also remains to be checked and that is the test of practicality. Point to be noted that a given course of action may solve/ reduce/ minimise a particular problem but if it is not practically possible, it will be consider useless. This is the reason why this point to, needs sound checking. For this you have to keep the following things in your mind:

- A. The problem and solution must be well matched and must be in proportion. In other words, if solution are too simple for too severe problems, they will be useless. Conversely, we can say that too severe solutions are not good solutions for too simple problems.
- B. Even after passing the step I test, the given solution is creating a new problem, then the given solution will not be a good solution and will fail in practicality test.

Examples for (A)

EXAMPLE 7.

Statement : Lack of discipline is a good reason for low productivity in India.

Course of action : Government must take step to make military traing compulsory for all Indian citizens. [wrong action]

EXAMPLE 8.

Statement: As per the report of 'WHO' (World Health Organisation) the life expectancy of an average Indian is continuously declining.

Course of action : A serious effort must be made to prevent children from making noises. [wrong action]

Comment: In Example 8, the given course of action is not a good solution for the given problem. No, doubt that military training wold be a solution for lack of discipline but is it a practical solution? Our answer will be a big 'No' (why?). In reality, at the 1st step test the given course of action may seem true as it solves the given problem but it comes to the 2nd level test, it becomes clear that it is too ever solution for relatively small problem. Hence, on this basis the given course of action is rejected finally.

In example 8, the given course of action suggests that problem of declining life expectancy can be solved if children are prevented from making noises. At one stage the given course of action reduce the problem to some extent as it suggests that less noise will increase the chance of less blood pressure and this will result in less death because of blood pressure. But when we think analytically, we come to the conclusion that the problem is very serious and the given solution is very simple for it. Hence on this basis the given course of action would be declared a wrong one and would be rejected finally.

Example for (B)

EXAMPLE 9.

Statement: In recent years, people have developed a tendency of tax evasion and this is the reason tax evasion has increased an alarming level.

Course of action : Government must make law to abolish taxes. [wrong action]

Comment: Here, the given problem is about tax evasion. Tax evasion does mean showing less income to pay less tax. Why tax evasion, is a problem? Because tax evasion generates black money. The given course of action suggests the abolition of taxes which cannot be said a good solution as taxes are taken to provide people certain indirect services like the facility of roads, parks, police etc. Suppose if taxes are not changed, how and where from

money will come to provide such indirect services to community. No doubts, the tax abolition will create a new problem. Hence on this basis the given course of action will be rejected finally as it fails the 2nd level test (step II test) of practicality.

Now after understanding what is a practical solution, we can test the courses of action that have been passed the step I test and given under examples 1, 2, 3, 4 and 6.

Step II test of Example. 1 (Course of action II): II course of action given under example 1. is " Anti mosquito liquids should be sprayed in the southern part of India " and we doubts this is a practical solution for the given problem. In the past we have also seen that such steps have been taken. Not in the past only even today whenever it seems that mosquito born diseases are imminent, the anti-mosquito liquids are sprayed. Such step is taken only because it is practical. Here, the II courses of action given under example 1 passes both the test to be finally declared as proper and correct solution.

Step II test of Example-2 [Course of action I]: I course of action given under example 2. is "child should be sent to child welfare society" and he doubts this is a practical solution. In so many cases we have seen that when a child does the crime like stealing and some other more serious crime, then they are put under such atmosphere that they can understand the seriousness of their crime and try to mend their ways. For such children, child welfare societies and some other such kind of organisations are very helpful. Hence, this course of action passes its final test to be declared a correct course of action.

Step II test of Example. 3 : course of action given under example 3 is "India must go to the international bodies with all the proof of Pakistani involvement in Jammu & Kashmir and demand that Pakistan must be declared as terrorist nation" and this is a very practical solution. As we have seen in certain circumstances in past India has put such type of demand from UNO an even from some other nations on individual basis. No doubts, that on such demands India has got support to some extent. Hence it is a very practical solution and this given course of action passes it practicality test to be declared a proper and correct course of action.

Step II test of Example. 4 : The given course of action "efforts should be made that the Indians remain united for any eventualities" is a practical one as we have shown this type of unity in the past. For example, in the freedom struggle we were united. How this unity took place? Only because this was practically possible. Hence, this given course of action, too, passed the practicality test to be declared finally a proper and correct course of action.

Step II test of Example.6: The given course of action "Prospects of privatisation of these (loss making) comparies must be explored is not a correct solution at the end at the 2nd level test (Practicality test) because the courses of action and the given statement are not properly linked. The statement does not make it clear that it talks only about public sector manufacturing concerns as even a private sector manufacturing company may be a loss making company. Hence the statement and given course of action create confusion. Therefore, the given course of action is rejected at 2nd level test.

2. PROBLEM BASED ON FACT AND IMPROVEMENT RELATIONSHIP

This is the 2nd type of problem related to course of action. But point to be noted that this does not require any new skill. The solving method is exactly the same as you have solved the 1st type of problem that is problem solution based. In fact you have to solve this type of problem in two steps:

- (i) Find out whether the suggested course of action will help an improvement of the situation
 - (ii) Find out whether the two are properly balanced.
- In fact problem given under example 7 is such type of problem.

Now we have come at the end of this chapter and this is the time to solve the problem given under segment what is the format of the problem? Let us solve it:

Statement : The sale of a particular product ‘A’ has gone down considerably, causing great concern to company ‘X’.

Courses of action :

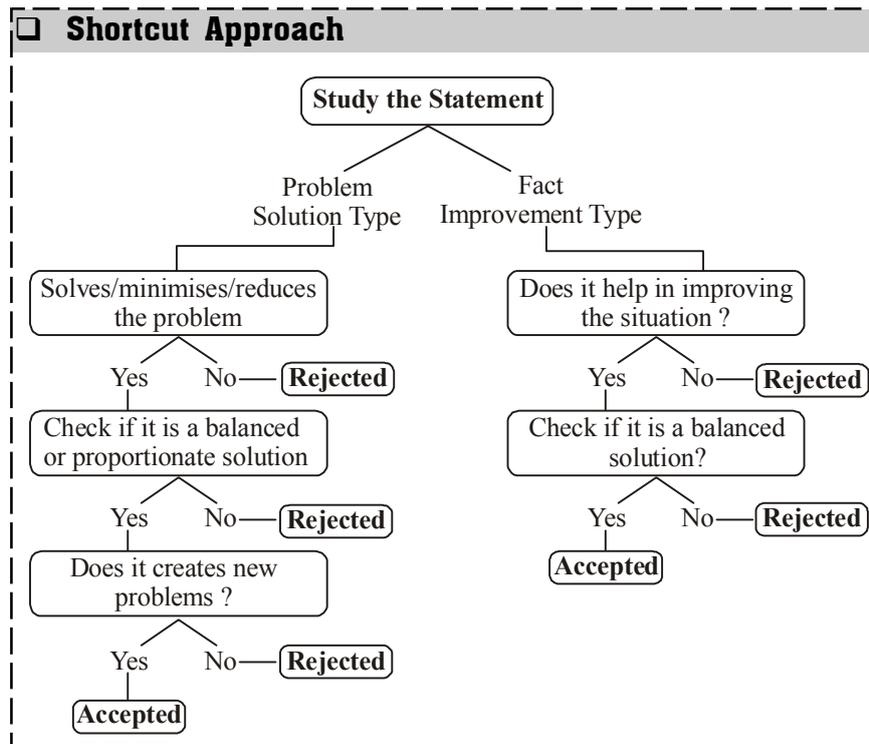
- I. Company should make a proper study of rival products in the market.
- II. The price of product ‘A’ should be reduced.

Solution. Option (a) is the correct option as only I follows.

Reason /Explanation: If the sale of ‘A’ has gone down, then there must be some solved reasons. The company X must know this reason. As I suggest the similar solution, it follows. But II does not follow. The company should 1st know if price was a factor behind the drop in sale. Without knowing this, reducing price may turn out to be a wrong and harmful action.

Note

If see an either choice in the answer options avoid it. It will be a wrong answer. Either choice can be in the form like “Either of I or II (or III or I etc.) follows”.



EXERCISE

Directions (Qs. 1-35): In each question below is given a statement followed by two courses of action numbered I and II. A course of action is a step or administrative decision to be taken for improvement, follow-up or further action in regard to the problem, policy, etc. On the basis of the information given in the statement, you have to assume everything in the statement to be true, then decide which of the suggested courses of action logically follow(s) for pursuing. Give answer

- (a) if only I follows.
 - (b) if only II follows.
 - (c) If either I or II follows.
 - (d) if neither I nor II follows
 - (e) if both I and II follow.
1. **Statements:** There has been a significant drop in the water level of all the lakes supplying water to the city.
Courses of action:
 - I The water supply authority should impose a partial cut in supply to tackle the situation.
 - II The government should appeal to all the residents through mass media for minimal use of water.
 2. **Statement:** A very large number of students have failed in the final high school examination due to faulty questions in one of the subjects.
Courses of action:
 - I All the students who have failed in that subject should be allowed to take supplementary examination.
 - II All those who are responsible for the error should be suspended and an enquiry should be initiated to find out the facts.
 3. **Statement:** The prices of foodgrains and vegetables have substantially increased due to a prolonged strike call given by the truck owners' association.
Courses of action:
 - I The government should immediately make alternative arrangement to ensure adequate supply of foodgrains and vegetables in the market.
 - II The government should take steps to cancel the licenses of all the vehicles belonging to the association.
 4. **Statement:** A large number of people visiting India from country 'X' have been tested positive for carrying viruses of a killer disease.
Courses of action:
 - I The government of India should immediately put a complete ban on people coming to India from country 'X' including those Indians who are settled in country 'X'.
 - II The government of India should immediately set up detection centres at all its airports and seaports to identify and quarantine those who are tested positive.
 5. **Statement:** There has been an unprecedented increase in the number of requests for berths in most of the long distance trains during the current holiday seasons.

Courses of action:

- I The railways authority should immediately increase the capacity in each of these trains by attaching additional coaches.
 - II The people seeking accommodation should be advised to make their travel plan after the holiday.
6. **Statement:** The cinema halls are incurring heavy loss these days as people prefer to watch movies in home on TV than to visit cinema halls.
Courses of action:
 - I The cinema halls should be demolished and residential multistorey buildings should be constructed there.
 - II The cinema halls should be converted into shopping malls.
 7. **Statement:** It is necessary to adopt suitable measures to prevent repetition of bad debts by learning from the past experiences of mounting non-performing assets of banks.
Courses of action:
 - I Before granting loan to customers their eligibility for loan should be evaluated strictly.
 - II To ensure the payment of instalments of loan, the work, for which loan was granted, should be supervised minutely on a regular basis.
 8. **Statement:** Many private sector banks have reduced interest rate on housing loans in comparison to public sector banks.
Courses of action:
 - I The case should be raised before the regulatory authority for investigation by the public sector banks as they cannot follow such reduction.
 - II Public sector banks must adopt such policy to remain in competition.
 9. **Statement:** In order to maintain its dignity every nation should prosper economically and ensure development.
Courses of action:
 - I The banks and financial institutions must make people aware of the importance of economic growth and development in every country.
 - II People should be encouraged to lead life with dignity.
 10. **Statement:** Many private sector banks have reduced interest rate on housing loans in comparison to public sector banks.
Courses of action:
 - I Public sector banks should explore new avenues in financial sector and try to establish their monopoly in these avenues and they should provide maximum possible and unique benefit to the customers.
 - II The public sector banks should advertise their special feature repeatedly so that they do not lose their future customers.
 11. **Statement:** The Kharif crops have been affected by the insects for three consecutive years in the district and the farmers harvested less than fifty per cent of produce during these years.
Courses of action:
 - I The farmers should seek measure to control the attack of insects to protect their crops next year.

- II.** The Government should increase the support price of Kharif crops considerably to protect the economic interests of farmers.
12. **Statement:** There was waterlogging in the major part of the city due to heavy rain during past few days and the people residing in those areas were forced to shift to other areas.
Courses of action:
- I.** The Government should arrange food and shelter for the displaced people.
- II.** The fire brigade should be put on high alert to cope with the situation.
13. **Statement:** It has been reported that a large number of old-age people live near the airport and they are suffering from hearing problem.
Courses of action:
- I.** The people who are living near the airport should be transferred to other areas immediately.
- II.** The airport authority should train the old-age people living near the airport to cope with noise pollution.
14. **Statement:** Many students who passed SSC could not get admission in the junior colleges due to less number of seats in the colleges.
Courses of action:
- I.** The Government should arrange additional seats in the colleges for the students immediately.
- II.** The students who did not get admission in the junior colleges, should be advised to get admission in the professional courses.
15. **Statement:** The availability of imported fruits has increased in the indigenous market and so the demand for indigenous fruits has decreased.
Courses of action:
- I.** To help the indigenous producers of fruits the Government should impose high import duty on imported fruits, even if these are of good quality.
- II.** The fruit vendors should stop selling imported fruits so that the demand for indigenous fruits would increase.
16. **Statement:** The ongoing transporters' strike has entered its tenth day and the supply of essential commodities to the consumers is dwindling fast. Moreover, there is no sign of softening of the rigid stand taken by the transporters.
Courses of action:
- I.** The government should immediately make alternative arrangements to supply the essential commodities to the consumers.
- II.** The government should immediately declare the strike illegal and put all those responsible for the strike behind bars.
17. **Statement :** Due to substantial reduction in fares by different airline services, a large number of passengers, so far travelling by upper classes in trains, have switched over to airline services.
Courses of action :
- I.** The railways should immediately reduce the fare structure of the upper classes substantially to retain its passengers.
- II.** The railways should reduce the capacity of upper classes in all the trains to avoid loss.
18. **Statement :** The government has decided to withdraw all the financial assistance it has been providing to the Institutes of higher learning and urged them to become self-sufficient.
Courses of action :
- I.** These institutes should increase the number of seats substantially so as to enable them to meet the shortfall.
- II.** These institutes should rationalise the fee structure and also offer consultancy services to meet the shortfall.
19. **Statement :** Most of those who study in premier engineering colleges in India migrate to developed nations for better prospects in their professional pursuits.
Courses of action:
- I.** All the students joining these colleges should be asked to sign a bond at the time of admission to the effect that they will remain in India at least for ten years after they complete education.
- II.** All those students who desire to settle in the developed nations should be asked to pay the entire cost of their education which the government subsidises.
20. **Statement :** A large number of people are expected to gather at the holy site at the end of this month and this may put strain on civic amenities.
Courses of action :
- I.** The civic authority should monitor the crowd and restrict entry of the devotees beyond a manageable number.
- II.** The local police authority should be put on high alert to maintain law and order during the congregation.
21. **Statement:** The meteorological department has issued a notification forecasting less rainfall during next year's monsoon.
Courses of action:
- I.** The farmers should be advised to be ready for the eventuality.
- II.** The government should make arrangement to provide water to the affected areas.
22. **Statement:** There is an unprecedented increase in migration of villagers to urban areas as repeated crop failure has put them into precarious financial situation.
Courses of action:
- I.** The villagers should be provided with alternate source of income in their villages which will make them stay put.
- II.** The migrated villagers should be provided with jobs in the urban areas to help them survive.
23. **Statement:** Due to inadequate rainfall this monsoon there is a sharp decline in foodgrain production.
Courses of action:
- I.** The government should increase the procurement price of foodgrains to support farmers.
- II.** The government should subsidise further the prices of seeds and fertilizers for the next season.

24. **Statement:** Majority of the students in many schools do not pass in the final examination.
Courses of action:
I. These schools should be closed down as these have become unproductive.
II. The teachers of these schools should immediately be retrenched.
25. **Statement :** The alert villagers collectively caught a group of dreaded dacoits armed with murderous weapons.
Courses of action:
I. The villagers should be provided sophisticated weapons.
II. The villagers should be rewarded for their courage and unity.
26. **Statement:**
According to the public health department of State 'X', the supply of contaminated water by the municipality is the main reason of the spread of the disease 'A' in the state.
Courses of action:
I. State government should replace the head of the water supply department immediately.
II. State government should provide free water filter to its residents.
27. **Statement:**
The proposed strike by the transporters would paralyse day-to-day life of the people.
Courses of action:
I. City administrators should engage the transporters successfully in negotiations on their demands in order to pre-empt their strike.
II. City administrators should arrange for alternative public transportation system during the strike.
28. **Statement:**
The government of state 'Y' has decided to remove hutments and buildings that have come up beside roads to broaden them in city 'A'.
Courses of action:
I. The government of state 'Y' should rehabilitate the affected residents of hutments/buildings.
II. The government should compensate with reasonable amounts for the targeted houses.
29. **Statement:**
Since the new building is ready, the chairman of Bank XYZ has directed its administrative section to plan for shifting its headquarters to the new building.
Courses of action:
I. Administrative department should deliver infrastructural facilities for the new building immediately.
II. Administrative department should invite quotations from Movers and Packers.
30. **Statement:** ABC Ltd company has decided to launch free education up to class X for the children of its employees from June 2000.
Courses of action:
I. The company should reduce its other expenditures to save money for the plan.
II. The company will have to prepare details for the execution of the plan.
31. **Statement:** The 'X' state government has chalked out a plan for the underdeveloped 'Y' district where 80% of the funds will be placed in the hands of a committee of local representatives.
Courses of action:
I. The 'X' state government should decide guidelines and norms for the functioning of the committee.
II. Other state governments may follow similar plan if directed by the Central government.
32. **Statement:** The district administration has agreed to provide necessary infrastructural facilities to the proposed NRI-funded Trust's project of supply of clean water to city 'Z'
Courses of action:
I. The district administration should provide necessary - land to the trust by completing due formalities.
II. The district administration should facilitate obtaining electricity and other permissions to the trust.
33. **Statement:** The car dealer found that there was a tremendous response for the new XYZ's car-booking with long queues of people complaining about the duration of business hours and arrangements.
Courses of action:
I. People should make their arrangement of lunch and snacks while going for car XYZ's booking and be ready to spend several hours.
II. Arrangement should be made for more booking desks and increase business hours to serve more people in less time.
34. **Statement:** The vegetable traders feel that the prices of onion will again go up shortly in the state P.
Courses of action:
I. The 'P' state government should purchase and store sufficient quantity of onion in advance to control price.
II. The 'P' state government should make available network of fair price shops for the sale of onions during period of shortage.
35. **Statement:** The 'M', state government has decided henceforth to award the road construction contracts through open tenders only.
Courses of action:
I. The 'M' state will not be able to get the work done swiftly as it will have to go through tender and other procedures.
II. Hence, forth the quality of roads constructed may be far better.
- Directions (Qs. 36-40):** In each question given below a statements followed by three courses of action numbered I, II and III. A course of action is a step or administrative decision to be taken for improvement, follow-up or further action in regard to the problem, policy, etc. On the basis of the information given in the statement, you have to assume everything in the statement to be true, then decide which of the three given/ suggested courses of action logically follows for pursuing and decide the answer.
36. **Statement:** The chairman of the car company announced in the meeting that all trial of its first product the new car model 'M' are over and company plans to launch its car in the marked after six months.

- Courses of action :**
- I.** The network of dealers is to be finalised and all legal, financial and other matters in this connection will have to be finalised shortly.
- II.** The company will have to make plan for product other than car.
- III.** Material, managerial and other resources will have to be in fine tune to maintain production schedule.
- (a) I and III only (b) Only I
(c) All the three (d) Only II
(e) None of these
37. **Statement:** The Company 'X' has rejected first lot of valves supplied by Company 'A' and has cancelled its entire huge order quoting use of inferior-quality material and poor craftsmanship.
- Courses of action :**
- I.** The Company 'A' needs to investigate functioning of its purchase, production and quality control departments.
- II.** The Company 'A' should inspect all the valves rejected by Company 'X'.
- III.** The Company 'A' should inform Company 'X' that steps have been taken for improvement and renegotiate schedule of supply.
- (a) Only I and II (b) Only II
(c) All I, II and III (d) II and either I or III
(e) None of these
38. **Statement:** Residents from Model Colony coming under North Ward of City 'X' have complained to the Ward Officer that for last three days the tap water in the ward is contaminated and no action is being initiated by the municipal staff.
- Courses of action :**
- I.** The Ward Officer of North Ward should initiate action against residents who have lodged complaints against municipal staff.

- II.** The Ward Officer should ask his junior officer to visit Model Colony to assess the actual condition of water with his staff and to get samples of water tested from laboratories.
- III.** The Ward Officer should ask Ward Engineer to check water installation and pipelines in the Model Colony area.
- (a) Only I and II (b) Only II and III
(c) Only either I or III & II (d) Only I and III
(e) None of these
39. **Statement:** The Deputy Mayor of city 'Z' has proposed to install a plant of mineral water and to supply citizens, mineral water bottles at ₹ 6 per litre as against ₹ 10 per litre being sold by local private companies.
- Courses of action :**
- I.** The local private companies of city 'Z' will have to close their operation.
- II.** The corporation of city Z will have to provide for losses in this project in its budget.
- III.** The tap water scheme of city Z will have to be stopped.
- (a) None of these (b) Only I and III
(c) Only I and II (d) Only II & III
(e) All the three
40. **Statement:** The Management of School 'M' has decided to give free breakfast from next academic year to all the students in its primary section through its canteen even though they will not get any government grant.
- Courses of action :**
- I.** The school will have to admit many poor students who will seek admission for the next academic year.
- II.** The canteen facilities and utensils will have to be checked and new purchases to be made to equip it properly.
- III.** Funds will have to be raised to support the scheme for years to come.
- (a) Only either I or II (b) Only II and III
(c) Only I (d) None of these
(e) All the three

ANSWER KEY

1	(e)	6	(d)	11	(e)	16	(a)	21	(e)	26	(d)	31	(a)	36	(a)
2	(e)	7	(e)	12	(a)	17	(a)	22	(a)	27	(e)	32	(e)	37	(c)
3	(a)	8	(b)	13	(d)	18	(c)	23	(e)	28	(c)	33	(b)	38	(b)
4	(b)	9	(a)	14	(b)	19	(c)	24	(d)	29	(a)	34	(e)	39	(a)
5	(a)	10	(e)	15	(d)	20	(e)	25	(b)	30	(e)	35	(d)	40	(b)

Hints & Explanations

1. (e) I is advisable because partial cut in supply will be useful when water crisis occurs. II is also advisable because minimal use of water by people will help conserve water and ensure smooth supply in future.
2. (e) I is advisable because it will give an opportunity to the victims of the faulty question paper. II is also advisable because disciplinary action taken against the persons responsible for faulty question paper will give the right message to other such persons, and abate such nuisance in future.
3. (a) I is advisable because it will reduce the inconvenience of the people. II is not advisable because it is an extreme action, which could aggravate the situation.
4. (b) I is not advisable because it is a harsh action. II is advisable because it is a proper and rational way.
5. (a) I is advisable because it will reduce the problem to some extent. II is not advisable because it is ridiculous to give such advice to people.
6. (d) I is not a proper way to tackle the problem. Because this action will not help reduce the problem. Hence, I is not advisable. On a similar basis II is also not advisable.

7. (e) Both I and II are advisable because it will reduce the number of defaulters.
8. (b) The strategy of providing housing loans at reduced interest rate has actually aided in sustainable business growth of the private banks. Also, quick processing of loans and easy financing has led to an increase in the customer footfall. Thus, private banks are way ahead as compared to the public sector banks. The same strategy can be implemented by the government banks to remain in the competition.
9. (a) I is advisable because awareness through these institutions will increase people's participation to get desired objective. II is irrelevant.
10. (e) Both I and II are advisable because both the courses of action will tighten the grip of public sector banks on customers.
11. (e) Both I and II follow. Course of action I will be a precautionary measure, while II will give the farmers a compensation.
12. (a) I follows because it will lessen the miseries of affected people. II does not follow. What role can the fire brigade play in a problem caused by heavy rain?
13. (d) Both I and II are impractical. Hence, both I and II do not follow.
14. (b) I does not follow because there are a large number of victims. Additional seats will not solve the problems of those students because it may compromise on the quality of education. II is advisable because it will solve the problem to some extent.
15. (d) I is not advisable because it is a biased approach to deal with problem. II is not an appropriate way to raise demand of indigenous fruits.
16. (a) A strike like this can increase prices of commodities and may create inconvenience for the people. Hence, I is advisable. II is too harsh as an option.
17. (a) I is advisable because it will attract a large number of passengers. II is not advisable because it will create another problem because of decrease in revenues.
18. (c) The shortfall erupted as a result of the government decision needs to be met. It can be met through increase in the revenue of the institute. Now, how can the revenue be increased? Obviously, either by increasing number of seats or by rationalising the fee structure.
19. (c) I will certainly help put a check on migration. But if one is not redy for I, then II can help one buy one's freedom.
20. (e) Both I and II will be helpful in controlling the situation and ensuring the availability of civic amenities. Hence, both I and II are advisable.
21. (e) I is advisable because it will prepare the farmer to face the situation well in advance. II is also advisable because it will be helpful to cope with the problem related to water.
22. (a) Only I is advisable because here the core problem is "migration of villagers for survival". I will make environment conducive to villagers to survive and restrict their migration. II is not advisable because it will compound the problem of migration.
23. (e) I is advisable because it will bolster the financial condition of the farmers. II is advisable because susidising further the price of seeds and fertilizers will act as a compensation.
24. (d) Both I and II are not the right approach to deal with the situation. Rather teacher can be trained to deliver the best.
25. (b) I is not advisable because sophisticated weapons must not be provided in lay hands. II is advisable because this will encourage the villagers.
26. (d) II is an impractical solution. Hence, does not follow. I does not address the problem. The action has to be issue-based, not person-based.
27. (e) The first course should be to try their best that transporters don't go on strike. But it necessary that one is prepared with an alternative as well, in case the first course fails.
28. (c) The affected residents can be compensated in either ways.
29. (a) I is a right action. Hence, follows. Inviting quotation from a single company is not a right action. Hence, II does not follow.
30. (e) Money is very important for the execution of any plan. Reduction in other expenditures will definitely help to raise money. Hence, I follows. Any programme can't succeed without a good planning. Hence, II follows.
31. (a) Once it is decided to place funds in the hands of the committee of local representatives, it is necessary to decide guidelines and norms for the functioning of the committee. Hence, I follows. II is not related to the statement.
32. (e) If district administration has passed any project, it should provide all the required facilities.
33. (b) I is not a practical action. II follows because additional booking desks and increased business hours will shorten the queue.
34. (e) It is the responsibility of the state govt to provide essential commodities to its citizen at fair price. I and II both follow because both are the steps taken for the welfare of the citizens.
35. (d) Neither talks about what should be done. Both only suggest the probable consequence.
36. (a) Once the trials are over, the best availability of material, managerial and other resources is necessary to maintain production schedule. Hence, III follows. As mentioned in the statement, "model M is its first product", so it is necessary to finalise the network of dealers and all matters regarding the sale of the product. Hence, I follows. II has no connection with the statement.
37. (c) As in the statement it is mentioned 'rejection due to inferior-quality material and poor craftsmanship', it is well known that purchase deptt. is responsible for purchasing the inferior quality material. Again, production deptt is responsible for improper inspection. Hence, investigation is compulsory for all the departments. Hence, I follows. II follows because claim of company 'X' may be wrong. III follows because relationships with a previous client should always be kept up.
38. (b) Since this is a grave issue, it calls for immediate redressal on the part of the ward officer. The ward officer should instruct his junior officer to inspect and evaluate the water condition and get water samples tested through laboratorial intervention. Also, the ward engineer should check the pipelines and the system for probable defects.
39. (a) None of the options has relevance to the statement. The first point of the local companies having to shut down its operations is contradictory. Next, there is no information or projection about the profit or losses. Lastly, tap water will not stop. Rather, this step, if implemented will additionally benefit the citizen of city 'Z'.
40. (b) As it is already known that there will not be any government subsidy, the school authorities will need to evaluate alternatives to raise funds for the initiative, besides proper equipments are also equally necessary to be purchased for the provision.

Cause & Effect

INTRODUCTION

This chapter is unavoidable for any exams as the questions based on causes and effect are frequently asked in such examinations. Therefore, PO aspirants must pay special attention towards such questions. Before discussing the chapter, you must get the idea of the format of the problems to be asked in the examination. Let us see.

PROBLEM FORMAT/SAMPLE PROBLEM

Directions (Qs. 1-5) : Given below are pairs of events 'A' and 'B'. You have to read both the events 'A' and 'B' and decide their nature of relationship. You have to assume that information given in 'A' and 'B' is true and you will not assume anything beyond the given information in deciding the answer.

Mark answer:

- If 'A' is the effect and 'B' is its immediate and principal cause.
- If 'A' is the immediate and principal cause and 'B' is its effect.
- If 'A' is an effect but 'B' is not its immediate and principal cause.
- If 'B' is an effect but 'A' is not its immediate and principal cause.
- None of these

Examples

- Event A:** Bihar has a lot of corruption.
Event B: Bihar is one of the poorest state of our country.
- Event A:** Company 'X' has recorded a 25% jump in its sales.
Event B: Company 'X' has reduced the prices of its products considerably.
- Event A:** Priyanka is suffering from scurvy.
Event B: Priyanka has had inadequate intake of vitamin C.
- Event A:** Ramkishan died while going to hospital.
Event B: A car dashed into the bike Madan was driving.
- Event A:** Vandana succeeded.
Event B: Vandana worked hard.

After seeing the sample problem, now we are ready to discuss the main terms of the chapter in detail.

CAUSES AND EFFECT

It is very important to understand that events do not just happen; they take place because there was a cause behind them. In fact, such causes are the conditions under which these events (or effects/results) take place. Further, point to be noted that something can be said to be a cause of another event only if it is a necessary as well as sufficient condition for that effect to take place. Now, the two questions arise:-

- What does mean a necessary condition?
- What does mean a sufficient condition?

Let us see:-

Necessary Condition

A circumstance in whose absence the event can not occur is called a necessary condition. For example, no fire can take place

without oxygen. But point to be noted that no doubt that presence of oxygen is a necessary condition for fire to occur, but it is not a sufficient condition for this event (fire to occur). Then what sufficient condition is? Let us see below.

Sufficient Condition

A circumstance in whose presence the event must occur. As we have come to know that presence of oxygen is only the necessary condition for fire to occur. Its reason is simple as it is not so that wherever there is oxygen, there follows a fire. In fact, fire takes place only if:

- the substance is combustible.
- the substance reaches a minimum temperature.
- there is oxygen present.

Hence, (i), (ii) and (iii) together make sufficient condition for fire to occur. Point to be noted that (i), (ii) and (iii) each is a necessary condition for fire to take place but when they are combined together, they become sufficient condition for fire to occur. Thus, you can conclude that there may be several necessary conditions behind the occurrence of an event and they together are called sufficient condition.

From the above discussion we can also define a cause as

Cause is an event that leads to a said effect or result and this fact is either scientifically proven or logically expected.

Important

- In the examinations, candidates are asked to find out if a cause is immediate as well as principal. It does mean that the said cause must be the principal reason of the given effect and it should also be fairly proximate in time to the said effect.
- Cause is always antecedent. In another words, cause always occur before effect.

After having a complete discussion about causes and effects, we can solve our sample problem:-

Solution of sample problem

Sol. 1. (d)

Explanation: No doubts, corruption does lead to underdevelopment and hence poverty. But this saying is very wrong that corruption is the immediate cause of poverty. Had it been so, all non-poor states must be non-corrupt; but this is very debatable.

Sol. 2 (a):

Explanation: Reduction in prices can be said to be logically expected to result in increased sales.

Sol. 3 (a):

Explanation: No doubts, that deficiency of vitamin C is the reason of scurvy as it is a scientifically proven truth.

Sol. 4 (a):

Explanation: It is very clear that death of Ramkishan took place because of the accident of his bike with a car.

Sol. 5 (a):

Explanation: It is always considered that without doing hard work success is not possible. It does mean that we take hard work to be a sufficient cause for success.

EXERCISE

Directions (Qs. 1-5) : In each of the following question two statements numbered I and II are given. There may be cause-and-effect relationship between the two statements. These two statements may be the effect of the same cause or independent causes. These statements may be independent cause without having any relationship. Read both the statements in each question and mark your answer accordingly. Give answer

- if statement II is the effect of statement I.
 - if statement I is the effect of statement II.
 - if both the statements I and II are effects of the same cause.
 - if both the statements I and II are independent causes.
 - if both the statements I and II are effects of independent causes.
- I.** There is an unprecedented increase in the number of young unemployed in comparison to the previous year.

II. A large number of candidates submitted applications against an advertisement for the post of manager issued by a bank.
 - I.** The prices of vegetables have increased considerably during this summer.

II. There is tremendous increase in the temperature during this summer, thereby damaging crops greatly.
 - I.** Heavy downpour with high-velocity wind is probable in the coastal areas in next twenty four hours.

II. A soap manufacturing company increased its production by more than 100 in the last month.
 - I.** There has been considerable reduction in the number of people affected by water-borne diseases in City A during this rainy season.

II. The government opened four new civil hospitals in City A at the beginning of the year.
 - I.** There is increase in water level of all the water tanks supplying drinking water to the city during the last fortnight.

II. Most of the trains were cancelled last week due to water logging on the tracks.

Directions (Qs. 6 - 9) : Given below are pairs of events I and II. Read both the events and decide the relationship. Assume that the information given is true in deciding the answer. Mark answer as

- if I is an effect but II is not its immediate and principal cause.
 - if I is the immediate and principal cause and II is its effect.
 - if I is an effect and II is its immediate and principal cause.
 - if II is an effect but I is not its immediate and principal cause.
 - if both the statements I and II are effects of independent causes.
- Event (I):** The price of gold has gone up in the local market.

Event (II): Indians have won several prizes in designing gold ornaments.
 - Event (I):** Today, the prime ministers of countries P and Q have decided to take steps to improve bilateral relations.

Event (II): Next week a committee of foreign ministers and senior officers of country P and Q will work out further steps to improve the relationship.

- Event (I):** Recently the prices of the personal computers (PCs) have come down.

Event (II): Some school-children are showing keen interest in learning computers.

- Event (I):** This year Bank M has celebrated its silver jubilee.

Event (II): More customers are getting attracted to the market branch of Bank M.

Directions (Qs. 10-14) : In each of these questions two statements numbered I and II are given. Mark answer as :

- If statement I is the cause and statement II is its effect.
 - If both the statement I and II are independent.
 - If statement II is the cause and statement I is its effect.
 - If both the statement I and II are affects of independent causes.
 - if both the statements I and II are effects of independent causes.
- I.** Most parts of both the arterial roads in the city are waterlogged and this has brought vehicular movement to a halt.

II. There have been heavy showers in the city area during the past thirty-six hours.
 - I.** The prices of all the petroleum products have increased substantially in the recent price hike announced a week ago due to increase in price of crude oil in the international market.

II. Oil producing countries have increased the output of crude oil by ten percent for the last one month.
 - I.** The private medical colleges have increased the tuition fees in the current year by 200 per cent over the last year's fees to meet the expenses.

II. The government medical colleges have not increased their fees inspite of price escalation.
 - I.** The university authority has decided to conduct all terminal examinations in March/April every year to enable them to declare results in time.

II. There has been considerable delay in declaring results in the past due to shortage of teachers evaluating the answer papers of the examination conducted by the university.
 - I.** India has surpassed the value of tea exports this year over all the earlier years due to an increase in demand for quality tea in the European market.

II. There is an increase in demand of coffee in the domestic market during the last two years.

Directions (Q. 15-17) : In each of these questions there are given two statements numbered I and II. These statements may be either independent causes or may be effects of independent causes. One of these statements may be the effect of the other statement. Read both the statements and decide which of the following answer choices correctly depicts the relationship between these two statements. Mark answer as :

- (a) If 'I' is the immediate and principal cause and 'II' its effect.
 (b) If 'I' is effect and 'II' is its immediate and principal cause.
 (c) If 'I' is an effect but 'II' is not its immediate and principal cause.
 (d) If 'II' is an effect but 'I' is not its immediate and principal cause.
 (e) if both the statements I and II are effects of independent causes.
15. I. The interview panel has recommended 5 candidates for 3 vacancies which are to be filled in immediately in Company Z.
 II. The 5 candidates have been asked to contact Company Z next week to know their result and accordingly to collect appointment letters.
16. I. The financial position of the Electricity Division of State XYZ has weakened and it has made demand to the government for more subsidies.
 II. While the Electricity Division of State XYZ has revised the pay and perks of its employees, several subscribers and farmers have refused to pay long pending dues.
17. I. Recently the prices of the personal computers (PCs) have come down.
 II. Some school children are showing keen interest in learning computers.

ANSWER KEY

1	(a)	3	(e)	5	(c)	7	(b)	9	(d)	11	(b)	13	(b)	15	(a)	17	(d)
2	(b)	4	(e)	6	(a)	8	(d)	10	(c)	12	(b)	14	(d)	16	(b)		

Hints & Explanations

1. (a) The effect mentioned in II has direct relationship with the number of unemployed persons. Hence, I is the cause which led to II.
2. (b) Soaring of prices of vegetable has direct relationship with the availability of vegetables and also with the demand of vegetable.
 The event mentioned in II has a negative impact on the availability of vegetables. Hence, II is the cause which led to I.
3. (e) Both I and II are effects of independent causes. Manufacturing of soaps or increase in its production has no relationship (as mentioned) with the coastal environment. Hence, opt 5).
4. (e) Is II the cause which led to I? Answer is 'No'. Again, is I the cause which led to II? Answer is 'No'. Thus, both I and II are effects of independent causes. Hence, opt 5).
5. (c) Increase in water level of all water tanks and the problem of water-logging on the tracks are the result of increase of water availability or surplus of water (due to rain). Hence, both the events are effects of the same cause.
6. (a) The prices of gold may vary due to any reason but not necessarily due to the prices won in designing gold ornaments.
7. (b) The ministers and officers are working towards improving the relationship between the two countries only after the prime minister's decision to improve the bilateral liasion (relation)
8. (d) the slashing of prices may invoke some interest in the field of computer but the main reason behind learning this skill has to be academic interest.
9. (d) The fact that the bank has completed its 25 years will assure the customers of its dependability but customer will mainly be attracted because of services and profitable schemes.
10. (c) Waterlogging problems have occurred due to the heavy showers. So II is the cause of effect I.
11. (b) Both I and II are independent statements contradicting each other. I contains both effect and cause respectively. There is no correlation between I and II.
12. (b) Both I and II are independent events contradicting each other.
13. (b) Both statements I and II are independent. There is no correlation between them. Statement II contains both effect and cause respectively.
14. (d) Both statements I and II are effects of independent causes. Why did increase in demand for quality tea is not given in statement II. Similarly, why did increase in demand of coffee in the domestic market is also not given in statement I.
15. (a) Statement I is the principal cause. Due to this cause candidates have been asked to contact company Z.
16. (b) Statement I is effect and II is its immediate and principal cause. Pending dues must effect the financial position of electricity division of state XYZ.
17. (d) Statement II is effect but I is not immediate and principal cause. I may be one of the factors responsible for the effect.



Assertion and Reason

INTRODUCTION

‘Assertion’ means ‘stating something’ and ‘Reason’ means ‘fact’.

In this type of questions, we have to deal with the combination of Assertion (A) and Reason (R).

Directions (for Examples 1 to 6) : Choose the correct alternative from the following option for the Assertion (A) and Reason (R) given below. Give answer as

- if both A and R are true and R is the correct explanation of A.
- if both A and R are true and R is not the correct explanation of A.
- if A is true but R is false.
- if A is false but R is true.
- Both A and R are false.

EXAMPLE 1.

Assertion (A) : Indian president is the head of the state.

Reasons (R) : Indian Parliament consists of the president, Lok Sabha and Rajya Sabha.

Sol. (b) R is not the correct explanation of A.

EXAMPLE 2.

Assertion (A) : Bangladesh imports jute from India.

Reason (R) : Bangladesh has most of the jute mills.

Sol. (d) A is false but R is true.

EXAMPLE 3.

Assertion (A) : Mercury is the farthest planet from the Sun.

Reason (R) : Mercury is the smallest planet in the entire Solar- System.

Sol. (d) Mercury is the smallest planet, but it is not the farthest planet. Hence, our answer is (d).

EXAMPLE 4.

Assertion (A) : Cotton is grown in alluvial soils.

Reason (R) : Alluvial soils are very fertile.

Sol. (d) Cotton is grown in Black soils.

EXAMPLE 5.

Assertion (A) : Simla is colder than Delhi

Reason (R) : Simla is at higher altitude as compared to Delhi.

Sol. (a) The temperature decreases with the altitude and Simla is situated in lesser Himalaya.

EXAMPLE 6.

Assertion (A) : Bronze is used for making statues.

Reason (R) : Bronze is an alloy of copper and tin.

Sol. (b) Both A and R are true. But Bronze is used for making statue because it is resistance to corrosion.

EXERCISE

Directions (Qs. 1-30) : Each of the following questions consists of two statements – one labelled as the Assertion (A) and other as Reason (R). You have to examine these two statements carefully and select the answer :

- Both A and R are true and R is the correct explanation of A.
- Both A and R are true but R is not the correct explanation of A.
- A is true but R is false.
- A is false but R is true.
- Both A and R are false.

- Assertion (A) :** Forest cutting is undesirable from the point of view of soil erosion.

Reason (R) : Cutting of forests reduces the interception of rain water.
- Assertion (A) :** Photosynthesis takes place in all green plants.

Reason (R) : Chlorophyll is essential for photosynthesis.

3. **Assertion (A)** : Vaccines prevent diseases.
Reason (R) : Vaccines must be given to children.
4. **Assertion (A)** : There is rainbow in the sky only after rains.
Reasons (R) : Water drops suspended in the air break up sun rays into seven colours.
5. **Assertion (A)** : Tamil Nadu gets most of the rainfall in winter.
Reason (R) : Tamil Nadu gets rainfall from retreating Monsoons.
6. **Assertion (A)** : Diamond is used for cutting glass.
Reason (R) : Diamond has a high refractive index.
7. **Assertion (A)** : Tides indicate the regular and periodic rise and fall in sea level.
Reason (R) : Tides are caused by the gravitational pull of the moon and the sun.
8. **Assertion (A)** : Goitre is a common disease in mountainous regions.
Reason (R) : The diet of the people in mountains lacks iodine content.
9. **Assertion (A)** : India is a democratic country.
Reason (R) : India has a Constitution of its own.
10. **Assertion (A)** : Bulb filament is made of Titanium.
Reason (R) : The filament should have low melting point.
11. **Assertion (A)** : A person with blood group O positive is supposed to be a universal recipient.
Reasons (R) : Type O positive does not contain any antigens.
12. **Assertion (A)** : Safety fuses are made up of materials having a high melting point.
Reasons (R) : Safety fuses should be resistant to electric current.
13. **Assertion (A)** : Sprouting should not be done before consuming the grains.
Reasons (R) : Sprouting kills many vital vitamins.
14. **Assertion (A)** : Leakages in household gas cylinders can be detected.
Reason (R) : LPG has a strong smell.
15. **Assertion (A)** : Cut fruits and vegetables should not be kept in open for long.
Reason (R) : Their vitamin content is ruined.
16. **Assertion (A)** : Telephone wires sag more in summer.
Reason (R) : They expand due to summer heat.
17. **Assertion (A)** : Most of the ancient civilisations grew near the rivers.
Reason (R) : The main occupation of man was agriculture.
18. **Assertion (A)** : Earthworms are not good for agriculture.
Reason (R) : Earthworms break down the soil into the fine particles and make it soft.
19. **Assertion (A)** : When a body is dipped in a liquid fully or partially, there is a decrease in its weight.
Reasons (R) : The decrease in weight is due to the higher density of the displaced liquid.
20. **Assertion (A)** : When a person is standing in a lift which is either at rest or moving up or moving down with uniform speed, he does not find any apparent change in his weight.
Reasons (R) : The reaction of the floor of the lift is equal to his weight.
21. **Assertion (A)** : A saltwater fish drinks sea water where a fresh water fish never drinks water.
Reasons (R) : A saltwater fish is hypertonic to its environment while a freshwater fish is hypotonic to its environment.
22. **Assertion (A)** : The territory of India is larger than the territories of the States taken together.
Reasons (R) : India is Union of States.
23. **Assertion (A)** : Alcohol rather than mercury is used in a thermometer to measure a temperature of -60°C .
Reasons (R) : Alcohol has a lower freezing point than mercury.
24. **Assertion (A)** : Noise pollution is an unwanted accumulation of noise in the atmosphere.
Reasons (R) : It interferes with communication.
25. **Assertion (A)** : The steam engine was invented by James Watt.
Reasons (R) : There was a problem of taking out water from flooded mines.
26. **Assertion (A)** : Food materials should not be soaked in water for a long time.
Reasons (R) : Washing leads to loss of vitamin A and vitamin D from the food stuff.
27. **Assertion (A)** : Pluto is the coldest planet.
Reasons (R) : It receives slanting rays of the sun.
28. **Assertion (A)** : Akbar found Din-e-Illahi
Reasons (R) : He was motivated by self glorification.
29. **Assertion (A)** : Most of the Himalyan rivers are perennial
Reasons (R) : They are fed by melting snow.
30. **Assertion (A)** : Water kept in earthen pots gets cooled in summer.
Reasons (R) : Evaporation causes cooling.

Hints & Explanations

1. (a) Cutting down trees causes increased run-off (water flowing over the surface of the earth). Rain water reaches rivers faster (due to reduction of interception). Soil particles are transported down-hill by water flow which leads to the degradation of soil.
2. (b) Both A and R are true but R does not explain the A. They are independent statements.
3. (b) Both A and R are true but R does not explain the A. They are independent statements.
4. (a) Clearly, both A and R true and R is the correct explanation of A.
5. (a) Both A and R are true and R is the correct explanation of A.
6. (b) Diamond being very hard substance is used to cut glass.
7. (a) Clearly, both A and R true and R is the correct explanation of A.
8. (a) Goitre is caused by deficiency of iodine and diet in mountainous areas lacks iodine.
9. (c) India is democratic country because the Government is elected by its citizens and not because India has its own constitution.
10. (e) Bulb filament is made of Tungsten. The filament should have very high melting point.
11. (d) As the person with blood group O positive is the universal blood donor and similarly O positive blood group contains antigens.
12. (e) Safety fuses are made up of metal having low melting point to avoid any accident in case of short-circuit also the safety fuses should not be resistant to electric current.
13. (e) Both Assertion and Reason are false because sprouted grains are used to increase the nutrient content of the grains.
14. (c) R is false as LPG does not have any smell. A chemical called 'Mercaptan', which has a strong pungent smell, is added to LPG so as to detect leakages in houses.
15. (a) When cut fruits and vegetables are kept in open, the vitamins in them get oxidised and remain of no use.
16. (a) Option (a) is correct. In summers, due to intense heat, the copper at the heart of these wires expands, making the wires longer. Thus, the sagging. So, both A and R are correct; R being the correct explanation of A.
17. (a) Most ancient civilisations grew near the rivers, because of fertile land and availability of water necessary for agriculture, the main occupation of man.
18. (d) Earthworms help in agriculture because they make the soil soft and porous. The assertion is false.
19. (c) 'A' is true but 'R' is false. The decrease in weight is due to the upward thrust (or buoyant force) which is equal to the rate of the liquid displaced by the body.
20. (a) As the reaction of the floor and weight of the person balance each other, there is not any apparent change in the his weight.
21. (d) The assertion that a salt water fish drinks sea water is correct because a salt water fish constantly lose water through their gills and skin. As the fish loses lot of water it must drink a lot of water to stay hydrated. But the statement suggesting that fresh water fish never drinks water, is false. Alternatively, the underlying reason is correct.
22. (b) Both are 'A' and 'R' correct but 'R' is not the correct explanation of 'A'. The territory of India comprises Union territories as well.
23. (a) We know that mercury freezes at -39°C , while alcohol freezes at a point far below -100°C , So alcohol is used to measure lower temp. Similarly mercury boils at 357°C while alcohol boils at 75°C . So, mercury is used to measure high temp.
24. (e) Noise pollution interferes with communication hence is an unwanted accumulation of noise in the atmosphere.
25. (c) The assertion that the steam engine was discovered by James Watt is correct. It was indeed a milestone, reached in 1769, for the benefit of mankind. However, the reason has no relevance to the assertion whatsoever.
26. (c) Food materials should not be soaked in water for a long time because it leads to loss of vitamins. However, the Reason is false.
27. (c) Pluto is the farthest planet from the sun, and hence is the coldest planet. However, Reason is false. Pluto gets dimmer sun rays due to inverse square law.
28. (c) Assertion is correct because Din-e-Illahi was founded by Akbar but the Reason is false.
29. (a) The fact that most of the rivers originating from the Himalayas are perennial is due to the reason of the thick snow cap. Rivers like the Ganges and the Yamuna originated from the glaciers. As the snow melts, the rivers are formed and then they travel all the way down to the plains.
30. (a) Earthen pots let the water evaporate through their pores and hence, keep the water cool.



Critical Reasoning

INTRODUCTION

Critical Reasoning (CR) is ability to reason clearly to evaluate and judge arguments. You are using this skill a lot during your everyday life while reading newspapers or watching movies. When you think that the movie is pushing the limit of the Reasonable or the news sounds less reasonable than the movie that was pushing the limit, you are using your Critical Reasoning skills to produce these conclusions. The argument you meet can be anything from a classical argument to an advertisement or a dialog. Critical Reasoning questions will ask you to manipulate the argument to weaken/strengthen it, find the conclusion, assumption, explanation, do an inference or supplement a statement, etc. Whatever it is that you have to do, you will need 2 things to succeed: know the basic structure of arguments and clearly understand the argument.

In general, most of them, arguments consist of evidence, usually 2 pieces, a conclusion - the main point of an argument, and an assumption - the bridge between the evidence and conclusion. The majority of the arguments you encounter on the test will be 3 step arguments:

Evidence 1 + Evidence 2 = Conclusion.



Example 1 : Last week Mike was detained for shoplifting at a groceries store near his house, but he has been a Christian for 10 years, therefore, the police must have been wrong accusing him in stealing.

Note : There are two pieces of evidence: 'Mike was accused of stealing' and that 'he is a Christian'. The conclusion is that '**the police are wrong**'. Therefore, our huge assumption here is that 'a Christian could not have stolen anything.'

Example 2. There are a lot of mosquitoes outside today, please do not turn on the light in the room because a lot of them will fly in.

Note : Here the evidences are 'there are a lot of mosquitoes outside today' and 'do not turn on the light'. The conclusion is that '**Many will fly in**' and the assumption is 'mosquitoes will approach the light.'

There is no set scheme for structure in CR, but since the majority of the arguments are only a few sentences long, the conclusion usually comes in the first or the last sentence. However, some of the arguments encountered will not have a conclusion at all or will have just an implied one.

Strategy to Crack Critical Reasoning Questions

This strategy is not the easiest way to do CR (the easiest would be read-and-answer), but it lets you get the most questions right spending less time per correct answer.

1. Read the questions first; this is needed so that you would know what to look for and what to do: find an assumption, strengthen/weaken, infer something or else; do not worry about the details in the question, read for keywords, such as strengthen, deny, or explain. [Use symbols for convenience, e.g. + for strengthen or – for weaken].
2. Read the passage very attentively because in contrast to Reading Comprehension, there is very little text here and mostly everything is important; try to read only once. Reread if required.
As you read, look for the problem in the passage (evaluate how convincing it is)
3. Paraphrase (reword) the passage. It is a very important step because when you do a paraphrase, you check whether you understood the passage and at the same time you extract the skeleton of the argument, making it easier to identify the conclusion and the assumption. Very often, the paraphrase of the passage will be pretty close to the conclusion. It is not surprising, since the conclusion is the main point and evidence just supports it.) Your paraphrase should be as close to the text and as simple as possible so that you would understand it easily and at the same time could fully trust it. Do not make it too general nor too detail oriented. When you do a paraphrase, do it in three steps: Evidence1, Evidence2, and Conclusion; put "therefore" word before you start your conclusion, this will help you to set it off.
4. Read the question again (now with more understanding of what is being asked; reading the question 2 times, it will also help you to make sure your answer exactly what is stated and that you understand the question.)
5. Answer before reading the answer choices. There are two reasons for this :
 - (i) if you can think of the correct answer or at least the general direction that the answer choice needs to be, you will identify it among the wrong choices much faster, thus spend less time reading the answers, which usually take 30 seconds to cover.
 - (ii) Often students are seduced by the author's wording. One reads a few words that were used in the passage and the brain identifies this choice with the passage, thus making it seem more right that it needs to be. The more problems you practice with, the more chance is you will guess the right answer even before reading it.

6. Go through the answers, first time scan them for YOUR answer choice (usually you will guess correctly in 60-70% of cases), if you did not find it, reread them more attentively.
7. Draw a grid to eliminate the wrong answers easier. Use “✓” for a sure answer, “✗” for a definitely wrong answer choice, and “?” for an answer that may be right or questionable. This will help to concentrate only on a few answer choices and will prevent you from reading same answers several times if you get confused or keep having troubles locating the right answer.

TYPES OF CRITICAL REASONING QUESTIONS

Critical reasoning questions will ask you to:

1. Identify the inference / Must be true question
2. Identify the assumption.
3. Strengthen an argument.
4. Weaken an argument.
5. Select the best conclusion / Main Point
6. Identify the paradox
7. Evaluation/ Reasoning
8. Identify a parallel argument/Structure.

1. Identify the Inference / Must be True Question

These type of questions are extremely common. An **Inference** means the same thing as “must be true”. **Conclusions** differ from **inferences** in that conclusions are the result of premises and inferences are something that must be true. The following are the typical Inference (Must be true) based Questions:

- If the statements above are true, which of the following must also be true?
- Which of the following is [implied, must be true, implicit, most reasonably drawn] in the passage above?
- Which of the following inferences is best supported by the statement made above?

How to tackle “Identify the inference / Must be true questions”:

- Read the stimulus and look for the argument.
- Note that Must Be True questions may not contain an argument. They may just be a series of facts. Nevertheless, try to find the argument.
- Avoid choices which contain absolute statements - never, always, none, only etc. Although these words might appear in some correct choice, you should be very sure about them.
- Some of the options can be eliminated as they go beyond the scope of the passage. Note that an inference can be based on only some of the information provided and not the complete passage.

EXAMPLE 1. Stimulus Argument

Increases in funding for police patrols often lower the rate of crimes of opportunity such as petty theft and vandalism by providing visual deterrence in high-crime neighborhoods. Levels of funding for police patrols in some communities are increased when

federal matching grants are made available.

Question :

Which of the following can be correctly inferred from the statements above?

Options :

- (a) Areas with little vandalism can never benefit from visual deterrence.
- (b) Communities that do not increase their police patrols are at higher risk for crimes of opportunity late at night.
- (c) Federal matching grants for police patrols lower the rate of crimes of opportunity in some communities.
- (d) Only federal matching grants are necessary to reduce crime in most neighborhoods.
- (e) None of these

Sol. : (c) is a summary of the information provided; it is the logical end of a chain of reasoning started in the stimulus argument. The sequence of events goes like this :

Increased funding → Increased visual deterrence
→ Lower crime

The last statement could be mapped as follows:

Federal grants → Increased patrol funds

(c) makes the chain complete by correctly stating that federal grants can lead to lower crime in some communities. Now the logical chain becomes:

Federal grants → Increased funding → Increased visual deterrence → Lower crime

The other answer choices may not be correctly inferred because they go beyond the scope of the argument. They may be objectively, factually correct, or they may be statements that you would tend to agree with. However, you are limited to the argument presented when choosing a correct answer.

2. Identify the Assumption

An assumption is an unstated premise that supports the author’s conclusion. It’s the connection between the stated premises and the conclusion. An assumption is something that the author’s conclusion depends upon. Assumption questions are extremely common and have types that look like this:

- Which of the following most accurately states a hidden assumption that the author must make in order to advance the argument above?
- Which of the following is an assumption that, if true, would support the conclusion in the passage above?

How to approach “Identify the assumption Questions”

- Look for gaps between the premises and the conclusion. Ask yourself why the conclusion is true. Before you progress to the answer choices, try to get feel of what assumption is necessary to fill that gap between the premises.
- Beware of extreme language in the answer choices of assumption questions. Assumptions usually are not

extreme. "Extreme" answer choices usually contain phrases such as always, never, or totally.

EXAMPLE 2. Stimulus Argument

Traditionally, decision making by doctors that is carefully, deductively reasoned has been considered preferable to intuitive decision making. However, a recent study found that senior surgeons used intuition significantly more than did most residents or mid-level doctors. This confirms the alternative view that intuition is actually more effective than careful, methodical reasoning.

Question :

The conclusion above is based on which of the following assumptions?

Options :

- (a) Senior surgeons are more effective at decision making than are mid-level doctors.
- (b) Senior surgeons have the ability to use either intuitive reasoning or deductive, methodical reasoning in making decisions.
- (c) The decisions that are made by mid-level and entry-level doctors can be made as easily by using methodical reasoning as by using intuitive reasoning.
- (d) Senior surgeons use intuitive reasoning in making the majority of their decisions.
- (e) None of these

Sol. (a) The correct answer is (a), which provides a missing link in the author's reasoning by making a connection from the evidence: that intuition is used more by senior surgeons than other, less-experienced doctors, and the conclusion: that, therefore, intuition is more effective. None of the other choices helps bridge this gap in the chain of reasoning. Although some of the other statements may be true, they are not responsive to the question. In fact, they mostly focus on irrelevant factors such as appropriateness, ease of application, ability, etc.

3. Strengthen an Argument

Assumptions connect premises to conclusions. An argument is strengthened by strengthening the assumptions. Here are some examples of Strengthen question types :

- The conclusion would be more properly drawn if it were made clear that...
- Which of the following, if true, would most strengthen the conclusion drawn in the passage above?

How to approach "Strengthen an argument"

- Once you have identified the argument of the passage, i.e. the evidence(s) + conclusion, try putting in each option with the argument. Check if the assumption(s) you have drawn is (are) strengthened if you accept the content of the option as true.

EXAMPLE 3. Stimulus Argument

Three years after the Bhakra Nangal Dam was built, none of the six fish species native to the area was still reproducing adequately in the river below the

dam. Because the dam reduced the average temperature range of the water from approximately 40° to approximately 10°, biologists have hypothesized that sharp increases in water temperature must be involved in signaling the affected species to begin their reproduction activities.

Question :

Which of the following statements, if true, would most strengthen the scientists' hypothesis?

Options :

- (a) The native fish species were still able to reproduce in nearby streams where the annual temperature range remains approximately 40°.
- (b) Before the dam was built, the river annually overflowed its banks, creating temporary backwaters that were used as breeding areas for the local fish population.
- (c) The lowest temperature ever recorded in the river prior to dam construction was 30°; whereas the lowest recorded river temperature after construction was completed has been 40°.
- (d) Non-native fish species, introduced after the dam was completed, have begun competing with the native species for food.
- (e) None of these

Sol. (a) most strengthens the conclusion that the scientists reached. It does so by showing that there is a control group. In other words, a similar population, not subjected to the same change as the population near the dam, did not experience the same type of result. Here the basic assumption about the conclusion that scientists reached is that 'because of the reduction of average temperature range of the water, the reproduction of the native fish species has reduced drastically'. Option (a) clearly strengthens the assumption.

4. Weaken an Argument

Assumptions connect premises to conclusions. An argument is weakened by weakening the assumptions. Here are some examples of Weaken question types :

- Which of the following, if true, would weaken the conclusion drawn in the passage above?
- The argument as it is presented in the passage above would be most strengthened if which of the following were true?

How to approach "Weaken an argument"

- Once you have identified the argument of the passage, i.e. the evidence(s) + conclusion, try putting in each option with the argument. Check if the assumption(s) you have drawn is (are) weakened if you accept the content of the option as true.

EXAMPLE 4. Stimulus Argument

A drug that is very effective in treating some forms of cancer can, at present, be obtained only from the

bark of the Raynhu, a tree that is quite rare in the wild. It takes the bark of approximately 5,000 trees to make one pound of the drug. It follows, then, that continued production of the drug must inevitably lead to the raynhu's extinction.

Question :

Which of the following, if true, most seriously weakens the above conclusion?

Options :

- (a) The drug made from Raynhu bark is dispensed to doctors from a central authority.
- (b) The drug made from the Raynhu bark is expensive to produce.
- (c) The Raynhu generally grows in largely inaccessible places.
- (d) The Raynhu can be propagated from cuttings and cultivated by farmers.
- (e) None of these

Sol. (d) provides an alternate source of the Raynhu bark. Even though the tree is rare in the wild, the argument is silent on the availability of cultivated trees. The author of the argument must be assuming that there are no Raynhu trees other than those in the wild, in order to make the leap from the stated evidence to the conclusion that the Raynhu is headed for extinction. The option (d) weakens the assumption - 'there are limited raynhu trees' - by saying that there are other ways as well for the propagation of Raynhu. The other answer choices all contain information that is irrelevant. Note that the correct choice does not make the conclusion of the argument impossible. In fact, it is possible that there may be domesticated Raynhu trees and the species could still become extinct. Answer choice (d) is correct because it makes the conclusion about extinction less likely to be true.

5. Conclusion / Main Point Question

In Main Point / Conclusion questions, you have to identify the conclusion of an argument. You are trying to find the author's point and should approach this question in a similar way to the reading comprehension main point questions. They come in several different formats:

- The main point of the passage is that...
- Which of the following statements about... is best supported by the statements above?
- Which of the following best states the author's conclusion in the passage above?
- Which of the following conclusions can be most properly drawn from the data above?

The conclusion of arguments in Main Point questions is usually not directly stated. To find the conclusion, identify the premises and then identify the conclusion drawn from the premises. Main Point questions differ from the other Critical Reasoning questions in that the argument in the

stimulus is usually valid. (In most other Critical Reasoning questions the reasoning is flawed.) Conclusion questions require you to choose the answer that is a summary of the argument.

How to approach "Main Point Questions":

- Main Point answers must be within the scope of the passage.
- Your opinions or information outside of the passage are always outside of the scope.
- Some of the options given can be out of the scope of the passage.
- Knock out answers with extreme wording. Main Point answers typically do not use *only*, *always*, *never*, *best* or any strong words that leave little room.

EXAMPLE

5. Stimulus Argument

People should be held accountable for their own behaviour, and if holding people accountable for their own behaviour entails capital punishment, then so be it. However, no person should be held accountable for behaviour over which he or she had no control.

Question :

Which of the following is the most logical conclusion of the argument above?

Options :

- (a) People should not be held accountable for the behaviour of other people.
- (b) People have control over their own behaviour.
- (c) People cannot control the behaviour of other people.
- (d) People have control over behaviour that is subject to capital punishment.
- (e) None of these

Sol. (b) The correct response is (b). The argument includes the following two premises:

Premise 1: People are accountable for their own behaviour.

Premise 2: People are not accountable for behaviour they cannot control.

Here's the logical conclusion based on these two premises:

Conclusion: People can control their own behaviour.

- (a) would require that people never have control over the behaviour of other people. Yet the argument does not provide this premise.
- (b) would require that people should not be held accountable for the behaviour of other people. Yet the argument does not provide this premise.
- (d) is not inferable. The argument allows for the possibility that a person might not have control over another person's behaviour which is subject to capital punishment.
- (e) None of these

6. Identify the Paradox

These questions present you with a paradox, a seeming contradiction or discrepancy in the argument, and ask you

to resolve it or explain how that contradiction could exist. In other words, there are two facts that are both true, and yet they appear to be in direct conflict with one another. Here are some examples of the ways in which these questions are worded:

- Which of the following, if true, would help to resolve the apparent paradox presented above?
- Which of the following, if true, contributes most to an explanation of the apparent discrepancy described above?

How to approach “Identify the paradox questions”

- Read the argument and find the apparent paradox, discrepancy, or contradiction.
- State the apparent paradox, discrepancy, or contradiction in your own words.
- Use process of elimination. The best answer will explain how both sides of the paradox, discrepancy, or contradiction can be true. Eliminate answers that are out of scope.

EXAMPLE 6. Stimulus Argument

Town Y is populated almost exclusively by retired people and has almost no families with small children. Yet Town Y is home to a thriving business specializing in the rental of furniture for infants and small children.

Question :

Which of the following, if true, best reconciles the seeming discrepancy described above?

Options :

- The business specializing in the rental of children’s furniture buys its furniture from distributors outside of Town Y.
- The few children who do reside in Town Y all know each other and often stay over night at each other’s houses.
- Many residents of Town Y who move frequently prefer to rent their furniture rather than buy it outright.
- Many residents of Town Y must provide for the needs of visiting grandchildren several weeks a year.
- None of these

Sol. (d) The correct answer (d), explains why a town of mostly retired residents might need to rent children’s furniture. The other answer choices all contain irrelevant information. This further illustrates the fact that, on all question types, if you eliminate the irrelevant choices, the remaining choice will most likely be correct.

7. Evaluation/Reasoning Based Questions

Reasoning questions ask you to describe how the argument was made, not necessarily what it says. These questions are closely related to assumption, weakening, and strengthening questions. The correct answer identifies a question that must be answered or information that must be gathered to determine how strong the stimulus argument is. The information will be related to an assumption that

the author is making. Another type of question that you will encounter asks you to *identify a flaw* in the stimulus argument. The question tells you that there is a problem with the logic of the argument. You just have to choose the answer that describes the flaw. Here are some examples of the ways in which these questions are worded:

- How does the author make his point?
- A major flaw in the argument above is that it...
- A’s response has which of the following relationships to B’s argument?

How to approach Reasoning Questions

- Read the argument and find the conclusion.
- State the reasoning in your own words.
- Check whether the reasoning given in the various options fall in line with the reasoning described above.

EXAMPLE 7. Stimulus Argument

Some observers have taken the position that the recently elected judge is biased against men in divorce cases that involve child custody. But the statistics reveal that in 40% of such cases, the recently elected judge awards custody to the fathers. Most other judges award custody to fathers in only 20%–30% of their cases. This record demonstrates that the recently elected judge has not discriminated against men in cases of child custody.

Question :

The argument above is flawed in that it ignores the possibility that

Options :

- A large number of the recently elected judge’s cases involve child custody disputes.
- The recently elected judge is prejudiced against men in divorce cases that do not involve child custody issues.
- The majority of the child custody cases that have reached the recently elected judge’s court have been appealed from a lower court.
- The evidence shows that men should have won custody in more than 40% of the recently elected judge’s cases involving divorcing fathers.
- None of these

Sol. (d) The correct answer (d), points out a flaw in the argument. Specifically, it points out that the author of the argument was comparing the recently elected judge to other judges, not to the evidence presented in the recently elected judge’s cases. In other words, the author of the argument made an unwarranted assumption that the recently elected judge did not rule against many men in custody battles where the evidence clearly favored the men. As with strengthening and weakening questions, the correct answer in flaw questions often involves unwarranted assumptions.

EXAMPLE 8. Stimulus Argument

Although dentures produced through a new computer-aided design process will cost more than twice as much as ordinary dentures, they should still be cost effective. Not only will fitting time and X-ray expense be reduced, but the new dentures should fit better, diminishing the need for frequent refitting visits to the dentist's office.

Question :

Which of the following must be studied in order to evaluate the argument presented above?

Options :

- (a) The amount of time a patient spends in the fitting process versus the amount of money spent on X-rays
- (b) The amount by which the cost of producing dentures has declined with the introduction of the new technique for producing them
- (c) The degree to which the use of the new dentures is likely to reduce the need for refitting visits when compared to the use of ordinary dentures
- (d) The amount by which the new dentures will drop in cost as the production procedures become standardized and applicable on a larger scale
- (e) None of these

Sol. (c) The correct answer (c), highlights an assumption in the stimulus argument. It shows that the author must be assuming that the reduction in refitting with the new dentures compared to ordinary dentures is significant in order to conclude that that difference will help offset an initial outlay that is twice as much. In other words, if you answer the question posed by answer choice (c) with "not much," the argument is weakened. If you answer it with "a tremendous amount," the argument is strengthened. The other answer choices are all irrelevant because no matter what the answers are, there is no impact on the relationship between the evidence presented in the stimulus argument and its conclusion.

8. Identify a Parallel Argument/Structure.

The last type of Critical Reasoning question is the *parallel structure* question. In this type of question, you must choose the answer that has the same structure as the stimulus argument. In other words, you have to find the

argument that is analogous to the given argument in that it includes the same relationship between the evidence presented and the conclusion. Here are some examples of the ways in which these questions are worded:

- Which of the following is most like the argument above in its logical structure?
- Which of the following is a parallel argument to the above given argument?

EXAMPLE 9. Stimulus Argument

It is true that it is against international law to provide aid to certain countries that are building nuclear programs. But, if Russian companies do not provide aid, companies in other countries will.

Question :

Which of the following is most like the argument above in its logical structure?

Options :

- (a) It is true that it is against United States policy to negotiate with kidnappers. But if the United States wants to prevent loss of life, it must negotiate in some cases.
- (b) It is true that it is illegal to sell diamonds that originate in certain countries. But there is a long tradition in Russia of stockpiling diamonds.
- (c) It is true that it is illegal for an attorney to participate in a transaction in which there is an apparent conflict of interest. But, if the facts are examined carefully, it will clearly be seen that there is no actual conflict of interest in the defendant's case.
- (d) It is true that it is against the law to steal cars. But someone else certainly would have stolen that car if the defendant had not done so first.
- (e) None of these

Sol. (d) The correct answer (d), has the same structure as the stimulus argument. If you just replace "aid to developing nuclear powers" with "car theft," and "Russian companies" with the "defendant," it is essentially the same argument. Sometimes the parallel structure is easier to see if you use symbols to represent the terms of the argument: It is true that X is illegal. But, if Y doesn't do it, others will. Granted, the stimulus argument is in the future tense and the credited answer is in the past tense. However, it certainly is *most* like the stimulus.

EXERCISE

Directions (Qs. 1 to 17) : Study the following paragraphs and answer the question that follows :

1. Wendy, a student, is an avid backgammon player. All students play either chess or checkers, but some checkers players do not play chess because they do not understand chess strategy. Backgammon players never play checkers, because they do not find checkers challenging. Therefore, Wendy must understand chess strategy.
Which of the following must be true for the conclusion drawn above to be logically correct?
 - (a) All chess players understand chess strategy.
 - (b) Backgammon is more challenging than checkers.
 - (c) Chess is more challenging than backgammon.
 - (d) All students who find backgammon challenging play checkers.
 - (e) None of these
2. Our school district should not spend its money on the new Verbal Advantage reading program. After all, our students get all the reading practice they need by studying history and science.
The argument above depends on which the following assumptions?
 - (a) The Verbal Advantage program would not help the students learn history and science.
 - (b) Other reading programs are just as effective but less expensive than the Verbal Advantage program.
 - (c) The Verbal Advantage program involves only reading practice.
 - (d) Teaching students history and science is more important than teaching them reading skills.
 - (e) None of these
3. Efficiency is all right in its place, in the shop, the factory, the store. The trouble with efficiency is that it wants to rule our play as well as our work; it won't be content to reign in the shop, it follows us home.
It can be inferred from the above passage that
 - (a) Efficiency can become all - pervading
 - (b) Efficiency does not always pay
 - (c) Efficiency can be more of a torture than a blessing
 - (d) both (b) and (c)
 - (e) None of these
4. The company encourages its managers to interact regularly, without a pre-set agenda, to discuss issues concerning the company and society. This idea has been borrowed from the ancient Indian concept of religious congregation, called *satsang*. Designations are forgotten during these meetings; hence, it is not uncommon in these meetings to find a sales engineer questioning the CEO on some corporate policy or on his knowledge of customers
Based on the information provided in the above passage, it can be inferred that
 - (a) The company is concerned about its reputation with its employees.
 - (b) The company believes in fostering the spirit of dialogue without degenerating it into a position-based debate.
 - (c) The company has some inter-personnel problems in the past due to which it felt the need for these corporate satsangs.
 - (d) All of the above
 - (e) None of these
5. From Cochin to Shimla, the new culture vultures are tearing down acres of India's architectural treasures. Ancestral owners often fobbed off with a few hundred rupees for an exquisitely carved door or window, which fetches fifty times that much from foreign dealers, and yet more from the drawing room sophisticates of Europe and the US. The reason for such shameless rape of the Indian architectural wealth can perhaps, not wrongly, be attributed to the unfortunate blend of activist disunity and local indifference.
It can be inferred from the above passage that
 - (a) The environment created by the meeting between activist disunity and local difference is ideal for antique dealers to thrive in India.
 - (b) Only Indians are not proud of their cultural heritage and are hungry for the foreign currency that is easily available in return of artefacts.
 - (c) Most Indian families have heirlooms which can be sold at high prices to Europeans and Americans.
 - (d) India provides a rich market for unscrupulous antique dealers.
 - (e) None of these
6. Developed countries have made adequate provisions for social security for senior citizens. State insurers (as well as private ones) offer medicare and pension benefits to people who can no longer earn. In India, with the collapse of the joint family system, the traditional shelter of the elderly has disappeared. And a state faced with a financial crunch is not in a position to provide financial security, So, it is advisable that the working population give serious thought to building a financial base for itself.
Which one of the following, if it were to happen, weakens the conclusion drawn in the above passage the most
 - (a) The insurance sector is under developed and trends indicate that it will be extensively privatized in the future.
 - (b) The insurance sector is under developed and trends indicate that it will be extensively privatized in the future.
 - (c) India is on a path of development that will take it to a developed country status, with all its positive and negative implications.

- (d) If the working population builds a stronger financial base, there will be a revival of the joint family system.
- (e) None of these
7. Animals in general are shrewd in proportion as they cultivate society. Elephants and beavers show the greatest signs of this sagacity when they are together in large numbers, but when man invades their communities they lose all their spirit of industry. Among insects, the labours of the bee and the ant have attracted the attention and admiration of naturalists, but all their sagacity seems to be lost upon separation, and a single bee or ant seems destitute of every degree of industry. It becomes the most stupid insect imaginable, and it languishes and soon dies.
- Which of the following can be inferred from the above passage
- (a) Humankind is responsible for the destruction of the natural habitat of the animals and insects.
- (b) Animals, In general, are unable to function effectively outside their normal social environment.
- (c) Naturalists have great admiration for bees and ants, despite their lack of industry upon separation.
- (d) Elephants and beavers are smarter than bees and ants in the presence of human beings.
- (e) None of these
8. Szymanski suggests that the problem of racism in football may be present even today. He begins by verifying an earlier hypothesis that clubs' wage bills explain 90% of their performance. Thus, if players' salaries were to be only based on their abilities, clubs that spend more should finish higher. If there is pay discrimination against some group of players—fewer teams bidding for black players thus lowering the salaries for blacks with the same ability as whites—that neat relation may no longer hold. He concludes that certain clubs seem to have achieved much less than what they could have, by not recruiting black players.
- Which one of the following findings would best support Szymanski's conclusion?
- (a) Certain clubs took advantage of the situational hiring above-average shares of black players.
- (b) Clubs hired white players at relatively high wages and did not show proportionately good performance.
- (c) During the study period, clubs in towns with a history of discrimination against blacks, under performed relative to their wage bills
- (d) Clubs in one region, which had higher proportions of black players, had significantly lower wage bills than their counterparts in another region which had predominantly white players.
- (e) None of these
9. The pressure on Italy's 257 jails has been increasing rapidly. Those jails are old and overcrowded. They are supposed to hold up to 43,000 people -----9, 000 fewer than now. San Vittore in Milan, which has 1, 800 inmates, is designed for 800. The number of foreigners inside jails has also been increasing. The minister in charge of prisons fears that tensions may snap, and so has recommended to government an amnesty policy ?

- Which one of the following, if true, would have most influenced the recommendation of the minister?
- (a) Opinion polls have indicated that many Italians favour a general pardon.
- (b) The opposition may be persuaded to help since amnesties must be approved by a two-thirds majority in parliament.
- (c) During a recent visit to a large prison, the Pope whose pronouncements are taken seriously, appealed for 'a gesture of clemency'
- (d) Shortly before the recommendation was made, 58 prisons reported disturbances in a period of two weeks.
- (e) None of these
10. Although in the limited sense of freedom regarding appointment and internal working, the independence of the Central Bank is unequivocally ensured, the same cannot be said of its right to pursue monetary policy without co-ordination with the central government. The role of the Central Bank has turned out to be subordinate and advisory in nature.
- Which one of the following best supports the conclusion drawn in the passage?
- (a) The decision of the chairman of the Central Bank to increase the bank rate by two percentage points sent shock waves in industry, academic and government circles alike.
- (b) Government has repeatedly resorted to monetisation of the debt despite the reservations of the Central Bank.
- (c) The central Bank does not need the central government's nod for replacing soiled currency notes.
- (d) The inability to remove coin shortage was a major shortcoming of this government.
- (e) None of these
11. "If you want a hassle-free holiday package for city M, then join only our tour. Hurry up; only a few seats available" – An advertisement of XYZ Tourist Company.
- If the above statement is true then which of the following has been assumed while making the statement?
- (a) No seats may be available with other tour operators for city M.
- (b) Nowadays people have a lot of money to spend on their comforts.
- (c) Travel packages offered by other tour operators are neither cheap nor comfortable.
- (d) Many people desire convenience and comfort while going for a holiday.
- (e) None of these
12. Psychological research indicates that college hockey and football players are more quickly moved to hostility and aggression than are college athletes in non-contact sports such as swimming. But the researchers' conclusion—that contact sports encourage and teach participants to be hostile and aggressive—is untenable. The football and hockey players were probably more hostile and aggressive to start with, than the swimmers. Which of the following, if true, would most strengthen the conclusion drawn by the psychological researchers?

- (a) The football and hockey players became more hostile and aggressive during the season and remained so during the off season, whereas there was no increase in aggressiveness among the swimmers.
- (b) The football and hockey players, but not the swimmers, were aware at the start of the experiment that they were being tested for aggressiveness.
- (c) The same psychological research indicated that the football and hockey players had a great respect for cooperation and team play, whereas the swimmers were most concerned with excelling as individual competitors.
- (d) The research studies were designed to include no college athletes who participated in both contact and non-contact sports.
- (e) None of these
13. The argument for liberalisation which answers the worries of the Left parties about the possible trade deficits created by the opening up of the Indian economy goes thus: 'In today's economic scenario, where there are many trading countries, the trade between two specific countries need not be balanced. The differing demands of goods and services and the differing productive capabilities of the same among different countries will cause a country like India to have trade deficits with some countries and surpluses with other countries. On the whole, the trade deficits and surpluses will balance out in order to give a trade balance'. Which of the following conclusions best summarises the argument presented in the passage above?
- (a) Left parties need not worry about trade deficits in India since its trade will always be in balance even though it runs a deficit with a single country.
- (b) India's trade deficits and surpluses with other countries always balance out.
- (c) The Left parties in India should not be concerned about India's trade deficits with specific countries because they will balance out in the long run.
- (d) None of these
- (e) None of these
14. In a famous experiment at the IISC campus, when a cat smelled milk, it salivated. In the experiment, a bell was rung whenever food was placed near the cat. After a number of trials, only the bell was rung, whereupon the cat would salivate even though no food was present. Such behaviour has been observed in other animals such as dogs, monkeys, etc. and is a vital input for training domesticated animals. Which of the following conclusions may be drawn from the above experiment?
- (a) The ringing of a bell was associated with food in the mind of the cat.
- (b) Cats and other animals can be easily tricked.
- (c) A conclusion cannot be reached on the basis of one experiment.
- (d) Two stimuli are stronger than one.
- (e) None of these
15. A mail-order company recently had a big jump in clothing sales after hiring a copywriter and a graphic artist to give its clothing catalog a magazine-like format designed to appeal to a more upscale clientele. The company is now planning to launch a housewares catalog using the same concept. The company's plan assumes that
- (a) An upscale clientele would be interested in a housewares catalog
- (b) Other housewares catalogs with magazine-like formats do not already exist
- (c) The same copywriter and graphic artist could be employed for both the clothing and housewares catalogs
- (d) Customers to whom the old clothing catalog appealed will continue to make purchase from catalogs with the new format
- (e) None of these
16. The fare-paying capacity of people who travel on routes connecting to small towns is very low. Most successful airlines which operate in such regions have a large number of seats. Which of the following can be inferred from the above information?
- (a) Regional airlines are quite profitable.
- (b) People from cities are increasingly travelling to small towns.
- (c) Regional airlines have to charge low fares in order to be profitable.
- (d) The number of people travelling from small towns to cities is massive.
- (e) None of these
17. All existing and upcoming hotels within a 5 km radius of national parks and sanctuaries in India will have to pay 30% of their annual turnover as tax to the government. Which of the following statements can be inferred from the facts/information given in the above statement?
- (a) The tax collected from the hotels will be used for the betterment of these national parks and sanctuaries.
- (b) Hotels which are sponsored by the government will not have to pay any tax even if these are located within the 5 km radius of such wildlife hotspots.
- (c) The ecosystem of the national parks and sanctuaries is adversely affected even if the hotels are located outside the 5 km radius.
- (d) Government allows the construction of hotels within 5km radius of national parks and sanctuaries.
- (e) Such a step is taken by the environment ministry to boost eco-tourism and perk up revenue collection of State governments.

Directions (Qs. 18-20): Study the following information carefully and answer the given questions.

The prospects for the Indian economy this year will be influenced by the behaviour of the monsoon and expansion of commerce and trade. The Eleventh Plan has envisaged a growth target of 8%. If the agriculture sector does well and the world trade

conditions improve then it is possible to achieve a growth of 6-7%. We need to improve our economy and aim at a higher rate of growth in order to feed our population, maintain the standard of living and improve the quality of life. It is now more than 10 years since we have adopted reforms. We need to go forward in liberalisation but we cannot throw open the market for everything. There are sectors like village industries which need protection.

18. Which of the following is an assumption which is implicit in the facts stated in the above paragraph?
- India should adopt economic policies of developed countries.
 - Free market strategy is beneficial for India, but not in all the sectors.
 - Over the last few years, we have achieved sustained growth.
 - A very good monsoon is expected this year.
 - None of these
19. Which of the following is an inference which can be drawn from the facts stated in the paragraph?
- The world trade conditions don't affect Indian economy.
 - The world trade conditions have a major impact on Indian economy.
 - Indian economy has been downgraded since last decade.
 - Govt should cut the subsidies in order to obtain sustained growth.
 - None of these
20. Which of the following is a conclusion which can be drawn from the facts stated in the above paragraph?
- India may become a super economic power some day.
 - The standard of living of people has continuously degraded in India.
 - Growth of Indian economy and a good monsoon are complement of each other.
 - Indian economy is on the peak of growth.
 - None of these

Directions (Qs. 21-23): Study the following information to answer the given questions.

Science is a sort of news agency comparable in principle to other news agencies. But this news agency gives us information which is reliable to an extraordinarily high degree due to elaborate studies spread over centuries. So, science should be read with the same interest with which we read news.

21. Which of the following will weaken the above argument?
- Man is an intelligent creature.
 - Science gives information.
 - Scientific information is revised.
 - News agencies cannot verify news.
 - None of these
22. Which of the following may be regarded as an assumption in the above passage?
- Verification of news is necessary.
 - Science encourages investigative spirit.
 - Science is objective in approach.
 - Science gives us news and not any other information regarding national phenomenon.
 - None of these

23. Which of the following strengthens the argument?
- Agricultural research is scientific.
 - Science gives abstract theories.
 - Verified information is reliable.
 - Science is a compulsory subject.
 - None of these

Directions (Q. 24-25) : In the following questions a paragraph is given. Read the paragraph carefully and answer the questions which follow each of these paragraph.

Fashion has become one of the largest fads among the youth. The amount of time wastage and expenditure on fashion is very large. What bothers, however, is the fact that fashion is here to stay despite countless arguments against it. What is required, therefore, is that strong efforts should be made in order to displace the excessive craze of fashion from the minds of today's youth.

24. Which of the following statements finds the least support by the argument made by the author in the given paragraph?
- Youngsters should be motivated to do constructive business rather than wasting time on fashion.
 - The world of fashion being glamorous and glittery attracts people towards itself.
 - Following the latest fashion increases the self-efficacy of people, thus increasing their overall mental abilities.
 - Many universities have implemented a dress code to put a check on the increasing fad amongst the youth which was affecting their grades.
 - None of these
25. Which of the following can be inferred from the given paragraph?
- The author has made strong efforts to wipe out fashion from the minds of youth.
 - Steps need to be taken in order to control the growing fad of fashion amongst the youth.
 - The author is upset with the shift of fashion from the traditional ethnic wear to western outfits.
 - Fashion world is responsible for lack of creativity among the youth.
 - None of these

Directions (Qs. 26- 28) : Study the following Information carefully and answer the questions given below :

Poverty measurement is an unsettled issue, both conceptually and methodologically. Since poverty is a process as well as an outcome; many come out of it while others may be falling into it. The net effect of these two parallel processes is a proportion commonly identified as the 'head count ratio', but these ratios hide the fundamental dynamism that characterises poverty in practice. The most recent poverty reestimates by an expert group has also missed the crucial dynamism. In a study conducted on 13,000 households which represented the entire country in 1993-94 and again on 2004-05, it was found that in the ten-year period 18.2% rural population moved out of poverty whereas another 22.1% fell into it over this period. This net increase of about four percentage points was seen to have a considerable variation across states and regions.

26. Which of the following is a **conclusion** which can be drawn from the facts slated in the above paragraph ?
- Accurate estimates of number of people living below poverty line in India is possible to be made.
 - Many expert groups in India are not interested measure poverty objectively.
 - Process of poverty measurement needs to take into account various factors to tackle its dynamic nature.
 - People living below poverty line remain in that position for a very long time.
 - None of these
27. Which of the following is an **assumption** which is **implicit** in the facts stated in the above paragraph ?
- It may not be possible to have an accurate poverty measurement in India.
 - Level of poverty in India is static over the years.
 - Researchers avoid making conclusions on poverty measurement data in India.
 - Government of India has a mechanism to measure level of poverty effectively and accurately.
 - None of these
28. Which of the following is an **inference** which can be made from the facts stated in the above paragraph ?
- Poverty measurement tools in India are outdated.
 - Increase in number of persons falling into poverty varies considerably across the country over a period of time.
 - Government of India has stopped measuring poverty related studies.
 - People living in rural areas are more susceptible to fall into poverty over the time
 - None of these

Directions (Qs. 29-31) : Study the following information carefully and answer the given questions.

The management of school M has decided to give free breakfast from next academic year to all the students in its primary section through its canteen even though they will not get any government grant.

- The school will have to admit many poor students who will seek admission for the next academic year.
 - The canteen facilities and utensils have to be checked and new purchases to be made to equip it properly.
 - Funds will have to be raised to support the scheme for years to come.
 - All students will get the more nutritious food at free of cost.
 - This decision will attract many students to get admission at school M
 - Breakfast will not be nutritious and safe and it can be harmful for health.
29. Which of the following (A), (B) and (C) can be an immediate **course of action** for the management?
- Only (A)
 - Only (B)
 - Only (C)
 - Both (B) and (C)
 - None of these

30. Which of the following among (A), (B), (E) and (D) may be the **reason** behind the management taking such decision?
- Only (A)
 - Only (B)
 - Both (A) and (E)
 - Only (E)
 - Only (D)
31. Which of the following A, B, E and F may be an immediate **effect** if there will be shortcomings in the proper arrangement of breakfast?
- Only (A)
 - Only (B)
 - Only (E)
 - Only (F)
 - Both (E) and (F)

Directions (Qs. 32-34) : Study the following information carefully and answer the given questions.

An advertisement of furniture company :
 “The simplest and the most cost-effective way to upgrade your home—

Exchange your old furniture and get 25% to 33% off on the new furniture.

- Now a days, there is no demand for furniture products unless some attractive scheme is offered.
 - Some customers always desire to have best quality and do not bother either for cost or for convenience.
 - Some customers want to keep their home up to date with reasonable cost and with hassles.
 - Generally, these types of advertisements increase the sell of particular products.
 - This advertisement will increase the sell of furniture products of company and customers will also get benefit from this scheme.
 - Now-a-days companies usually cheat customers by giving heavy discount.
32. Which of the following among (A), (B), (C) and (D) is **implicit** in the advertisement given above?
- Only (A)
 - Only (B)
 - Only (C)
 - Both (A) and (C)
 - Only (D)
33. Which of the following among (A), (B), (D) and (E) can be an immediate **cause** for giving this type of advertisement?
- Only (A)
 - Only (B)
 - Only (D)
 - Only (E)
 - Both (A) and (D)
34. Which of the following among (B), (C), (D) and (E) may be a **strong argument** in favour of, both, the company and the customer?
- Only (B)
 - Only (E)
 - Only (C)
 - Only (D)
 - Both (D) and (E)

Directions (Qs. 35-38) : Study the following information carefully and answer the given questions.

Population increase coupled with depleting resources is going to be the scenario of many developing countries in days to come.

- (A) The population of developing countries will not continue to increase in future.
- (B) It will be very difficult for the governments of developing countries to provide its people decent quality of life.
- (C) Governments of developing countries should make laws and implement them immediately to check the excessive growth of population.
- (D) In developing countries, people get marriages at early age.
- (E) Mostly in developing countries, girls' literacy rate is very low.
35. Which of the following (A), (B), (C) and (D) may be a **conclusion** that logically follows beyond a reasonable doubt from the information given above.
- (a) Only (A) (b) Only (B)
(c) Only (C) (d) Only (D)
(e) Both (A) and (B)
36. Which of the following (A), (B), (D) and (E) is quite **contrary** to the given information?
- (a) Only (A) (b) Only (B)
(c) Only (D) (d) Only (E)
(e) None of these
37. Which of the following (A), (B), (C) and (D) can be a **course of action** for the governments of developing countries?
- (a) Only (A) (b) Only (B)
(c) Only (C) (d) Only (D)
(e) All of these
38. Which of the following (A), (B), (D) and (E) can be the **reason** behind the population increment?
- (a) Only (A) (b) Only (B)
(c) Only (D) (d) Only (E)
(e) Both (D) and (E)

Directions (Qs. 39-41) : Study the following information carefully and answer the given questions.

Many private sector banks have reduced interest rate on housing loans in comparison to public sector banks.

- (A) The case should be raised before the regulatory authority for investigation by the public sector banks as they cannot follow such reduction.
- (B) Public sector banks must adopt such policy to remain in competition.
- (C) The public sector banks should advertise their special feature repeatedly so that they do not lose their future customers.
- (D) Now-a-days customers have been very aware on taking house loans. They search everything.
- (E) Sometimes private sector banks reduce interest rate on housing loans for a limit period.
- (F) Public sector banks are more reliable than private sector banks.
39. Which of the following among (A), (B), (C) and (F) can be an immediate **course of action** for the public sector banks?
- (a) Only (A) (b) Only (B)
(c) Only (C) (d) Both (B) and (C)
(e) Either (B) or (C)

40. Which of the following among (B), (C) (D) and (E) can be the **cause** behind the reduction interest rate on housing loans in comparison to public sector banks?
- (a) Only (B) (b) Only (D)
(c) Only (C) (d) Only (E)
(e) Both (D) and (E)
41. Which of the following among (A), (B), (E) and (F) may be a **weak argument** in favour of the private sector banks?
- (a) Only (A) (b) Only (B)
(c) Only (E) (d) Only (F)
(e) Both (E) and (F)

Directions (Qs. 42-44) : Study the following information carefully and answer the given questions.

There have been quite a few incidents of highway robbery on the super expressway between cities A and B during recent months.

- (A) The local administration should immediately set up police tickets along the expressway to prevent robbery.
- (B) The local administration should immediately close down the expressway till the robbers are apprehended.
- (C) More and more people should be given training on how to tackle with the robbers.
- (D) Due to unemployment people do illegal work.
- (E) There is a lack of security arrangements on the super express way between cities A and B.
- (F) These incidents will increase anarchy in the whole country.
42. Which of the following (A), (B), (C) and (D) may be a practical **course of action** for the local administration?
- (a) Only (A) (b) Only (B)
(c) Only (C) (d) Only (D)
(e) Both (B) and (C)
43. Which of the following among (C), (D), (E) and (F) may be the **effect** of these robberies?
- (a) Only (C) (b) Only (D)
(c) Only (E) (d) Only (F)
(e) Both (E) and (F)
44. Which of the following among (C), (D), (E) and (F) may be the **cause** of these incidents of highway robbery?
- (a) Only (C) (b) Only (D)
(c) Only (E) (d) Only (F)
(e) Both (D) and (E)

Directions (Qs. 45-47) : Study the following information carefully and answer the given questions.

The successful man has the ability to judge himself correctly.

- (A) Inability to judge correctly causes failure.
- (B) To judge others is of no use to a successful man.
- (C) The successful man cannot make a wrong judgement.
- (D) Hard-working is the key of success.
- (E) A successful man can not judge others.
- (F) A successful man does not look in to the future.

ANSWER KEY

1	(a)	11	(d)	21	(c)	31	(d)	41	(e)	51	(a)
2	(c)	12	(d)	22	(e)	32	(c)	42	(a)	52	(c)
3	(a)	13	(d)	23	(c)	33	(e)	43	(d)	53	(d)
4	(b)	14	(b)	24	(c)	34	(b)	44	(e)	54	(d)
5	(a)	15	(a)	25	(b)	35	(b)	45	(e)	55	(c)
6	(d)	16	(c)	26	(c)	36	(a)	46	(d)	56	(c)
7	(b)	17	(a)	27	(a)	37	(c)	47	(e)	57	(c)
8	(b)	18	(b)	28	(b)	38	(e)	48	(c)	58	(d)
9	(d)	19	(b)	29	(d)	39	(e)	49	(a)		
10	(a)	20	(c)	30	(c)	40	(b)	50	(c)		

Hints & Explanations

- (a) The argument's premises boil down to the following:

 - Wendy is a student who plays backgammon.
 - All students play either chess or checkers, but no backgammon player plays checkers.

Based on these premises we can conclude that Wendy plays chess. In order to also conclude that Wendy understands chess strategy, we must assume that all chess players understand chess strategy.

Premise: X is an A.
Assumption: All A's are B's.
Conclusion: X is a B.

Statement (a) provides the assumption needed to draw the conclusion.
- (c) The argument boils down to the following, including the unstated assumption provided by (c):

Premise: Students get enough reading practice already.
Unstated assumption (c): The reading program provides only reading practice.
Conclusion: The reading program is unnecessary.

(a) is not a necessary assumption. The argument is not concerned with whether improved reading skills would help the students learn history and science. Rather, the argument involves whether the new program would help improve reading skills.

(b) is not a necessary assumption. The argument is that no additional reading practice is needed, regardless of which program provides that practice.

(d) is not a necessary assumption. The argument does not aim to compare the importance of one discipline over another.
- (a) (a) is the correct choice as the passage says that "efficiency is present everywhere, this makes it all pervading". The passage does not suggest that efficiency does not pay or can be more of a torture.
- (b) (b) is the only option as according to the passage designations can be forgotten and even a subordinate like a sales engineer can question the CEO.
- (a) The passage refers to disunity of activists and local indifference to India's architectural treasures. Thus (a) comes across as a best choice as a situation it created in which antique dealers can thrive. Other options are clearly not suggested may appear correct but is not as apt as (a).
- (d) (d) comes across the right choice, as according to the passage, the working population needs a stronger financial base, since the joint family system is collapsing and thus the elderly are not being given the traditional shelter and the state can't provided it as it faces a financial crunch. Thus (d) is contrary to the conclusion drawn from the passage.
- (b) (b) comes across as the only logical inference from the passage where it is shown that animals in general can function when they are in their normal social environment as explained through the examples of bees, ants, elephant & beavers who cannot work properly when separated or invaded by humans
- (b) Inferring from the passage (b) supports Szymanski's conclusion because the passage suggests that clubs that had spend more on hiring white players should have finished higher. However, there is pay discrimination. So high pay may not mean good performance.
- (d) (d) is the only choice which make sense since the Minister in charge of prisons would be influenced by incidence of disturbance as he had already fears of tensions snapping and have recommended an amnesty policy to his government.
- (a) (a) is the only option that make sense as the passage catagorically mentions that the Central Bank does not have the right pursue a monitary policy without coordination with the central government.
- (d) The use of word 'hassle-free' suggests that the company assumed that people seek convenience and comfort.

12. (d) Option (d) is essential for basic conclusion.
13. (d) The first statement uses the word 'always', which makes it out of context as per the argument presented. Similarly the second statement is useless as it also uses the word 'always'. The third statement is not correct as it talks only about the trade deficit only and surplus is not mentioned.
14. (b) This passage is a typical example of Response to Stimuli. Clearly the cat starts salivating when the bell rings because she has related the ringing of bell with food in the back of her mind.
15. (a) The mail-order company received a tremendous response with the help of magazine-like format catalog designed for the upscale clientele. As the company is planning to launch a housewares catalog on the similar concept, the clear cut assumption which the company is making that the upscale clientele would be interested in a housewares catalog also.
16. (c) Only this follows by combining the two statements.
17. (a) This seems to be the only logic behind the imposition of tax in such specific areas.
18. (b) Read the last two sentences of the paragraph.
19. (b) Read the line-"If the agriculture sector does well and world trade conditions improve."
20. (c) The Indian economy depends on agricultural sector which depends a lot on monsoon.
21. (c) This dents the reliability factor.
24. (c) 3 goes in the opposite direction: it talks about the utility of fashion whereas the author does not talk of fashion approvingly.
25. (b) Read the last sentence of the paragraph.
26. (c) Process of poverty measurement needs to take into account various factors to tackle its dynamic nature.
27. (a) It may not be possible to have an accurate poverty measurement in India.
28. (b) Increase in number of persons falling into poverty varies considerably across the country over a period of time.



Vocabulary

A set of all the words that exist in a particular language or subject is vocabulary. The word vocabulary can have at least three different meanings: 1) all of the words in a language; 2) the words used in a particular context and 3) the words an individual knows.

Learning vocabulary is a very important part of learning a language. The more words you know, the more you will be able to understand what you hear and read; and the better you will be able to say what you want to speak or write.

Every student at some time or the other faces the question "How do I increase my vocabulary?" This is because, people who might otherwise be very fluent in spoken English do not really take care to use new words for the purpose of communication; the current register of words is deemed enough.

An unfortunate fallout of this nonchalant complacency is that when these people actually face questions examining their vocabulary and its extent, they fall flat. An easy example will bear this out. Everyone knows that when we are asked to name the tip of a mountain or the highest point of something, we use the word 'peak'. But not everyone would know that words like zenith, apogee, crest and summit may be replacements for the same word. So the same meaning used in the form of another word might leave the student totally flummoxed. Therefore, it is important to start working on one's vocabulary as soon as possible for success in any competitive exam.

Given below are a few tips on the accepted methods and practices used to improve one's vocabulary:

(a) The practice of reading:

This is, sadly, lacking in most aspirants. With the advent of Television, reading has almost become passé. Reading is important not just because it increases general knowledge. That it definitely does; in addition what it does is help a student get into the habit of reading. It is also important to read a variety of subjects, because each subject has its own register of language and words are used with differing connotations in each register. So, for success in competitive exams, perusal of a few different sources of reading material is mandatory. The sources are:

- (1) A general magazine e.g. India Today, Frontline, Outlook, Reader's Digest, Time, etc.
- (2) A business magazine e.g. Business Today, Business India, Business World, etc.
- (3) The daily newspaper e.g. The Times of India, The Hindu, The Indian Express, etc.

(b) Using a dictionary - the almost-extinct habit:

Even though the idea of using a dictionary does nothing to enthuse the common student, every one owns a dictionary but treats it like a sacred cow, not to be touched and defiled; of course, not that they are to be blamed too much for it; it is almost a habit now; but should be considered a necessary evil. A dictionary should be kept with the student while reading anything, so that an incomprehensible word can be looked up immediately. Procrastination invariably leads to the words remaining incomprehensible due to forgetfulness in looking up the word in the dictionary.

(c) Self-help books:

Quite a few self-help books claiming to improve Verbal Ability are to be found in the open market, and one or two are actually

helpful in this regard. Students are welcome to consult these books but are advised to do so after consulting discriminating people who have experience in this regard e.g. experienced English teachers or the English faculty, since they have better idea of the relative efficacy of these books.

(d) Thesaurus-the viable alternative:

If using a dictionary seems to be too boring to be considered for any length of time, using a thesaurus may be a more interesting alternative. In theory, it is the reverse of a dictionary, and basically gives the various synonyms and the types of usage of a word e.g. as a verb, adjective, noun etc. So it gives a lot of information about each word. If the student can remember even some of it, it will be a great advantage. The most commonly available thesaurus in the market is the Roget's Thesaurus, usually now used as a generic name by most publishers.

(e) The Word List:

The Word List is a comprehensive compendium of the words most commonly asked or used in the Management Examination question papers. Studying the Word List will also give the student a lot of information about the origin of various words, their roots etc. This is a particularly useful method of studying because knowledge of etymology helps the student gauge the meaning and usage of other words having the same roots, regardless of whether the student has come across the word earlier or not.

(f) Flip-Cards:

We strongly advocate this technique which is another tool to memorize words from the list. These are blank cards approximately double the size of your standard visiting card. After isolation of the exceptionally difficult words from the Word List, the student should write approximately five words on one side of the card and the corresponding meanings on the other. The advantages of using this type of tool are that (1) Cards are portable and the student can carry a card around with him/her anywhere and glance at it anytime. (2) The embarrassment factor which carrying a Word List around entails is absent here, and (3) At the time of the final run-up to the examination, the student, instead of revising the whole Word List, can just go through the set of Flip Cards that he or she has collected. The only problem is getting started and, to mix metaphors, once that initial hurdle is overcome the rest is smooth sailing!

(g) Gauging meanings:

This logically follows from the earlier method. It is advisable for the student to try and gauge the meaning of a word from the context of the sentence. This is an extremely effective method and very frequently, it is possible to find out the meaning of a newly seen word just by reading the whole sentence and getting the meaning of the sentence as a whole. e.g. in the sentence 'All of us tried our best to persuade him but he remained adamant'. Even if a student does not know the meaning of the word adamant per se, it is still possible to gauge the meaning from the context of the sentence i.e. unmoved, firm, intractable, etc. It should be kept in mind by the students that none of the above methods are absolute in themselves. It is a combination of all these, or at least some of these, which will give one the best results.

ONE WORD - A SMALL COLLECTION

- | | | | |
|--------------------|--|---------------------|---|
| Abdicate | - Renounce a throne or high office | Armistice | - (or cease-fire or truce) An agreement to stop fighting |
| Abolish | - Do away with | Ascetic | - One who avoids physical pleasures and comforts |
| Accelerate | - Move faster | Astrology | - The art of understanding the influence of heavenly bodies on human affairs |
| Accomplish | - One associated with another especially in wrong-doing | Astronomy | - Scientific study of heavenly bodies |
| Acoustics | - Science of the production, transmission, reception and effects of sound | Aviary | - A place for keeping birds |
| Acrobat | - An athlete who performs acts requiring skill and agility and coordination | Backlog | - It means an accumulation of arrears. Example: I must clear my heavy backlog of work. |
| Adolescence | - The period of life from puberty to maturity | Backwater | - A part of a river out of the main stream, where the water does not move |
| Actuary | - One who calculates insurance and annuity premium etc. | Barbarian | - An uncivilised person |
| Adulterate | - Make impure by the addition of inferior substance | Barbecue | - A metal flame on which meat etc. is cooked over an open fire |
| Aggression | - Unprovoked attack of one country or person by another | Barometer | - An instrument for measuring the air pressure |
| Amnesty | - General pardon | Beverage | - A liquid for drinking |
| Abattoir | - A building where animals are killed for meat (or slaughterhouse) | Bibliography | - A list of writings on a subject |
| Ad hoc | - arranged or happening when necessary and not planned in advance | Biennial | - Happening once every two years |
| Aeronautics | - The science of the operation and flight of aircraft | Bigamy | - System of two marriages |
| Aesthete | - A person with a highly developed sense of beauty aesthetics | Biodata | - (or Resume or Curriculum Vitae) A short written account of one's education and past employment |
| Agnostic | - One who believes that nothing can be known about God | Black Hole | - An area in outer space into which everything near it, including light, is pulled |
| Agoraphobia | - Fear of open spaces in public places | Bleach | - Make white or pale by means of chemicals or sunlight |
| Alibi | - It is Latin for elsewhere. It is actually a plea of having been elsewhere at the time of commission of an act. But it is now used in the sense of an excuse. Example: He offered no alibi for his absence from duty. | Blue Blood | - The quality of being a noble person by birth |
| Alimony | - Compensatory allowance given to wife after divorce | Blueprint | - The word originated in the engineering industry where it means the final stage of paper design. So it may mean the final plan or layout. Example: The blueprint of the Five-Year Plan is ready. |
| Allergic | - Allergy means, a heightened sensitivity to a substance as food, medicine etc. Allergic means having an aversion to. Example: He is allergic to hard work. | Bonsai | - The art of growing a plant in a pot that is prevented from reaching its natural size |
| Altruist | - One who is habitually kind to others | Bon Vivant | - One who likes good wine and food and cheerful companions |
| Alumnus | - A former student of a school or college | Bookworm | - (or nerd) One who is too fond of reading and study |
| Ambivalent | - A simultaneous attraction towards and repulsion from an object, person or action; Example: The attitude of educated Indians to love-marriages is ambivalent | Botany | - The scientific study of plants |
| Anachronism | - That which appears to be old fashioned and does not belong to the present time | Bottleneck | - It is a narrow passage, a place, stage or condition that checks progress. Example: We must remove all bottlenecks in the swift implementation of policies. |
| Anarchy | - Lawlessness and disorder caused by absence of control | Boulevard | - A broad street having trees on each side |
| Anecdote | - A short interesting or amusing story | Bourgeois | - Belonging to the middle class |
| Anthology | - A collection of poems or writings | Bric-a-brac | - Small objects kept for decoration |
| Aphorism | - (or maxim) A wise saying in a few words | Bullion | - Bars of gold or silver |
| Aphrodisiac | - A medicine drug causing sexual excitement | Bust | - A piece of sculpture showing a person's head, shoulders, and upper chest |
| Apiary | - A place where bees are kept | Cabal | - A small group of people who make secret plans for political action |
| Apprentice | - A person who works under someone to learn that person's skill | Calligraphy | - The art of beautiful writing by hand |
| Arboreal | - Those who live in trees | Canine | - Of a dog |
| | | Cannibal | - One who eats human flesh |
| | | Cardiac | - Connected with the heart |

Catch-22	- A situation from which one is prevented from escaping by something that is part of the situation itself	Debacle	- A sudden complete failure
Celestial	- Of the sky or heaven	Decanter	- A container for holding alcoholic drinks, especially wine
Cerebral	- Connected with the brain	Defeatism	- The practice of thinking in a way that shows an expectation of being unsuccessful
Chalet	- A wooden house with a steeply sloping roof	Deficit	- The amount by which something is less than what is needed
Charlatan	- One who deceives others by falsely claiming to have a skill	Déja vu	- The feeling of remembering something that in fact one is experiencing for the first time
Celibacy	- One who does not indulge in carnal pleasure	Depression	- A long period of seriously reduced business activity and high unemployment; A mental state characterized by a pessimistic sense of inadequacy and a despondent lack of activity
Clean sweep	- A complete victory	Designate	- Chosen for an office but not yet officially placed in it
Cloak-and-Dagger	- Stories that deal with adventure and exciting mystery	Disarmament	- Reduction of weapons by a government
Clot	- A half-solid mass or lump formed from a liquid, especially blood	Dissection	- Cutting up the body of a plant or animal for studying
Clubfoot	- A badly-shaped foot twisted out of position from birth	Dividend	- The money which is divided among shareholders
Coagulate	- Change from a liquid into a solid by chemical action	Dome	- A rounded roof on a building
Cold war	- Severe political struggle between countries, without actual fighting	Dormitory	- A large room containing a number of beds
Colloquial	- Suitable for ordinary, informal, or familiar conversation	Down-and-out	- One who is suffering from lack of money, work, etc, and is unable to change the situation
Colonnade	- A row of pillars supporting a roof or arches	Dragnet	- A system of connected actions and methods for catching criminals
Coma	- A state of long unnatural deep or unconsciousness	Dregs	- Sediment in a liquid that sinks to the bottom and is thrown away
Combustible	- (or Inflammable) that can catch fire and burn easily	Drudgery	- Hard uninteresting work
Comrade	- A close companion who shares difficult work	Dutch	- Of the Netherlands (Holland)
Congenital	- Existing at or from one's birth	Eagle-eyed	- Looking with very keen attention and noticing small details
Connotation	- The feeling or ideas that are suggested by a word	Eaves	- The edges of a roof which come out beyond the walls
Consortium	- A combination of several companies, banks, etc. for a common purpose	Eddy	- A circular movement of water, wind, dust etc.
Consul	- A person appointed by a government to protect and help its citizens and its interests in trade in a foreign city	Elastic	- Able to spring back into shape after being stretched
Contemporary	- A person living at the same time as another	Electrocute	- To kill by passing electricity through the body
Contretemps	- An unlucky and unexpected event, socially uncomfortable position with someone	Embargo	- An official order forbidding trade with another country
Corinthian	- Typical of the most richly decorated style of ancient Greek buildings	Empirical	- Based on practical experience of the world we see and feel
Corrigendum	- Something (to be) made correct in a printed book	Enigmatic	- That which is mysterious and very hard to understand
Counterfeit	- Made exactly like something real in order to deceive	Entomology	- The scientific study of insects
Countervailing	- Acting with equal force but opposite effect	Epic	- A long narrative poem
Couture	- The business of making and selling fashionable women's clothes	Epicurean	- Lover of physical/material
Cradle	- A small bed for a baby	Ergonomics	- The study of the conditions in which people work most effectively with machines
Creativity	- The ability to produce new and original ideas	Estuary	- The wide lower part or mouth of a river
Criminology	- The scientific study of crime and criminals	Evaporate	- To change into steam and disappear
Crossroads	- A point at which an important decision must be taken	Evolution	- Gradual development from simpler forms
Cruise	- A sea voyage for pleasure	Excise	- Tax on goods produced and used inside a country
Cuisine	- A style of cooking	Expletive	- An often meaningless word used for swearing
Daredevil	- One who is prepared to take dangerous risks		
D-day	- A day on which an important operation is to begin		

Expressionism	- A style of painting which expresses feelings rather than describing objects and experiences	Grunt	- Short deep rough sound of a pig
Extrovert	- One who likes to spend time with others	Gubernatorial	- Of a governor
Facet	- Any of the many flat sides of a cut jewel	Guinea pig	- A person who is subject of some kind of test
Faeces	- The solid waste material passed from the bowels	Halitosis	- A condition in which one has bad breath
Fallacy	- A false idea or belief	Handbook	- A short book giving all the most important information about a subject
Farce	- A light humorous play full of silly things happening	Hangar	- A big building where aircraft are kept between flights
Farrier	- One who makes and fits shoes for horses	Harpoon	- A spear with a long rope, used for hunting large sea animals
Febrile	- Of or caused by fever	Haven	- A place of calm and safety
Felony	- A serious crime such as murder or armed robbery	Headgear	- A covering for the head
Fiancé	- (feminine fiancée) the person one is going to marry	Headstrong	- Determined to do what one wants in spite of all advice
Filament	- A thin thread	Heat-stroke	- Fever and weakness caused by too much heat
Flogging	- Severe beating with a whip or stick	Heirloom	- A valuable object passed on for generations
Flora	- All the plants of a particular place, country, or period	Herbivore	- A plant-eating animal
Fluvial	- Of, found in, or produced by rivers	Hide	- An animal's skin, when removed, to be used, for leather
Foible	- A small rather strange and stupid personal habit	Hinterland	- The inner part of a country
Foolscap	- A large size of paper, especially writing paper	Histrionics	- Behaviour resembling a theatrical performance
Foray	- A sudden rush into enemy country	Holocaust	- Great destruction and the loss of many lives
Foreman	- A skilled and experienced worker in charge of other workers	Holster	- A leather holder for a pistol
Fortnight	- Two weeks	Hooligan	- A noisy rough person who causes trouble
Fourth Estate	- Newspapers and their writers, considered with regard to their political influence	Hothead	- One who does things too quickly, without thinking
Freckle	- A small flat brown spot on the skin	Hub	- The central part of a wheel
Freight	- Goods carried by ship, train, plane, etc.	Hump	- A lump on the back of a camel
Frill	- A decorative edge to a piece of material	Ideology	- A set of ideas on which a political or economic system is based
Frontispiece	- A picture or photograph at the beginning of a book	Idolatry	- The worship of idols
Fumigate	- To clear of disease, bacteria etc. by means of chemical smoke	Illegible	- Difficult or impossible to read
Furrow	- A long narrow track cut by a plough	Immortal	- That which will never die
Galaxy	- A large group of stars	Implacable	- Impossible to satisfy, change, or make less angry
Gastronomy	- The art and science of cooking and eating good food	Improvident	- One who does not save for future
Gelatine	- A clear substance used for making jellies	Incarnate	- In physical form rather than in the form of a spirit or idea
Geocentric	- Having the Earth as the central point	Incorporeal	- Without a body or form
Gigolo	- A man who is paid to be a woman's lover	Inedible	- Not suitable for eating
Glacier	- A mass of ice moving very slowly down a mountain valley	Inflate	- To fill with air or gas until swelled
Glut	- A larger supply than is necessary	Ingest	- To take into the stomach
Goatee	- A little pointed beard on the bottom of the chin	Innate	- Being talented through inherited qualities
Go-Getter	- One who is forceful, determined, and likely to succeed in getting what one wants	Inseminate	- To put male seed into a female
Good Samaritan	- One who helps others in trouble, without thinking of oneself	Intelligentsia	- Those who are highly educated and often concern themselves with ideas and new developments
Gorge	- A deep narrow valley with steep sides	Intestate	- Not having made a will
Graffiti	- Drawings or writing on a wall	Invective	- A forceful attacking speech used for blaming someone
Grange	- A large country house with Farm buildings	Invoice	- A list of goods supplied, stating quantity and price
Green Belt	- A stretch of land, around a town or city, where buildings are not allowed, so that fields, woods, etc. remain	Irreproachable	- So good that no blame at all could be given
		Journal	- A serious magazine produced by a specialist society
		Junta	- A council or assembly that deliberates in secret upon the affairs of government

Juxtapose	- To place side by side or close together	Mercantile	- Of trade and business
Kennel	- A small hut for a dog	Meteorology	- The scientific study of weather conditions
Kimono	- A long loose garment made of silk	Midriff	- The part of the human body between the chest and the waist
Knuckle	- The joint between the finger and the hand	Militia	- Those trained as soldiers but not belonging to a regular army
Lackey	- One who behaves like a servant by always obeying	Miniature	- A very small painting
Lead Time	- The time taken in planning and producing a new product	Mirage	- The appearing of objects which are not really there
Lecher	- One who continually looks for sexual pleasure	Misnomer	- A name wrongly or mistakenly applied
Leonine	- Of or like a lion	Moccasin	- A simple shoe made of leather
Levee	- An embankment beside a river or stream or an arm of the sea, to prevent floods	Modus Operandi	- A method of doing something typical of someone
Levy	- An official demand and collection, especially of a tax	Mogul	- A person of very great power, wealth and importance
Libertarian	- One who believes that people should have freedom of expression	Monarchy	- Rule by a king or queen
Lien	- A legal claim or hold on employment or property, as security for a debt or charge.	Monomaniac	- One who keeps thinking of one particular idea only
Limerick	- A humorous short poem with five lines	Moralistic	- Having unchanging narrow ideas about right and wrong
Linchpin/ Lynchpin	- An important member which keeps the whole group together	Morbid	- Having or expressing a strong interest in sad or unpleasant things
Literati	- People with great knowledge of literature	Motto	- A few words taken as the guiding principle
Livery	- Uniform of a special type for servants	Multinational	- A company having operations in many different countries
Locale	- A place where something particular happens	Mundane	- Dull / Ordinary
Logger	- One whose job is to cut down trees	Mycology	- The scientific study of fungi (plural of fungus)
Loom	- A machine on which thread is woven into cloth	Namesake	- A person with the same name as yours is your namesake
Lore	- Old beliefs, not written down, about a particular subject	Nautical	- Of sailors, ships, or sailing
Lowbrow	- One who has no interest in literature, art etc.	Necromancy	- The practice which claims to learn about the future by talking with the dead
Lullaby	- A pleasant song used for causing children to sleep	Nemesis	- Just and unavoidable punishment
Machete	- A knife with a broad heavy blade	Newfangled	- New (idea, machine etc) but neither necessary nor better
Magnum Opus	- A great work of art, theatre, film etc.	Nihilism	- The belief that nothing has meaning or value
Malady	- That which is wrong with a system	Nodding Acquaintance	- A very slight familiarity
Malaise	- A feeling of pain without any particular pain or appearance of disease	Nosegay	- A small bunch of flowers, to be carried or worn on a dress
Malcontent	- One who is dissatisfied with the existing state of affairs	Notary	- A public official who makes written statements official
Male Chauvinist	- A man who believes that men are better than women	No-win Situation	- That which will end badly whichever choice one makes
Malign	- To speak evil of, especially to do so falsely and severely	Nursery	- A place where small children are taken care of or where young plants are grown for sale
Mane	- The long hair on the back of a horse's neck	Oar	- A long pole used for rowing a boat
Manual	- A book giving information about how to do something	Obstetrics	- The branch of medicine concerned with childbirth
Market Forces	- The free operation of business and trade without govt. controls	Obtrude	- To be pushed or to push oneself into undue prominence.
Mascot	- Chosen as a symbol or thought to bring good luck	Obtrusive	- Tending to be pushed or to push oneself into undue prominence
Massacre	- The unnecessary and indiscriminate killing of human beings	Obviate	- To clear away or provide for, as an objection or difficulty
Materialism	- Too great interest in money & material, etc, rather than spiritual matters	Odoriferous	- Having a smell
Mechanics	- The science of the action of forces on objects	Off-White	- White with some grey or yellow
Megalomania	- The belief that one is more important or powerful than one really is	Oligarchy	- A collective government formed by a few persons

One-Upmanship	- The art of getting an advantage over others without actually cheating	Poker Face	- A face that shows nothing of what one is thinking or feeling
Ontology	- The branch of philosophy concerned with the nature of existence	Porcine	- Of or like a pig
Operational Research	- Being in effect or operation organised in order to make them more efficient	Pork	- Meat from pigs
Opprobrium	- The state of being scornfully reproached or censured	Portend	- To indicate as being about to happen, especially by previous signs
Orderly	- A soldier who attends an officer	Post-Haste	- In a great hurry
Ornithology	- The scientific study of birds	Pot-Boiler	- A book of low quality produced quickly to make money
Ostentation	- A display dictated by vanity and intended to invite applause or flattery.	Powder Keg	- Something dangerous that might explode
Ostracism	- The state of not being included in a group	Précis	- A shortened form of a piece of writing
Outcast	- A person who is rejected (from society or home)	Prescient	- Able to imagine or guess what will probably happen
Overhaul	- Thorough examination and repair if necessary	Prevaricate	- To use ambiguous or evasive language for the purpose of deceiving or diverting attention.
Pacemaker	- A small machine that regularises heartbeats	Prey	- An animal that is hunted and eaten by another
Palaeography	- The study of ancient writing systems	Prima Donna	- The main woman singer in an opera company
Panacea	- A remedy or medicine proposed for or professing to cure all diseases.	Prodigal	- One who is wasteful or extravagant, especially in the use of money or property.
Panache	- Being able to do things in a confident and elegant way.	Profile	- A side view of someone's head /face
Panegyric	- A speeds or a piece of writing praising somebody or something	Projection	- Something that sticks out from a surface
Pariah	- One who is not accepted by society	Propellant	- An explosive for firing a bullet or a rocket
Parricide	- Act of murdering one's father, mother or other close relative	Protagonist	- First actor in a play; it means one who takes the leading part in a drama, novel or any other sphere.
Parting Shot	- A last remark made at the moment of leaving	Proscribe	- To reject, as a teaching or a practice, with condemnation or denunciation.
Passive Smoking	- The breathing in of smoke from the cigarettes that others are smoking	Prosody	- The rules by which the patterns of sounds and rhythms are arranged in poetry
Patent	- The right to make or sell a new invention	Postscript (or P.S.)	- A note added at the end of a letter
Paunch	- A man's fat stomach	Pulmonary	- Of or having an effect on the lungs
Peanuts	- Too small a sum of money	Punctilious	- Strictly observant of the rules or forms prescribed by law or custom
Peeping Tom	- One who secretly looks at others when they are undressing	Punter	- One who makes a bet on horse race
Penance	- Making oneself willingly suffer for one's wrongs	Pus	- A thick yellowish liquid produced in an infected wound
Perdition	- Everlasting punishment after death	Putsch	- A sudden secretly planned attempt to remove a government by force
Perjury	- A lie told on purpose in court	Palmistry	- The art of telling one's character or future by examining one's hands and palms
Persona non Grata	- One who is not acceptable or welcome	Quartet	- Four singers or musicians performing together
Petrology	- The scientific study of rocks	Quixotic	- Trying to do the impossible, often so as to help others, while getting oneself into danger
Phonetics	- The study and science of speech sounds	Raconteur	- One who is good at telling stories in an interesting way
Phylum	- A main division of animals or plants	Raillery	- Friendly joking at someone's weaknesses
Pigment	- The natural colouring matter of plants and animals	Realpolitik	- Politics based on practical facts rather than on moral or ideological aims
Pillion	- A seat for a second person on a motorcycle	Rebuff	- Reject outright and bluntly
Pithead	- The entrance to a coalmine	Recant	- To withdraw formally one's belief (in something previously believed or maintained)
Placate	- To bring from a state of angry or hostile feeling to one of patience or friendliness.	Recumbent	- Lying down on the back or side
Plaintiff	- One who brings a charge against someone in a court	Red-Handed	- In the act of doing something wrong
Platitude	- A written or spoken statement that has been made often before and is not interesting		
Platonic	- A friendly, not sexual, relationship between a man and a woman		
Plebeian	- Of the lower social classes		
Poetaster	- A writer of inferior quality poems		

Redundant	- Exceeding what is natural, usual or necessary.	Shaman	- A priest believed to have magical powers and able to cure people
Reflation	- A govt. policy of increasing the amount of money used to increase the demand for goods or services	Shibboleth	- A once-important custom which no longer has much meaning
Relic	- Something old that reminds us of the past	Shoot	- A new growth from a plant
Renaissance	- A renewal of interest in some particular kind of art, literature, etc, a period of revival during 15th and 16th centuries in Europe	Short-change	- To give back less than what actually should be given back
Renal	- Of the kidneys	Siamese twins	- Those joined together from birth at some part of their bodies
Rescind	- To make void, as an act, by the enacting authority or by a superior authority.	Side Effect	- An unwanted effect happening in addition to the intended one
Resonance	- Sound produced in one object by sound waves from another	Sill	- The flat piece at the base of a window
Retribution	- A justly deserved penalty	Singsong	- A repeated rising and falling of the voice in speaking
Revisionism	- The questioning of the main beliefs of an already existing political system	Skyscraper	- A very tall modern city building
Rhyme	- To end with the same sound, including a vowel	Sleeping Partner	- A partner in a business who takes no active part
Ringleader	- One who leads others to do wrong or make trouble	Slip-up	- A slight unintentional mistake
Riviera	- A warm stretch of coast on the Mediterranean sea; popular with holiday makers	Small Fry	- A young or unimportant person
Rodent	- A small herbivore with strong sharp long front teeth	Smokestack	- The tall chimney of a factory or a ship
Rolling Stone	- One who travels around a lot and has no fixed address or responsibilities	Snippet	- A short piece from something spoken or written
Rosary	- A string of beads used for counting prayers	Socialite	- A person well known for going to fashionable parties
Roving eye	- Sexual interests that pass quickly from one person to another	Sociology	- The scientific study of societies and human behaviour in groups
Rubber Stamp	- One who acts only to make official the decisions already made by another	Solidarity	- Loyal agreement of interests, aims, or principles among a group
Ruling	- An official decision of a court	Somnambulism	- The habit of walking about while asleep
Rung	- Any of the cross-bars that form the steps of a ladder	SOS	- An urgent message from someone in trouble
Saboteur	- One who practices sabotage	Souvenir	- An object kept as a reminder of something
Salve	- (or Ointment) An oily substance for putting on a cut, wound, etc.	Spatial	- Connected with space
Sapient	- Wise and full of deep knowledge	Spectacle	- A grand public show or scene
Scaffolding	- A structure built from poles and boards for workmen to stand on	Spindle	- A machine part round which something turns
Scalp	- The skin on the top of the human head	Splinter	- A small sharp-pointed piece of wood, glass or metal broken off
Sceptical	- Unwilling to believe a claim or promise	Sportsmanship	- A spirit of honest fair play
Scraps	- Pieces of food not eaten at a meal and thrown away	Sprig	- A small end of a stem or branch with leaves
Scuba	- An instrument used for breathing while swimming underwater	Stallion	- A fully-grown male horse kept for breeding
Seam	- A line of stitches joining two pieces of cloth, leather, etc.	Standard-bearer	- An important leader in a moral argument or movement
Sedentary	- Anything done while sitting down	Statesman	- A political leader who is respected as being wise, honourable, and fair-minded
Seer	- A person with unusual powers of foresight	Stellar	- Of the stars
Seismic	- Of or caused by earthquakes	Sticking Point	- Something that prevents an agreement
Seller's Market	- Where there are not many goods for sale	Stock Broker	- One whose job is buying and selling shares and debentures for others
Sensationalism	- The intentional producing of excitement or shock	Stoic	- One who is indifferent to joys or sorrows
Septic	- Infected with disease bacteria	Stooge	- One who habitually does what another person wants
Sexagenarian	- One who is between 60 and 69 years old	Stratagem	- A trick to deceive an enemy
Sexism	- The belief that one sex is not as good as the other	Strategist	- A person skilled in planning, especially of military movements
		Stride	- A long step in walking; significant progress (especially in the phrase "make strides")
		Strobe Light	- A light which goes on and off very quickly
		Subcutaneous	- Beneath the skin
		Sub-Judice	- A legal case being considered in court

Subsidy	- Money paid by the government to reduce prices	Tyrant	- A ruler with complete power, who rules cruelly and unjustly
Superannuated	- Too old for work	Tyro	- One slightly skilled in or acquainted with any trade or profession
Surety	- One who takes responsibility for the behaviour of someone	Underling	- A person of low rank in relation to another
Surreal	- Having a strange dreamlike unreal quality	Undermanned	- Not having enough workers
Swarm	- A large group of insects moving in a mass	Unguent	- A thick oily substance used on the skin to heal it
Sweet Tooth	- A liking for sweet and sugary things	Unisex	- Of one type used by both male and female
Sword of Damocles	- Something bad that may happen at any time	Upholstery	- A comfortable covering and filling for a seat
Tactile	- Of the sense of touch	Valise	- A small bag used while travelling
Take-home Pay	- Wages left after all taxes, deductions, etc, have been made	Vase	- A decorative container used to put flowers in
Tannery	- A Place where animal skin is made into leather	Vendor	- A seller of small articles that can be carried about
Tarot	- A set of 22 cards used for telling the future	Vertebrate	- A living creature which has a backbone
Tautology	- Needless repetition of meaning in other words; example: audible to the ear, return back, One after another in succession, etc.	Vicissitude	- A variation in circumstances or fortune at different times in your life or in the development of something
Taxonomy	- The system of putting plants and animals into various classes	Vinous	- Of or pertaining to wine
Technocrat	- A highly skilled specialist in charge of an organisation	Voluntary	- Done willingly, without being forced
Teller	- One who is employed to receive and pay out money in a bank	Wade	- To walk through water
Tenure	- The act, right, or period of holding land or a job	Walkout	- Leaving a meeting as an expression of disapproval
Territorial waters	- The sea near a country's coast over which it has legal control	Wardrobe	- A large cupboard in which one hangs up clothes
Testamentary	- Of or done according to a will	Wasteland	- Empty, unproductive, usually barren land
Thatch	- Roof covering of straw, reeds, etc.	Waterloo	- A severe defeat after a time of unusual success
Thermal	- Of heat	Weakling	- One who lacks physical strength or strength of character
Thorax	- The part between the neck and the abdomen	Wean	- To transfer (the young) from dependence on mother's milk to another form of nourishment
Thrombosis	- Having a clot in a blood vessel or the heart	Weather-beaten	- Marked or damaged by the force of wind, sun, rain etc.
Topiary	- The art of cutting trees and bushes into decorative shapes of animals and birds	Wheeler-dealer	- One who is skilled at making profitable or successful deals
Touchstone	- Something used as a test or standard	Whirlpool	- A place with circular currents of water which can pull objects down into it
Tract	- A short piece dealing with a religious or moral subject	Wholesale	- The business of selling goods to shopkeepers
Traitor	- One who is disloyal to one's country	Wit	- The ability to say clever and amusing things
Transient	- Lasting a very short time	Wizard	- One who has magic powers
Transmogrify	- To change completely as if by magic	Word Blindness	- (or dyslexia) Difficulty in seeing the difference between shapes of letters
Transpire	- To happen or occur or become known. Example: It transpired at the meeting that he was going to be our next President.	Workaholic	- One who likes to work too hard
Treatise	- A serious book or article that examines a particular subject	Working	- Enough practical knowledge to do something
Tribunal	- A court of people officially appointed to deal with special matters.	Knowledge	
Troglodyte	- One who lives in a cave	Wreckage	- The broken parts of a destroyed thing
Trousseau	- The personal outfit of a bride; clothes and accessories and linens	Wretch	- An unfortunate or unhappy person
Tunnel Vision	- A condition in which one can see only straight ahead	Xenophobia	- Fear of strange or foreign people, customs, etc.
Turf	- A surface made up of earth and a thick covering of grass	Yeoman Service	- Great and loyal service, help, or support
Tutelage	- The act of training or the state of being under instruction	Yuppie	- A young person in a professional job with a high income
		Zeitgeist	- The intellectual and moral tendencies that characterize any age or epoch
		Zoology	- The scientific study of animals

FOREIGN WORD AND PHRASES

Foreign words and phrases are generally not asked directly. But the knowledge of foreign words and phrases will help you in reading comprehension and other types of common questions. So, make yourself familiar with the common foreign words and phrases.

- **Ab initio** : from the beginning.
- **Addenda** : 'list of additions'. (addenda to a book)
- **Ad valorem** : according to value.
- **Ad hoc** : a body elected or appointed for a definite work. (ad hoc committee).
- **Ad infinitum** : to infinity.
- **Alma mater** : a school which one has attended.
- **A la carte** : according to the bill of fare. (a la carte dishes are available)
- **A la mode** : according to the custom (fashion). (a la mode silk)
- **Alter ego** : the other self, intimate friend, (Kissinger was the alter ego of Nixon)
- **Amende honorable** : satisfactory apology, reparation.
- **Amour propre** : self love
- **Ancien regime** : a political or social system that has been displaced by another.
- **A posteriori** : empirical
- **A priori** : from cause to effect, presumptive. (every science cannot be taught a priori)
- **Apropos** : in respect of
- **An couran** : fully acquainted with matters.
- **Au fait** : completely familiar with
- **Au revoir** : until we meet again (to say au revoir at parting)
- **Avant propos** : preliminary matter, preface
- **Beau ideal** : the ideal of perfection.
- **Beaumonde** : the world of fashion.
- **Beaux esprits** : men of wit.
- **Bete noire** : a special aversion (Uncle Symond was my father's bête noire)
- **Bona fide** : good faith (His bona fide in the matter cannot be doubted)
- **Bizarre** : odd, fantastic.
- **Bon voyage** : a good voyage or journey to you
- **Casus belli** : that which causes or justifies war.
- **Cause celebre** : a celebrated or notorious case in law
- **Charge d' affaires** : diplomat inferior in rank to an Ambassador but acting on his behalf in his absence.
- **Chef d' oeuvre** : masterpiece (Mona Lisa is Vinci's Chef-d' oeuvre)
- **Circa** : about ('circa 1930')
- **Contretemps** : an unexpected or untoward event; a hitch
- **Corrigenda** : a list of errors (in a book)
- **Coup d'etat** : violent change in government.
- **Coup de grace** : a finishing stroke. (The coup de grace of the Russian Revolution was the total annihilation of the Czar family)
- **Cul-de-sac** : a blind alley (The failure of the Policy of non-alignment in 1962 saw our foreign policy reach a cul-de-sac)
- **Debacle** : complete tout (debacle of opposition in the election)
- **De facto** : actual or actually (de facto recognition to a state)
- **Dejure** : from the law, by law.
- **Denovo** : anew, again (trial of a case)
- **Denouement** : the end of a plot (in play)
- **De profundis** : out of the depths
- **Dernier resort** : last resort
- **Detente** : easing of strained relations especially between states / countries
- **Dramatis personae** : characters of a drama or play
- **Elite** : the best part; the pick. (The elite of town)
- **Enfant terrible** : a terrible child; one who makes disconcerting remarks
- **Entrepreneur** : person in effective control of a business organization.
- **En masse** : in a body. (They took leave en masse)
- **En rapport** : in harmony
- **Entourage** : friends, group of people accompanying a dignitary.
- **Errata** : list of errors
- **Esprit de corps** : the animating spirit of a collective body, as a regiment.
- **Etcetera** : and the rest.
- **Eureka** : a cry of joy or satisfaction when one finds or discovers something.
- **Ex-officio** : in virtue of his office.
- **Expose** : a statement
- **Expost facto** : acting retrospectively
- **Fait accompli** : a thing already done.
- **Faux pas** : a false step; slip in behaviour
- **Hoi polloi** : the rabble, ordinary people
- **Impasse** : a deadlock. (Talks reached an impasse)
- **Inextenso** : unextended small in extension
- **In memoriam** : in memory of
- **In toto** : entirely. (The committee's recommendations were accepted in toto)
- **Ipsa facto** : by that very fact.
- **Laissez faire** : non interference

- **Mala Fide** : In bad faith; with intent to deceive
- **Mal-a-propos** : ill-timed
- **Modus operandi** : manner of working. (of a gang, group etc.)
- **Mutatis mutandis** : with the necessary changes (rules will come into force mutatis mutandis)
- **Noblesse oblige** : rank imposes obligation.
- **Nota bene** : note well
- **Par excellence** : pre-eminently.
- **Pari passu** : side by side.
- **Per se** : by itself.
- **Piece de resistance** : the main dish of a meal.
- **Poste restante** : to remain in the post office till called for. (said of letters)
- **Post mortem** : (examination) made after death.
- **Prima facie** : at first view or consideration. (prima facie a good case)
- **Pro bone publico** : for the good of the public
- **Proforma** : for the sake of the form.
- **Pro rata** : according to rate or proportion.
- **Protégé** : one under the protection of another. (S.Vietnam is US's protege).
- **Quid pro quo** : an equivalent, something in return.
- **Raisond'etre** : the reason for a thing's existence.
- **Resume** : a summary or abstract (of a discussion Etc.)
- **Sanctum sanctorum** : holy of holies. (temple, church etc.)
- **Seiratim** : in a series
- **Sine die** : without a day being appointed.
- **Status quo** : the existing condition. (status quo on border should be maintained)
- **Stet** : let it stand.
- **Sub judice** : before a court, not yet decided. (The case is sub judice)
- **Sub rosa** : under the rose; confidentially
- **Sui generis** : in a class by itself
- **Summon bonum** : the chief good.
- **Terra incognita** : an unknown country
- **Tour deforce** : a notable feat or strength of skill.
- **Ultra vires** : beyond one's authority
- **Verbatim** : word for word
- **Vice versa** : conversely
- **Vis-à-vis** : opposite; face to face
- **Viva voce** : an examination conducted orally
- **Vox populi, vox die** : The voice of the people is The voice of God.
- **Zeitgeist** : spirit of the age

WORD LIST

Given below is a list of words placed in alphabetical order. Each word is followed by a few of its synonyms. Note these words whenever you come across them. You should be familiar with most of the words for which synonyms are given if you have done all the exercises till this point thoroughly. So, this list will give you synonyms for the words which you know. Thus learning will be easier.

- **Abandon** : Leave, desert, forsake
- **Abase** : Degrade, disgrace, humiliate
- **Abhor** : Hate, loathe, detest
- **Abridge** : Shorten, abbreviate
- **Absolute** : Unalterable, unrestricted, unconditional
- **Absurd** : Ridiculous, silly, foolish
- **Abundant** : Ample, plentiful
- **Accessory** : Additional, auxiliary, subsidiary
- **Adept** : Proficient, skilled, expert
- **Adherent** : Follower, stickler
- **Adhesive** : Sticky, glue, gum
- **Admire** : Praise, adore, esteem
- **Adore** : Respect, idolise, worship, admire
- **Adversity** : Misery, misfortune
- **Affliction** : Distress, sorrow, sadness
- **Alien** : Foreign, stranger, unknown
- **Alive** : Lively, vivacious, living
- **Alleviate** : Relieve, lighten, ease
- **Alms** : Gratuity, donation, grant
- **Amend** : Improve, change, emend
- **Amicable** : Suitable, friendly, lovable, amiable
- **Anxiety** : Eagerness, misgiving, worry
- **Apathy** : Indifference, neutrality
- **Appalling** : Terrific, terrifying, dreadful, horrible
- **Apposite** : Apt, suitable, well chosen
- **Appraise** : Evaluate, estimate
- **Apprehend** : Seize, fear, arrest
- **Arbitrary** : Despotic, wayward
- **Assent** : Agree, consent, acquiesce
- **Astonish** : Astound, surprise, amaze, bewilder
- **Audacious** : Bold, courageous, daring
- **Aversion** : Dislike, detestation, hostility, hatred
- **Base** : Mean, low, ignoble
- **Beg** : Implore, ask, beseech, solicit
- **Behaviour** : Conduct, deportment, way, demeanour
- **Brave** : Courageous, intrepid, bold, daring, valiant
- **Brisk** : Active, fast, quick, busy, alert
- **Brittle** : Frail, fragile
- **Brutal** : Animal, savage, beastly, cruel
- **Burglar** : Thief, bandit, brigand, stealer
- **Bystander** : Spectator, onlooker, beholder
- **Calculate** : Estimate, count, reckon, compute
- **Callous** : Hard, indifferent, cold-blooded
- **Calm** : Cool, confident, quiet, serene, tranquil
- **Cancel** : Annual, withdraw, revoke, delete
- **Candid** : Sincere, straightforward, frank
- **Captive** : Prisoner, confined, jailed, bonded
- **Cause** : Make, originate, induce, generate, create

- **Censor** : Cut off, prohibit, ban
- **Censure** : Blame, condemn, reprove, reprimand
- **Character** : Letter, emblem, type, nature, disposition, quality
- **Charity** : Philanthropy, benevolence
- **Chaste** : Pure, immaculate, virgin, refined
- **Chatter** : Babble, ramble, talk, discourse
- **Cheat** : Defraud, gull, outwit, dupe
- **Cite** : Quote, mention, name, adduce
- **Clothes** : Apparel, attire, dress, garb
- **Colossal** : Huge, gigantic, enormous, big
- **Commence** : Begin, start
- **Commensurate** : Equivalent, suitable, applicable, proportionate
- **Conceal** : Hide, cover, shelter, disguise
- **Confess** : Admit, acknowledge, reveal, agree
- **Confuse or confound** : Mix, perplex, astonish, Amaze, bewilder
- **Consequent** : Following, resultant, outcome
- **Conspiracy** : Plot, intrigue, treason
- **Convict** : Felon, culprit, criminal, guilty
- **Cowardly** : Craven, dastardly, fearful, poltroon
- **Coy** : Modest, shy, reserved
- **Crafty** : Artful, adroit, dexterous, cunning, deceitful
- **Crazy** : Mad, insane, silly
- **Credence** : Belief, faith, trust, confidence
- **Crisis** : Turning point, emergency, decisive moment
- **Criterion** : Test, touchstone, standard, yardstick
- **Criticism** : Analysis, review, stricture
- **Cruel** : Brutal, unmerciful, beastly, savage
- **Cynical** : Captious, incredulous, sarcastic, morose
- **Danger** : Hazard, risk, peril
- **Dash** : Run, rush, fly
- **Dawn** : Daybreak, appear, (sunrise), begin
- **Deadly** : Fatal, lethal, destructive
- **Dearth** : Scarcity, lack, want
- **Debase** : Degrade, defame, disparage, humiliate
- **Decay** : Decompose, rot, decline in power, wealth, waste, wither, fade
- **Decease** : Death, demise, end
- **Deceit** : Fraud, cheating, forgery
- **Decipher** : Translate, interpret, solve, explain
- **Decorum** : Decency, etiquette, propriety, gravity
- **Decree** : Law, edict, ordinance, mandate, judgement
- **Defamation** : Calumny, disparagement, debasement
- **Defection** : Abandonment, desertion
- **Defer** : Postpone, delay
- **Deference** : Respect, reverence, honour
- **Deformity** : Disfigurement, malformation, ugliness
- **Dejected** : Depressed, distressed, downhearted, downcast
- **Delectable** : Charming, delightful, pleasant
- **Delegate** : Commission, depute, authorise
- **Deliberate** : Knowingly done, intentional, forcible
- **Delicacy** : Softness, nicety, slenderness, refinement, purity
- **Delusion** : Illusion, fancy, error, false belief
- **Demeanour** : Behaviour, conduct, bearing
- **Demise** : Death, decease
- **Demolish** : Break, destroy, annihilate
- **Demure** : Modest, coy, humane
- **Denomination** : Name, appellation, designation
- **Denounce** : Accuse, malign, criticise, defame, condemn
- **Deny** : Contradict, refuse, disavow, withhold
- **Deride** : Ridicule, mock, taunt
- **Descant** : Discourse, expatiate, enlarge
- **Desire** : Wish, long for, crave, covet
- **Desolate** : Lonely, deserted, solitary, devastated
- **Despise** : Condemn, dislike
- **Despondency** : Despair, dejection, hopelessness
- **Despotic** : Arbitrary, tyrannical, illegal
- **Destitute** : Needy, poor, miserable, indigent
- **Destruction** : Ruin, demolition, ravage
- **Detain** : Lock in, arrest, hold, custody
- **Detest** : Despise, abhor, dislike
- **Dethrone** : Depose, remove (from office)
- **Devastate** : Ruin, demolition, ravage
- **Devoid** : Lacking, empty, vacant
- **Devout** : Religious, reverent
- **Dexterity** : Adroitness, cleverness, skill
- **Diabolical** : Fiendish, devilish, wicked
- **Diatribes** : Tirade, denunciation
- **Dictatorial** : Tyrannical, arbitrary, despotic
- **Diffident** : Hesitating, doubtful, distrusting
- **Digression** : Excursion, deviation, misguidance
- **Diligence** : Care, industry, effort
- **Dire** : Terrible, awful, horrible; miserable
- **Disapprove** : Condemn, reject, disallow
- **Disavow** : Deny, refuse
- **Disciple** : Follower, learner, student
- **Disclose** : Reveal, tell, uncover, divulge
- **Disconsolate** : Sad, cheerless, miserable
- **Discredit** : Disbelieve, doubt, disgrace
- **Disgust** : Abhorrence, dislike, detestation
- **Dismay** : Disappointment, discouragement
- **Disorder** : Disease, illness, untidiness, uncleanliness
- **Disown** : Disclaim, deny, renounce
- **Disparage** : Debase, decry, defame
- **Dispose** : Adjust, arrange, incline
- **Dispute** : Argument, controversy, altercation
- **Disregard** : Neglect, overlook, disrespect
- **Dissolute** : Corrupt, mean, lax, licentious
- **Distaste** : Abhorrence, dislike, detestation
- **Distorted** : Blurred, maligned, changed, disguised, deformed, misrepresented
- **Distress** : Affliction, depression, misery
- **Divert** : Turn aside, deflect, deviate
- **Divine** : Heavenly, metaphysical, godlike
- **Divulge** : Reveal, uncover, disclose
- **Docile** : Amenable, tractable, submissive
- **Doctrine** : Precept, principle, teaching

- **Dogmatic** : Categorical, authoritative, firm, preachy
- **Dolt** : Blockhead, stupid, fool, idiot, dullard
- **Domicile** : Dwelling, home, residence
- **Dotage** : Senility, imbecility
- **Downright** : Simple, unquestionable, blunt, frank
- **Dread** : Apprehend, fear
- **Drench** : Soak, wet
- **Drowsy** : Sleepy, comatose, lazy, lethargic
- **Dubious** : Suspicious, doubtful, unreliable
- **Ductile** : Pliant, yielding, flexible
- **Dupe** : Cheat, befool, steal
- **Dwindle** : Shrink, diminish, decrease
- **Earnest** : Eager, ardent, intent, anxious, sincere
- **Eccentric** : Irregular, anomalous, abnormal, odd
- **Economise** : Save, retrench
- **Ecstasy** : Trance, enchantment, rapture
- **Efface** : Blot out, obliterate, destroy
- **Effeminate** : Womanly, weak, unmanly
- **Efficacy** : Energy, virtue, potency
- **Egotistic** : Self-centred, egoist, self-conceited
- **Egregious** : Conspicuously bad, sinful, monstrous, shocking
- **Elaborate** : Explain, discuss, elucidate
- **Elevated** : Elated, promoted, upgraded, risen
- **Eliminate** : Remove, replace, dismiss, discard
- **Eloquence** : Oratory, rhetoric, finery (of speech) fluency of expression
- **Emanate** : Originate, proceed, spring, issue
- **Emancipate** : Free, deliver, liberate
- **Embarrass** : Vex, confuse, entangle
- **Embezzle** : Steal, peculate, cheat
- **Embody** : Incorporate, include, comprise
- **Emolument** : Salary, wage, remuneration
- **Emulate** : Compete, rival, vie against, copy
- **Enchant** : Charm, bewitch, hypnotise
- **Encompass** : Surround, encircle
- **Encounter** : Come across, combat, fight
- **Encroach** : Trespass, intrude, invade
- **Endeavour** : Attempt, effort, aspiration
- **Endorse** : Back, approve, ratify
- **Endurance** : Patience, continuance, fortitude
- **Enfranchise** : Liberate, free, (also: give right to vote)
- **Enlighten** : Illuminate, edify, elaborate
- **Enmity** : Hostility, hatred, animosity
- **Enormous** : Big, huge, colossal, gigantic
- **Enrage** : Infuriate, madden, incense, irritate
- **Ensue** : Succeed, follow, result
- **Entangle** : Ravel, involve, perplex
- **Enterprise** : Undertaking, venture, endeavour
- **Enthusiasm** : Zeal, ardour, interest
- **Entice** : Allure, tempt, seduce, attract
- **Entreat** : Beseech, implore, beg
- **Entwine** : Encircle, surround, encompass
- **Enumerate** : Count, number one by one
- **Enunciate** : Declare, publish, propound, reveal
- **Envoy** : Legate, messenger, ambassador
- **Epoch** : Era, time, age
- **Equivocal** : Doubtful, Ambiguous, uncertain
- **Eradicate** : Root out, extirpate, annihilate
- **Erroneous** : Wrong, false
- **Erudite** : Learned, scholarly, lettered
- **Esteem** : Admire, appreciate, adore, respect
- **Eulogy** : Laudation, praise, extolling, felicitation
- **Evidence** : Testimony, proof, witness
- **Evince** : Show, manifest, demonstrate
- **Exact** : Extort, oppress, loot
- **Exaggerate** : Amplify, overstate
- **Excerpt** : Extract, quotations
- **Exile** : Expulsion, banishment, expatriation
- **Exonerate** : Acquit, absolve, release
- **Exorbitant** : Excessive, too much, very high
- **Extinguish** : Quench, terminate, destroy, put out
- **Extravagant** : Excessive, lavish, stylish
- **Exuberant** : Abundant, plentiful
- **Exult** : Triumph, rejoice, delight
- **Fable** : Story, legend, myth, fiction
- **Fabricate** : Construct, forge, invent
- **Fabulous** : Fictitious, mythical, exaggerated
- **Facile** : Fluent, ready, glib (of writing), pliable, docile, tractable
- **Faction** : Clique, cabal, discord, section
- **Fallacy** : Deception, illusion, mistake
- **Falter** : Waver, hesitate, delay, flounder
- **Famine** : Hunger, starvation, scarcity of food
- **Fanatical** : Bigoted, enthusiastic
- **Fancy** : Liking, conception, craving, whim
- **Farcical** : Droll, comic, extravagant
- **Fascinate** : Charm, bewitch, attract
- **Fastidious** : Particular, over-nice, squeamish
- **Fatal** : Deadly, lethal, mortal
- **Fatigue** : Weakness, exhaustion, tiredness
- **Feeble** : Weak, frail, dim
- **Felicitate** : Congratulate, compliment
- **Felicity** : Joy, happiness, good luck
- **Felon** : Criminal, sinner, guilty, bandit
- **Ferment** : Excite, agitate
- **Ferocity** : Fierceness, vehemence, fanaticism
- **Fervent** : Glowing, heated, impassioned
- **Fervour** : Warmth, glow, vehemence
- **Festivity** : Gaiety, merry-making
- **Fetter** : Shackle, bind, imprison
- **Feud** : Dispute, broil, strife
- **Fickle** : Changeable, vacillating, varying
- **Fiendish** : Devilish, diabolical, malignant
- **Figurative** : Typical, imaginative, emblematic, metaphorical
- **Filthy** : Dirty, foul, nasty
- **Fissure** : Crevice, rift, narrow opening
- **Flaccid** : Soft, loose, weak
- **Flatter** : Adore, please, praise
- **Fleece** : Rob, despoil, cheat
- **Flexible** : Variable, pliable, changeable
- **Flimsy** : Transparent, thin, trivial, tenuous
- **Flounder** : Stumble, falter, wallow, struggle
- **Fluctuate** : Undulate, waver, vacillate
- **Flutter** : Flip, quiver, ruffle, agitate
- **Folly** : Absurdity, silliness, imprudence, foolishness

- **Fondle** : Caress, touch, rub
- **Foray** : Incursion, inroad, venture
- **Forbearance** : Abstaining, refraining
- **Forbid** : Prohibit, disallow, debar
- **Forebode** : Betoken, indicate, augur
- **Forlorn** : Disconsolate, cheerless, distressed, abandoned, lonely
- **Formidable** : Dreadful, difficult, hard to overcome
- **Fragile** : Weak, feeble, slender, delicate
- **Fragrant** : Odorous, balmy, soothing
- **Fraility** : Weakness, delicacy, fragileness
- **Frantic** : Frenzied, mad, distracted
- **Fraudulent** : Dishonest, cheating, deceitful
- **Fray** : Battlefield, combat, brawl
- **Frisk** : Skip, dance, caper, frolic
- **Frivolous** : Vain, foolish, trivial
- **Frugal** : Economical, thrifty
- **Futile** : Useless, hopeless, in vain
- **Gaiety** : Hilarity, jollity, festivity
- **Gainsay** : Contradict, dispute, controvert, deny
- **Gallantry** : Courage, bravery, heroism
- **Garbage** : Filth, waste, useless, throwaway, trash
- **Garner** : Accumulate, collect, gather
- **Garrulous** : Prattling, chattering
- **Gawky** : Awkward, clumsy
- **Gay** : Happy, merry, joyous
- **Generous** : Noble, magnanimous, kind, liberal
- **Genteel** : Well-bred, well-cultured, polite, refined
- **Genuine** : True, authentic, real
- **Ghastly** : Horrible, horrifying, horrific
- **Ghost** : Phantom, spirit, spectre
- **Glimmer** : Shine, flash, gleam
- **Glimpse** : Glance, (quick) look, (brief) view
- **Glisten** : Shine, beam, glow
- **Gloom** : Depression, melancholy, loneliness
- **Glutinous** : Sticky, viscous
- **Gluttonous** : Greedy, gorging, voracious
- **Grandeur** : Splendour, magnificence, glory
- **Grapple** : Grasp, clutch, seize
- **Gratification** : Satisfaction, enjoyment
- **Gravity** : Seriousness, importance, calmness
- **Greed** : Avarice, ravenous, envious, covetous
- **Grievance** : Hardship, complaint, trouble
- **Grotesque** : Horrifying, contorted, bizarre, whimsical
- **Grudge** : Grievance, begrudge, resent
- **Gullible** : Simple, easy, pliable, credulous
- **Hallucination** : Delusion, illusion, nightmare
- **Hamper** : Impede, block, fetter, bind
- **Hapless** : Unfortunate, unlucky
- **Harangue** : a lengthy speech, oration
- **Hardship** : Trouble, adversity, difficulty
- **Haughty** : Arrogant, overbearing, imperious
- **Havoc** : Devastation, destruction, ruin
- **Heartly** : Sincere, warm, ardent
- **Heave** : Raise, lift
- **Hedge** : Fence, hem
- **Heed** : Advise, note, consider, mind
- **Heinous** : Atrocious, odious, wicked
- **Hem** : Border, edge, fringe, outskirt
- **Herculean** : Colossal, laborious, excessive
- **Heterogeneous** : Dissimilar, unlike, different, diverse, varied
- **Hideous** : Terrific, horrible, filthy
- **Hilarious** : Exceedingly, funny, boisterously merry, amusing, joyous
- **Hindrance** : Impediment, hampering, obstruction, **obstacle**
- **Histrionic** : Theatrical, dramatic
- **Hoax or Humbug** : Dupe, cheat, befool
- **Homage** : Deference, salute, worshipping
- **Horizon** : Verge, limit, skyline
- **Hostile** : Adverse, opposing, inimical
- **Hover** : remain in one place in the air, remain suspended, linger
- **Humane** : Compassionate, caring, benevolent
- **Humiliate** : Abase, insult, mock, defy
- **Humorous** : Amusing, laughable, comical
- **Hypocrisy** : Pretence, imposture, deceit
- **Idolise** : Adore, worship, admire
- **Illegal or Illicit** : Unlawful, prohibited
- **Illogical** : Inconsequent, irrational
- **Imitate** : Copy, follow, mimic, emulate
- **Immaculate** : Spotless, stainless, perfect
- **Immature** : Crude, childish, unseasoned
- **Imminent** : Impending, near, due, threatening
- **Immodest** : Indecent, indelicate, unchaste
- **Immortal** : Everlasting, undying, endless
- **Impassioned** : Fervent, frenzied, fanatical
- **Impeachment** : Imputation, accusation
- **Implicit** : Implied, assumed, inferred
- **Impostor** : Cheat, conman, charlatan
- **Impracticable** : Impossible, (merely) theoretical
- **Impressive** : Striking, affecting, extraordinary
- **Impunity** : Exemption (from punishment)
- **Inane** : Empty, silly, idiotic
- **Inarticulate** : Voiceless, indistinct, inexpressive
- **Incense** : Infuriate, enrage, anger
- **Incessant** : Unceasing, continual
- **Incognito** : (Identity) Concealed, secretly, stealthily
- **Inculcate** : Instil, enforce, pass on, generate
- **Inculpate** : Blame, incriminate
- **Incumbent** : Compulsory, obligatory, binding
- **Incursion** : Inroad, foray, venture
- **Indefatigable** : Tireless, assiduous
- **Indict** : Accuse, charge
- **Indiscriminate** : Mixed, undistinguished, confused, wanton
- **Indolence** : Apathy, inactivity, laziness, sluggishness, lethargy
- **Industrious** : Busy, active, tireless
- **Inevitable** : Unavoidable, certain, sure
- **Inexorable** : Relentless, indefatigable
- **Infallible** : Unfailing, unerring, certain
- **Infectious** : Catching, contaminating, corrupting, transmittable

- **Infer** : Gather, conclude, deduce
- **Influence** : Authority, effect, power
- **Infringe** : Break, violate, transgress, encroach
- **Ingredient** : Constituent, component, element
- **Inherent** : Inborn, innate, built-in
- **Inhibition** : Restraint, check
- **Iniquitous** : Unjust, wrong, unfair
- **Initiate** : Start, begin, inchoate
- **Innocuous** : Harmless, mild, innocent
- **Insanity** : Madness, lunacy, mania
- **Insidious** : Deceitful, treacherous
- **Instantaneous** : Immediate, Sudden, quick
- **Instigate** : Arouse, misguide, provoke
- **Intact** : Untouched, unscathed, whole, unbroken, undamaged, unimpaired, entire
- **Integrity** : Oneness, entirety, completeness, honesty, wholeness, soundness
- **Intellectual** : Intelligent, rational, learned
- **Intentional** : Deliberate, intended,
- **Intercourse** : Intimacy, association, communication
- **Intermission** : Suspension, stoppage, pause, cessation, interval
- **Intervene** : Interpose, mediate
- **Intimate** : Close, tender, friendly or informal, advertise, inform
- **Intolerable** : Unendurable, unbearable
- **Intransigent** : Uncompromising, inflexible
- **Intrepid** : Brave, fearless
- **Intricate** : Complex, difficult, complicated
- **Intuition** : Insight, premonition, instinct
- **Inveterate** : Habitual, deep-rooted
- **Involuntary** : Compulsory, unwilling, reflex
- **Irksome** : Annoying, disagreeable, tedious
- **Irresolute** : Wavering, confused, vacillating
- **Itinerant** : Travelling (on a circuit), wandering, nomadic
- **Jaded** : Tired, weary
- **Jargon** : cant, technical language, gibberish
- **Jocose** : Jocular, humorous
- **Jocular** : Inclined to joke
- **Jovial** : Merry
- **Judicious** : Prudent.
- **Juxtaposition** : Closeness, nearness
- **Kiosk** : Stand (open on one side), booth
- **Knead** : Work up (into dough), press, squeeze
- **Lacerate** : Tear (tissue toughly), mangle
- **Lachrymose** : Given to shedding tears.
- **Lackadaisical** : Listless.
- **Laconic** : (Briskly) Short, concise, pithy
- **Languid** : Listless, spiritless
- **Languish** : Die (with hunger or desire), weaken, droop
- **Lascivious** : Lustful.
- **Lassitude** : Weariness, tiredness
- **Latent** : Hidden, concealed
- **Laudable** : Praiseworthy.
- **Legacy** : A bequest.
- **Legitimate** : Genuine, lawful
- **Levity** : Frivolity.
- **Libel** : Defamation.
- **Licentious** : Wanton.
- **Lithe** : Supple.
- **Loquacious** : Talkative.
- **Lustrous** : Shining.
- **Malaise** : A condition of uneasiness or ill-being.
- **Malevolence** : Ill-will.
- **Malleable** : Pliant.
- **Mawkish** : Sickening or insipid.
- **Mellifluous** : Sweetly or smoothly flowing.
- **Mendacious** : Untrue
- **Mendicant** : A beggar.
- **Mesmerize** : To hypnotize.
- **Meticulous** : Over-cautious.
- **Mettle** : Courage.
- **Mien** : The external appearance or manner of a person.
- **Moderation** : Temperance.
- **Modicum** : A small or token amount.
- **Mollify** : To soothe.
- **Mordant** : Biting.
- **Moribund** : On the point of dying.
- **Morose** : Gloomy.
- **Multifarious** : Having great diversity or variety.
- **Mundane** : Worldly, as opposed to spiritual or celestial.
- **Munificent** : Extraordinarily generous.
- **Myriad** : A vast indefinite number.
- **Nadir** : The lowest point.
- **Nefarious** : Wicked in the extreme.
- **Negligent** : Apt to omit what ought to be done.
- **Neophyte** : Having the character of a beginner.
- **Noxious** : Hurtful.
- **Nugatory** : Having no power or force.
- **Obdurate** : Impassive to feelings of humanity or pity.
- **Obfuscate** : To darken; to obscure.
- **Oblique** : Slanting; said of lines.
- **Obstreperous** : Boisterous.
- **Odious** : Hateful.
- **Odium** : A feeling of extreme repugnance, or of dislike and disgust.
- **Ominous** : Portentous.
- **Onerous** : Burdensome or oppressive.
- **Onus** : A burden or responsibility.
- **Palate** : The roof of the mouth.
- **Palatial** : Magnificent.
- **Palliate** : To cause to appear less guilty.
- **Palpable** : Perceptible by feeling or touch.
- **Panoply** : A full set of armour.
- **Paragon** : A model of excellence.
- **Pariah** : A member of a degraded class; a social outcast.
- **Paroxysm** : A sudden outburst (of any kind of activity).
- **Paucity** : Fewness.
- **Pellucid** : Translucent.
- **Penchant** : A bias in favour of something.

- **Penurious** : Excessively sparing in the use of money.
- **Penury** : Indigence.
- **Peremptory** : Precluding question or appeal.
- **Perfidy** : Treachery.
- **Perfunctory** : Half-hearted.
- **Peripatetic** : Walking about.
- **Perjury** : A solemn assertion of a falsity.
- **Permeate** : To pervade.
- **Pernicious** : Tending to kill or hurt.
- **Persiflage** : Banter.
- **Perspicacity** : Acuteness or discernment.
- **Perturbation** : Mental excitement or confusion.
- **Petulant** : Displaying impatience.
- **Phlegmatic** : Not easily roused to feeling or action.
- **Pique** : To excite a slight degree of anger in.
- **Plea** : An argument (to obtain some desired action).
- **Plenary** : Entire.
- **Plethora** : Excess; superabundance.
- **Poignant** : Severely painful or acute to the spirit.
- **Polyglot** : Speaking several tongues.
- **Ponderous** : Unusually weighty or forcible.
- **Portent** : Anything that indicates what is to happen.
- **Pragmatic** : Practical(values), empirical
- **Precarious** : Critical, dangerous
- **Preclude** : To prevent.
- **Precocious** : Advanced (in development), over-forward, premature
- **Predilection** : Preference, partiality, inclination
- **Predominate** : To be chief in importance, quantity, or degree.
- **Preposterous** : (Very) Absurd, ridiculous
- **Prerogative** : (Special) Right, privilege
- **Presage** : To foretell.
- **Prescience** : Knowledge of events before they take place.
- **Preternatural** : Extraordinary.
- **Prim** : Stiffly proper.
- **Pristine** : Primitive.
- **Probity** : Virtue or integrity tested and confirmed.
- **Proclivity** : A natural inclination.
- **Procrastination** : Delay.
- **Prodigious** : Large, immense
- **Profligate** : Immoral, wanton, reckless, dissolute, licentious
- **Profuse** : Produced or displayed in overabundance.
- **Prolix** : Verbose.
- **Promiscuous** : Indiscriminate, impure, casual
- **Propinquity** : Nearness, proximity
- **Propitious** : Kindly disposed.
- **Prosaic** : Unimaginative.
- **Protagonist** : Leading character), hero(ine)
- **Providential** : Fortunate, lucky
- **Prudence** : Caution.
- **Puerile** : Childish.
- **Pugnacious** : Quarrelsome
- **Puissant** : Powerful, influential, mighty
- **Punctilious** : Exact (in formalities), ceremonious, conscientious
- **Pungency** : The quality of affecting the sense of smell.
- **Pusillanimous** : Without spirit or bravery.
- **Putrefy** : Decay, rot, decompose
- **Pyre** : A heap of combustibles arranged for burning a dead body.
- **Qualm** : A fit of nausea.
- **Quandary** : Doubt, dilemma, plight
- **Quibble** : An utterly trivial distinction or objection.
- **Quiescence** : Being quiet, still, or at rest; inactive
- **Quirk** : Twist, quibble, deviation
- **Quixotic** : (Foolishly) Chivalrous, unrealistic, whimsical
- **Rabble** : Throng (of the vulgar), crowd, proletariat
- **Rabid** : Furious, mad, fanatical
- **Raconteur** : A person skilled in telling stories.
- **Raillery** : Jestng (language), banter, ridicule
- **Ramify** : To divide or subdivide into branches or subdivisions.
- **Rampant** : Rife, widespread
- **Ramshackle** : Dilapidated, tumbledown, rickety
- **Rapacious** : Seize by force, avaricious
- **Raucous** : Harsh.
- **Recalcitrant** : Stubborn, refractory
- **Recluse** : One who lives in retirement or seclusion.
- **Recondite** : Incomprehensible to one of ordinary understanding.
- **Recuperate** : To recover.
- **Redoubtable** : Formidable.
- **Redundant** : Wordy, repetitious, superfluous, needless
- **Refractory** : Not amenable to control.
- **Regale** : To give unusual pleasure.
- **Regicide** : The killing of a king or sovereign.
- **Reiterate** : To say or do again and again.
- **Relapse** : To suffer a return of a disease after partial recovery.
- **Relegate** : Assign a lower position, banish, demote
- **Repat** : A meal; figuratively, any refreshment.
- **Repine** : To indulge in fretfulness and faultfinding.
- **Reprisal** : (Injury in) Return, retaliation, revenge
- **Reprobate** : One abandoned to depravity and sin.
- **Repudiate** : Disavow, disclaim
- **Resilience** : The power of springing back to a former position
- **Resonance** : Able to reinforce sound by sympathetic vibrations.
- **Respite** : Interval of rest.
- **Restive** : Resisting control.
- **Revere** : To regard with worshipful veneration.
- **Reverent** : Humble.
- **Rotund** : Round from fullness or plumpness.
- **Ruffian** : A lawless or recklessly brutal fellow.
- **Ruminate** : To chew over again, as food previously swallowed and regurgitated.

- **Sagacious** : Wise, shrewd, astute
- **Salacious** : Obscene, foul, indecent, lecherous
- **Salubrious** : Healthful; promoting health.
- **Salutary** : (Morally) Healthy, salubrious, beneficial
- **Sanguine** : Ardent, confident, optimistic
- **Sardonic** : Ironical, scornful, derisive
- **Satiate** : Gratify (fully), surfeit, saturate
- **Satyr** : A very lascivious person.
- **Savour** : To perceive by taste or smell.
- **Schism** : Disjunction, split
- **Scribble** : Hasty, careless writing.
- **Sedition** : Plotting (against government), incitement, insurgence
- **Sedulous** : Persevering in effort or endeavour.
- **Severance** : Separation.
- **Sinecure** : Any position (having emoluments with few or no duties).
- **Sinuous** : Curving in and out.
- **Sluggard** : A person habitually lazy or idle.
- **Solace** : Comfort in grief, trouble, or calamity.
- **Solvent** : Having sufficient funds to pay all debts.
- **Somniferous** : Tending to produce sleep.
- **Somnolent** : Sleepy.
- **Soporific** : Causing sleep; also, something that causes sleep.
- **Sordid** : Filthy, morally degraded
- **Specious** : Plausible.
- **Spurious** : Not genuine.
- **Squalid** : Having a dirty, mean, poverty-stricken appearance.
- **Stanch** : To stop the flowing of; to check.
- **Stingy** : Cheap, unwilling to spend money.
- **Stolid** : Having or revealing little emotion or sensibility; not easily aroused or excited
- **Submerge** : To place or plunge under water.
- **Subterfuge** : Evasion.
- **Succinct** : Concise.
- **Sumptuous** : Rich and costly.
- **Supercilious** : Exhibiting haughty and careless contempt.
- **Superfluous** : Being more than is needed.
- **Supernumerary** : Superfluous.
- **Supersede** : To displace.
- **Supine** : Lying on the back.
- **Supplicate** : To beg.
- **Suppress** : To prevent from being disclosed or punished.
- **Surcharge** : An additional amount charged.
- **Surfeit** : To feed to fullness or to satiety.
- **Susceptibility** : A specific capability of feeling or emotion.
- **Taciturn** : Disinclined to conversation.
- **Taut** : Stretched tight.
- **Temerity** : Foolhardy disregard of danger; recklessness.
- **Terse** : Pithy.
- **Timorous** : Lacking courage.
- **Torpid** : Dull; sluggish; inactive.
- **Torrid** : Excessively hot.
- **Tortuous** : Abounding in irregular bends or turns.
- **Tractable** : Easily led or controlled.
- **Transgress** : To break a law.
- **Transitory** : Existing for a short time only.
- **Travail** : Hard or agonizing labour.
- **Travesty** : A grotesque imitation.
- **Trenchant** : Cutting deeply and quickly.
- **Trepidation** : Nervous uncertainty of feeling.
- **Trite** : Made commonplace by frequent repetition.
- **Truculence** : Ferocity.
- **Truculent** : Having the character or the spirit of a savage.
- **Turbid** : In a state of turmoil; muddled
- **Turgid** : Swollen.
- **Turpitude** : Depravity.
- **Ubiquitous** : Being present everywhere.
- **Umbrage** : A sense of injury.
- **Unctuous** : Oily.
- **Undulate** : To move like a wave or in waves.
- **Untoward** : Causing annoyance or hindrance.
- **Upbraid** : To reproach as deserving blame.
- **Vagary** : A sudden desire or action
- **Vainglory** : Excessive, pretentious, and demonstrative vanity.
- **Valorous** : Courageous.
- **Vapid** : Having lost sparkling quality and flavour.
- **Variiegated** : Having marks or patches of different colours; also, varied.
- **Vehement** : Very eager or urgent.
- **Venal** : Mercenary, corrupt.
- **Veneer** : Outside show or elegance.
- **Venial** : That may be pardoned or forgiven, a forgivable sin.
- **Veracious** : Habitually disposed to speak the truth.
- **Veracity** : Truthfulness.
- **Verbiage** : Use of many words without necessity
- **Verbose** : Wordy
- **Verdant** : Green with vegetation.
- **Veritable** : Real, true, genuine
- **Vestige** : (A visible) trace, mark, or impression (of something absent, lost, or gone).
- **Virago** : Loud talkative women, strong statured women
- **Virtue** : Rare, curious, or beautiful quality.
- **Visage** : The face, countenance, or look of a person.
- **Vitiate** : To contaminate
- **Vituperate** : To overwhelm with wordy abuse.
- **Vivify** : To endue with life.
- **Vociferous** : Making a loud outcry
- **Volatile** : Changeable.
- **Voluble** : Having great fluency in speaking.
- **Whimsical** : Capricious.
- **Winsome** : Attractive.

SYNONYMS AND ANTONYMS

This is the other very important area of the vocabulary section. This section tests widely and exhaustively one's knowledge of the language and word power, but goes beyond that to test your ability to remember words with similar meanings or opposite meanings. Or, alternately, to discover the similarity or proximity between the meaning of the given word with one of those in the options.

These exercises can get confusing sometimes because more than one option may appear as the right answer or none of them may look like the right answer. For such questions a student may consider the following strategies:

STRATEGY 1

If you do not know the meaning of the given word, think of a context in which you might have used it, that may help you to figure out the meaning, for example, in the question below find the word nearest in meaning to

MAGNIFY

(a) Forgive (b) diminish (c) swell (d) extract

Now if you do not know what magnify means think of a magnifying glass and what it does. It expands or makes a thing look bigger. So the right answer will be (c).

STRATEGY 2

If you cannot find a correct antonym in the given option think of the antonyms you know of and subsequently check if there is any word in the given options which is synonymous to the antonyms in your mind. For example

INDUSTRIOUS

(a) stupid (b) harsh (c) indolent (d) complex

If you don't know any of the words given as options think of antonyms you could think of, like lazy, idle. Now think of synonyms of lazy and you will know indolent is a synonym of lazy. So it will be the antonym to industrious. Formula → SYNONYM of ANTONYM is another ANTONYM.

STRATEGY 3

Look at the part of speech of the given word. A word may exist in various parts of speech. For example precipitate exists as a verb which means send rapidly into a certain state and also as a noun, precipitate, which means a substance deposited from a solution.

POLISH

(a) ruthlessness (b) honesty (c) indolence (d) gaucheness

Now is this the verb polish or noun polish? Since all options are nouns, this cannot be the verb polish related to shoes but noun polish which means culture and sophistication and the antonym to this would be gaucheness.

ANALOGIES

Analogy literally means a comparison or a comparable similarity. A student has to find a pair of words in the same relation or a similar relation as that of the given pair of words. Analogy is, in a sense, a test of vocabulary since you need to know the meaning of the words given, but in a broader sense it is a test of reasoning ability. To know the meaning of the words will not be enough if one is not able to understand clearly what the relation between the pairs of words is. Therefore, there are two things that are important to attempt a question on analogy:

- (i) meaning of all given words
- (ii) relationship between the given pairs of words

It is more convenient and time saving to first figure out the relation between the given pair and then compare it with the relations between the pairs in the options given for choice. Consider the following example

Pen : Write :: Book :

Now first determine the relation between the first two words, it is that of purpose, pen is used to write. Then determine the other word which will be in the same relation to the third word. Book is used to read, then

Pen : Write :: Book : read

There are different kinds of relationships that could be drawn from daily usage but some common relationships are given below:

1. CAUSE : EFFECT

Liquor : Intoxication → Liquor causes intoxication
Wound : pain → wound causes pain.

In this relation the first word is the cause for the second and the second is the result of the first

2. PURPOSE

Bottle : Cork → a cork is used to close a bottle

Dress : cloth → cloth is used to make a dress

In this relation, one word is used for another, there is a purpose between the two

3. OBJECT : ACTION

Gun : Fire → you fire a gun

Violin : play → you play a violin

In this, one term is an object and the other one is action undertaken with the help of that object.

4. ACTION : OBJECT

foment : Riot → you foment a riot

Wear : clothes → you wear clothes

This is opposite to the previous relation, here the first word is the action and the second the object with which that action is done.

5. PART : WHOLE

Book : Literature → a book is a part of the larger body of literature

Ship : fleet → ship is a part of the collection called fleet

In this relation, the first word will in the same way be a constituent of a bigger body represented by the second word.

6. **SYNONYMS**
Abundant : ample → ample means the same as abundant
Skilled : adroit → the two words are synonymous, i.e., they mean the same
This relation is when both the words are synonyms.
7. **ANTONYMS :**
Abstinence : indulgence → indulgence means the opposite of Abstinence
Legitimate : Unlawful → Legitimate means legal which is the opposite of unlawful.
In this relation, the two words are opposite to each other in meaning.
8. **SECONDARY SYNONYMS :**
Callous : Indifference → The synonym of callous will be indifferent, since both words are adjectives but rather the noun form, indifference, has been given in the relation
Brainwave: Inspired → The synonym of Brainwave is inspiration, but instead the second word in this relation is Inspired - the one who has inspiration.
In this relation, the two words are not directly synonymous but a slight change of the part of speech has been made in the second word.
9. **WORKER: ARTICLE CREATED**
Carpenter : furniture → carpenter makes wooden furniture
Compose : music → a composer composes or creates music
In this relation, the first word is the doer and the second is the professional work done by the first.
10. **SYMBOL : QUALITY**
Olive leaf : Peace → an olive leaf is a symbol of peace.
Red : passion → the colour red symbolises passion.
In this relation the first word is a symbol, and the second is the meaning represented by the symbol.
11. **CLASS : MEMBER**
mammal : man → man belongs to the class of mammals.
Doggerel : Poem → Doggerel is a class of poem which is bad in quality.
In this relation the first word is a member belonging to the class denoted by the second word.
12. **ACTION : SIGNIFICANCE**
Blush : embarrassment → if one blushes, that signifies that the person is embarrassed.
Spasm : pain → a spasm indicates that the person is in pain.
In this relation the first word is an action and the second is what that action signifies.

Although most of the questions asked in a competitive exam can be solved with the help of the given relationships, for subtle questions a student should apply reasoning to figure out the relation between the given words. Following are certain tips that would help a student to attempt analogy questions.

TIP 1

The first and foremost step while attempting an analogy question should be to DEFINE THE RELATIONSHIP. To avoid any errors, first define the relationship on paper or in your mind before searching for options. Once you have defined the relationship analyse the given pairs in the light of the relationship.

- (1) **ANXIOUS : REASSURANCE**
→ resentful : gratitude
→ perplexed : classification
→ insured : imagination
→ vociferous : suppression
First, the relationship can be defined as 'need' i.e. an anxious person needs reassurance and then you can check the given pairs to find out that 'a perplexed person needs classification'. Thus this will be the right analogy.
- (2) **SIMMER : BOIL**
→ Cook : Fry
→ Chill : Freeze
→ Roast : Stew
→ Slice : Cut

Now, establish the relation between the two given words. It is that of degree. Simmer is the lower degree of boil. Just as chill is the lower degree of freeze.

TIP 2

Always be careful about apparent and easy similarity. These are only to deceive the student as you would be attracted by these options. Always confirm all the options and be highly careful while considering an obvious answer.

e.g. **STUTTER : SPEECH**

- Blare : hearing
→ Aroma : smelling
→ Astigmatism : sight
→ Novocaine : Touch

Stutter is a defect of speech, so the relation between the two is that of defect. But Blare and hearing are closely related since blare means a harsh sound. This may attract the student, but this is not a relation of defect. This relation is in the third option, astigmatism is a defect of sight. So always avoid giving into the temptation of obviously correct answers.

TIP 3

Sometimes a word has two meanings, while what may first come to your mind will be the more frequent use of that word, if you cannot find a logical relation between the two words. Go beyond the obvious meaning and link the word with the other meaning of the second word.

MAROON : SAILOR

- Red : Ship
→ Crimson : flower
→ Stranded : Tourist
→ Colour : Dress

Maroon also has two meanings the colour 'maroon' and the verb maroon which means being left alone or abandoned. Obviously the second meaning will make a logical relation with sailor, a sailor is marooned just as a tourist is stranded.

WORD USAGE

FILL IN THE BLANKS OR SENTENCE COMPLETION

Sentence completion questions test your ability to use your vocabulary and recognise logical consistency among the elements in a sentence. You need to know more than the dictionary definitions of the words involved. You need to know how the words fit together to make logical and stylistic sense.

Sentence completion questions actually measure one part of reading comprehension. If you can recognise how the different parts of a sentence affect one another, you should do well at choosing the answer that best completes the meaning of the sentence or provides a clear, logical statement of fact. The ability to recognise irony and humour will also stand you in good stead, as will the ability to recognise figurative language and to distinguish between formal and informal levels of speech.

Since the sentence completion questions contain many clues that help you to answer them correctly (far more clues than the antonyms provide, for example), and analysing them helps you warm up for the reading passages later on in the test, on the paper-and-pencil test, answer them first. Then go on to tackle the analogies, the antonyms, and, finally, the time-consuming reading comprehension section.

Sentence completion questions may come from any of a number of different fields - art, literature, history, philosophy, botany, astronomy, geology, and so on. You cannot predict what subject matter the sentences on your test will involve.

WHAT MAKES THE HARD QUESTIONS HARD?

- Vocabulary Level** :Sentences contain words like intransigence, nonplussed, harbingers. Answer choices include words like penchant, abeyance, and eclectic.
- Grammatical Complexity**: Sentences combine the entire range of grammatical possibilities : adverbial clauses, relative clauses, prepositional phrases, gerunds, infinitives, and so on in convoluted ways. The more complex the sentence, the more difficult it is for you to spot the key words that can unlock its meaning.
- Tone**: Sentences reflect the writer's attitude towards the subject matter. It is simple to comprehend material that is presented neutrally. It is far more difficult to comprehend material that is ironic, condescending, playful, sombre, or otherwise complex in tone.
- Style**: Ideas may be expressed in different manners ornately or sparsely, poetically or prosaically, formally or informally, journalistically or academically, originally or imitatively. An author's style depends on such details as word choice, imagery, repetition, rhythm, sentence structure and length. Work through the following fundas and learn techniques that will help you with vocabulary, grammatical complexity, tone, and style.

FUNDA 1

BEFORE YOU LOOK AT THE CHOICES, READ THE SENTENCE AND THINK OF A WORD THAT MAKES SENSE

Your problem is to find the word that best completes the sentence in both thought and style. Before you look at the answer choices, see if you can come up with a word that makes logical sense in the context. Then look at all five choices. If the word you thought of is one of your five choices, select that as your answer. If the word you thought of is not one of your five choices, look for a synonym of that word. Select the synonym as your answer.

This technique is helpful because it enables you to get a sense of the sentence as a whole without being distracted by any misleading answers among the answer choices. You are free to concentrate on spotting key words or phrases in the body of the sentence and to call on your own "writer's intuition" in arriving at a stylistically apt choice of word.

See how the process works in a typical model question.

- Because experience had convinced her that he was both self-seeking and avaricious, she rejected the likelihood that his donation had been.....

(A) redundant	(B) frivolous
(C) inexpensive	(D) ephemeral
(E) altruistic	

This sentence presents a simple case of cause and effect. The key phrase here is self-seeking and avaricious. The woman has found the man to be selfish and greedy. Therefore, she refuses to believe he can do something..... What words immediately come to mind? Selfless, generous, charitable? The missing word is, of course, altruistic. The woman expects selfishness (self-seeking) and greediness (avaricious), not altruism (magnanimity). The correct answer is Choice E.

Practice of Funda 1 extensively develops your intuitive sense of just the exactly right word. However, do not rely on Funda 1 alone. On the test, always follow up Funda 1 with Funda 2.

FUNDA 2

LOOK AT ALL THE POSSIBLE ANSWERS BEFORE YOU MAKE YOUR FINAL CHOICE

Never decide on an answer before you have read all the choices. You are looking for the word that best fits the meaning of the sentence as a whole. In order to be sure you have not been hasty in making your decision, substitute all the answer choices for the missing word. Do not spend a lot of time doing so, but do try them all. That way you can satisfy yourself that you have come up with the best answer.

See how this Funda helps you deal with another question.

1. The evil of class and race hatred must be eliminated while it is still in anstate; otherwise it may grow to dangerous proportions.
- (A) Amorphous (B) overt
(C) uncultivated (D) embryonic
(E) independent

On the basis of a loose sense of this sentence's meaning, you might be tempted to select Choice A. After all, this sentence basically tells you that you should wipe out hatred before it gets too dangerous. Clearly, if hatred is vague or amorphous, it is less formidable than if it is well defined. However, this reading of the sentence is inadequate: it fails to take into account the sentence's key phrase.

The key phrase here is 'grow to dangerous proportions'. The writer fears that class and race hatred may grow large enough to endanger society. He wants us to wipe out this hatred before it is fully-grown. Examine each answer choice, eliminating those answers that carry no suggestion that something lacks its full growth. Does overt suggest that something isn't fully-grown? No, it suggests that something is obvious or evident. Does uncultivated suggest that something isn't fully grown? No, it suggests that something is unrefined or growing without proper care or training. Does independent suggest that something isn't fully-grown? No, it suggests that something is free and unconstrained. Only one word suggests a lack of full growth: embryonic (at a rudimentary, early stage of development). The correct answer is Choice D.

FUNDA 3

IN DOUBLE-BLANK SENTENCES, GO THROUGH THE ANSWERS, TESTING THE FIRST WORD IN EACH CHOICE (AND ELIMINATING THOSE THAT DON'T FIT)

In a sentence completion question with two blanks, read through the entire sentence to get a sense of it as a whole. Then insert the first word of each answer pair in the sentence's first blank. Ask yourself whether this particular word makes sense in this blank. If the initial word of an answer pair makes no sense in the sentence, you can eliminate that answer pair.

(Note: Occasionally this Funda will not work. In some questions, for example, the first words of all five answer pairs may be near-synonyms. However, the Funda frequently pays off, as it does in the following example.)

1. Critics of the movie version of *The Colour Purple* its saccharine, overoptimistic mood at odds with the novel's moretone.
- (A) applauded, sombre
(B) condemned, hopeful
(C) acclaimed, positive
(D) denounced, sanguine
(E) decried, acerbic

For a quick, general sense of the opening clause, break it up. What does it say? Critics.....the movie's sugary sweet mood.

How would critics react to something sugary sweet and over-hopeful? They would disapprove. Your first missing word must be a synonym for disapprove.

Now eliminate the misfits. Choices A and C fail to meet the test: applauded and acclaimed signify approval, not disapproval. Choice B, condemned, Choice D, denounced and Choice E, decried, however, all disapprobation; they require a second look.

To decide among Choices B, D, and E, consider the second blank. The movie's sugary, overly hopeful mood is at odds with the novel's tone: the two moods disagree. Therefore, the novel's tone is not hopeful or sugary sweet. It is instead on the bitter or sour side; in a word, acerbic, the correct answer is clearly Choice E.

Remember that, in double-blank sentences, the right answer must correctly fill both blanks. A wrong answer choice often includes one correct and one incorrect answer. ALWAYS test both words.

FUNDA 4

WATCH FOR SIGNAL WORDS THAT LINK ONE PART OF THE SENTENCE TO ANOTHER

Writers use transitions to link their ideas logically. These transitions or signal words are clues that can help you figure out what the sentence actually means. Sentences often contain several signal words, combining them in complex ways.

1. Cause and Effect Signals

Look for words or phrases explicitly indicating that one thing causes another or logically determines another.

Cause and Effect Signal Words

Accordingly in order to Because
so...that Consequently Therefore
Given thus Hence when...then If...then

Look for words or phrases explicitly indicating that the omitted portion of the sentence supports or continues a thought developed elsewhere in the sentence. In such cases, a synonym or near-synonym for another word in the sentence may provide the correct answer.

Support	Signal	Words
Additionally	furthermore	Also
indeed	And	Likewise
as well	moreover	besides
too		

2. Contrast Signals (Explicit)

Look for functional words or phrases (conjunctions, adverbs, etc.) that explicitly indicate a contrast between one idea and another, setting up a reversal of a thought. In such cases, an antonym or near-antonym for another word in the sentence may provide the correct answer.

Explicit Contrast Signal Words

Albeit	nevertheless	Although
nonetheless	But	
Notwithstanding	despite	
on the contrary	even though	
on the other hand		however
rather than	in contrast	still
in spite of	while	instead of yet

3. Contrast Signals (Implicit)

Look for content words whose meanings inherently indicate a contrast. These words can **turn a situation on its head**. They indicate that something unexpected, possibly even unwanted, has occurred.

Implicit Contrast Signal Words

anomaly	Anomalous	anomalously	illogically	illogical
incongruity	incongruous	incongruously		
irony	ironic	ironically		
paradox	paradoxical	paradoxically		
surprise	surprising	surprisingly		
unexpected	unexpectedly			

Note the function of such a contrast signal word in the following question.

- Paradoxically, the more.....the details this artist chooses, the better able she is to depict her fantastic, otherworldly landscapes.

(A) ethereal	(B) realistic
(C) fanciful	(D) extravagant
(E) sublime	

The artist creates imaginary landscapes that do not seem to belong to this world. We normally would expect the details comprising these landscapes to be as fantastic and supernatural as the landscapes themselves. But the truth of the matter, however, is paradoxical: it contradicts what we expect. The details she chooses are realistic, and the more realistic they are, the more fantastic the paintings become. The correct answer is Choice B.

FUNDA 5

USE YOUR KNOWLEDGE OF WORD PARTS AND PARTS OF SPEECH TO FIGURE OUT THE MEANINGS OF UNFAMILIAR WORDS

If a word used by the author is unfamiliar, or if an answer choice is unknown to you, two approaches are helpful.

- Break up the word into its component parts - prefixes, suffixes, and roots - to see whether they provide a clue to its meaning. For example, in the preceding list of Implicit Contrast Signal Words, the word *incongruous* contains three major word parts, *in-* here means not; *con-* means together; *gru-* means to move or conic. *Incongruous* behaviour, therefore, is behaviour that does not go together or agree with someone's usual behaviour; it is unexpected.
- Change the unfamiliar word from one part of speech to another. If the adjective *embryonic* is unfamiliar to you, cut off its adjective suffix *-nic* and recognise the familiar word *embryo*. If the noun *precocity* is unfamiliar to you cut off its noun suffix *-ity* and visualise it with different endings. You may think of the adjective *precocious* (maturing early). If the verb *appropriate* is unfamiliar to you, by adding a word part or two, you may come up with the common noun *appropriation* or the still more common noun *misappropriation* (as in the *misappropriation of funds*).

Note the application of this funda in the following typical example.

- This island is a colony; however, in most matters, it is and receives no orders from the mother country.

- | | |
|-------------------|----------------|
| (A) dichotomous | (B) methodical |
| (C) heretical | (D) autonomous |
| (E) disinterested | |

First, eliminate any answer choices that are obviously incorrect. If a colony receives no orders from its mother country, it is essentially self-governing. It is not necessarily methodical or systematic nor is it by definition heretical (unorthodox) or disinterested (impartial). Thus, you may rule out Choices B, C, and E.

The two answer choices remaining may be unfamiliar to you. Analyse them, using what you know of related words. Choice A, *dichotomous*, is related to the noun *dichotomy*, a division into two parts, as in the dichotomy between good and evil. Though the island colony may be separated from the mother country by distance that has nothing to do with how the colony governs itself. Choice D, *autonomous*, comes from the prefix *auto-* (self) and the root *nom-* (law). An autonomous nation is independent; it rules itself. Thus, the correct answer is *autonomous*, Choice D.

FUNDA 6

BREAK UP COMPLEX SENTENCES INTO SIMPLER COMPONENTS

In analysing long, complex sentence completion items, you may find it useful to simplify the sentences by breaking them up. Rephrase dependent clauses and long participle phrases, turning them into simple sentences.

See how this funda helps you to analyse the following sentence.

- Museum director Hoving refers to the smuggled Greek urn as the "hot pot;" not because there are doubts about its authenticity or even great reservations as to its price, but because its of acquisition is open to question.

(A) informally, costliness
(B) characteristically, date
(C) colloquially, manner
(D) repeatedly, swiftness
(E) cheerfully, mode

What do we know?

- The urn has been smuggled.
- Hoving calls it a "hot pot."
- It is genuine. (There are no doubts about its authenticity.)
- It did not cost too much. (There are no great reservations as to its price.)

In calling the smuggled urn a "hot pot", Hoving is not necessarily speaking characteristically or redundantly or cheerfully. He is speaking either informally or colloquially. (Hot here is a slang term meaning stolen or illegally obtained.) Its costliness is not being questioned. However, because the urn has been smuggled into the country, there clearly are unresolved questions about how it got here, in other words, about its manner of acquisition. The correct answer is Choice C.

Note that in sentence completion questions a choice may be complicated by an unusual word order, such as:

- placing the subject after the verb: To the complaints window strode the angry customer.

2. placing the subject after an auxiliary of the verb: Only by unending search could some few Havana cigars be found.
 3. inverting the subject and verb to give the sense of "if": Were defeat to befall him today's dear friends would be tomorrow's acquaintances, and next week's strangers.
 4. placing a negative word or phrase first, which usually requires at least part of the verb to follow: Never have I encountered so demanding a test!
- In all these instances, rephrase the sentence to make it more straightforward. For example:
1. The angry customer strode to the complaints window.
 2. Some few Havana cigars could be found only by unending search.
 3. If defeat were to befall him, today's dear friends would be tomorrow's acquaintances, and next week's strangers.
 4. I have never encountered so demanding a test!

IDIOMS AND PHRASES

- *Beat back* (to compel to retire) : The firemen were *beaten back* by angry flames and the building was reduced to ashes.
- *Boil down to* (to amount to) : His entire argument *boiled down* to this that he would not join the movement unless he saw some monetary gain in it.
- *Cast aside* (to reject, to throw aside) : Men will *cast aside* truth and honesty for immediate gains.
- *Cry down* (to deprecate) : Some of the Western powers did their best to *cry down* India's success in the war.
- *To cut off with a shilling* (to give someone a mere trifle in the will) : The father was so angry with the son over his marriage that *he cut him off with a shilling*.
- *Egg on* (to urge on) : Who *egged* you on to fight a professional boxer and get your nose knocked off?
- *Gloss over* (to ignore or avoid unpleasant fact) : Even if you are an important person your faults cannot be *glossed over*.
- *To laugh in one's sleeves* (to be secretly amused) : While I was solemnly reading my research paper to the audience, my friends were *laughing in their sleeves* for they knew what it was worth.
- *Play off* (to set one party against another for one's own advantage) : It best serves the interests of the super powers to *play off* one poor nation against another.
- *Pull one through* (to recover, to help one recover) : Armed with the latest medicines, the doctor *will pull him through*.
- *Cast a slur upon* (by word or act to cast a slight reproach on someone) : Many a man casts a *slur* on his own good name with some mean act.
- *To catch a Tartar* (to encounter a strong adversary) : When Hitler marched in to Russia he little knew that he would *catch a Tartar* in the tough people of that country.
- *To come off with flying colours* (to come out of a conflict with brilliant success) : The 2014 election outcome was uncertain but finally the BJP *came off with flying colours*.
- *To come off second best* (to be defeated in every contest) : Be it an election or a tambola, I have always come off the second best.
- *To cut the Gordian knot* (to remove a difficulty by bold or unusual measures) : The Parliament threw out the Bill for Abolition of Privy Purses. The Government cut the Gordian knot by abolishing the privy purses through an ordinance.
- *To fall to one's lot* (to become one's fate): It fell to the lot of Sheikh Hasina and her colleagues to reconstruct the shattered economy of their nation.
- *To get into hot water* (to get into difficulty): The businessman *got into hot water* with the Income-tax authorities for concealing his income from ancestral property.
- *To give someone the slip* (to dodge someone who is looking for you): The police had nearly got the dacoits when the *latter gave* them the *slip* in the Chambal ravines.
- *To go on a fool's errand* (to go on an expedition which leads to a foolish end): Many people earlier believed that going to the moon was like *going on a fool's errand*
- *To go to the wall* (to get the worst in a competition): In the struggle of life, the weakest *goes to the wall*.
- *To go to rack and ruin, to go to the dogs* (to be ruined): If a big war comes, our economy will *go to the dogs*.
- *To have one's hands full* (to be very busy): Pakistan could hardly expect active help from the USA *as its hands were already full with* domestic problems.
- *To have a bone to pick with one* (to have a difference with a person which has not yet been fully expressed). The extreme leftists *have a bone to pick* with the police and if ever they come to power there may be unpleasantness between the two.
- *To have the whip hand of* (to have mastery over): During the last decade, the *right wing* of the *party* has *held the whip hand*.
- *To have too many irons in the fire* (to have so much work in hand that some part of it is left undone or is done very badly): Let the Government not go in for privatization so fast. If they *have too many irons in the fire* they are bound to fare badly.
- *To have the tree or right ring* (To be genuine): Nixon's pronouncements on world peace do not *have the right ring*.
- *To have two strings to one's bow* (to have an alternative means of achieving one's purpose): A wife always has *two strings to her bow* if coaxing fails to achieve the desired end, tears succeed.
- *To have an axe to grind* (have personal interests to serve): Bigger nations supply arms to the smaller ones primarily because they (the bigger nations) *have their own axe to grind*.

- *To keep the wolf from the door* (to keep away extreme poverty and hunger): Lakhs in India have to struggle everyday to *keep the wolf from the door*.
- *To make short work of* (to bring to sudden end): The locusts *made short work of* the ripe standing corn.
- *To make amends for* (to compensate for damage): By his kindness, today he has *made amends for* his past insolence.
- *To make common cause with* (to unite, to co-operate with): During the last elections the princess *made a common cause with* the rightist parties. Both went down.
- *To make a virtue of necessity* (to do a very disagreeable thing as though from duty but really because you must do it): When a minister knows that he is going to be booted out of the cabinet he *makes a virtue of necessity* and resigns on health grounds.
- *To make much ado about nothing* (make a great fuss about a trifle): Demonstrations and protests over the change in the timing of news bulletins over AIR was *making much ado about nothing*.
- *To make a cat's paw or a tool of someone* (to use someone as a means of attaining your object): The super-powers have *made a cat's paw* of the smaller nations of Asia in their game of power politics.
- *To play into the hands of someone* (to act as to be of advantage to another) If this information is made public, it will play into the hands of people who are demanding an investigation of the police.
- *To play second fiddle* (to take a subordinate part): With Mr. Phillip as the undisputed leader of the party, everyone else is content to *play second fiddle to him*.
- *To put the cart before the horse* (to begin at the wrong end to do a thing): Preparing the blue print of a project without the provision of funds is like *putting the cart before the horse*.
- *To put one's shoulder to the wheel* (to make great efforts ourselves): No amount of foreign aid will pull us out of the economic morass; we have to *put our own shoulders to the wheel*.
- *To set store by* (to value highly): India, *surely sets much store by* the Indo Soviet Treaty of Friendship.
- *To set the Thames on fire* (to do something extraordinary): He is a steady worker but never likely to *set the Thames on fire*.
- *To set one's house in order* (to arrange one's affairs): Let Pakistan *set its own house in order* before talking of the welfare of the Kashmiris.
- *To take into one's head* (to occur to someone): The Manager *took it into his head* that by shutting off the electricity for a few hours daily he could save on refrigeration costs.
- *To take the bull by the horns* (to grapple with a problem courageously instead of avoiding it): There is no short cut to prosperity. We have to *take the bull by the horns* and make people work like slaves.
- *To take a leap in the dark* (to do a hazardous thing without any idea of what it may result in): You *took a leap in the dark* in going into partnership with that man.
- *To throw cold water upon* (to discourage something): The doctor *threw cold water upon* my plans for a world tour by declaring that I could never stand the strain of it.
- *To throw up the sponge* (to give up a contest): Faced with stiff competition from big companies, many a small company will *throw up the sponge*.
- *To turn over a new leaf* (to change one's course of action completely): After a long career of crime the convict suddenly *turned over a new leaf* and became a model citizen.
- *To turn tail* (to retreat ignominiously): The enemy *turned tail* in the face of heavy onslaughts on its key positions.
- *To turn the tables* (to reverse someone's success or superiority): Pakistan started war with a blitz on our positions but the superior tactics of our Armed Forces soon *turned the tables* on them.
- *To cook or doctor an account* (to tamper with or falsify the account): From the balance sheet presented to the shareholders, the company seemed to be flourishing, but it afterwards turned out that the Secretary had *cooked the accounts*.
- *To bear the brunt of* (to endure the main force or shock of): The infantry has to *bear the brunt of* a battle.
- *To beard the lion in his den* (to oppose someone, in his stronghold): The Indian Army broke through strong Pakistani fortifications, and in the Kargil *bearded the lion in his own den*.
- *To bid fair to* (to give fair prospect of): His health is so good that he *bids fair to* live till he is sixty.
- *To blow one's own trumpet* (to parade one's own good deeds): Modesty always pays. If you *blow your own trumpet*, you cannot succeed.
- *To blunt the edge of* (to make something less effective): Time *blunts the edge of* grief.
- *To build castles in the air* (to indulge in reveries or visionary schemes): There is nothing wrong if you *build castles in the air*; now put foundations under them.
- *To burn the candle at both ends* (to use too much energy): Our resources are limited. Let us use them judiciously and not *burn the candle at both ends*.
- *To buy a pig in a poke* (to purchase a thing without previously examining it): Buying shares in a new Company started by unknown entrepreneurs is like buying a *pig in a poke*.
- *To cross or pass the Rubicon* (to take a decisive step forward): The Government will have to think of many things before nationalising the textile industry for once they *cross the Rubicon* there will be no going back.
- *To cry over spilt milk* (to nurse unnecessary regrets): We have failed to build up a sizeable total against England's meagre first innings total. It is no use crying *over spilt milk* now.

- *To err on the safe side* (to choose a course which may in fact be inaccurate, but which will keep you safe from risk or harm): In going *in* for mixed economy rather than wholesale nationalisation the Government were *erring on the safe side*.
- *To flog a dead horse* (waste one's energies): We are *flogging a dead horse* if we are trying to make Sanskrit the national language of India.
- *To feather one's nest* (to provide for oneself through dishonest means): Many tax collectors make a point of *feathering their own nests* well while they have opportunity.
- *To eat one's heart out* (to brood over one's sorrows or disappointments): Don't *eat your heart out* over failure in this competition.
- *To eat humble pie* (to have to humiliate oneself): Since none came to his support he had to *eat humble pie* and give in to their demands.
- *To eat one's words* (to retract one's assertions under compulsion): It is hard for a haughty man to have to *eat his words*.
- *To throw down the gauntlet, to take up the gauntlet* (to offer or give a challenge, to accept a challenge): It is not for a small country to *throw down the gauntlet* to the right and the left.
- *To run the gauntlet* (to undergo severe criticism or ill-treatment): Most trend-setting books have to *run the gauntlet* of the literary critics.
- *To burn one's fingers* (to get oneself into unexpected trouble): They were happily placed in the woollen industry. But they went in for cosmetics and *burnt their fingers*.
- *To force one's hands* (to compel one to do something unwillingly or earlier than he wished to do it): The Government wanted to do all that they could to meet the workers' demands. But the violence by the strikers *forced their hands* to declare a lockout.
- *To haul over the coals* (to scold a man, reprove him): If your bad habits become known, you will get *hauled over the coals* and richly deserve it.
- *To let the grass grow under your feet* (to be inert and passive to things around): The authorities should listen to students' grievances. By being indifferent they would only *let the grass grow under their feet* till it will be too late to turn these young people away from the path of violence.
- *To put in a nutshell* (this is said of a thing which is capable of, or presented in brief expression): His conduct is weird. To *put in a nutshell*, he is insane. The explanation of his conduct can be *put in a nutshell* - he is insane.
- *To let loose the dogs of war* (to set in motion the destructive forces of war): Pakistan has *let loose the dogs of war* in Kashmir, through organized terrorism.
- *To lord it over someone* (to domineer over someone, to act as a lord): The love of power is so strong in human nature, that when a man becomes popular he seeks to *lord it over* his fellows.
- *To mind one's Ps and Qs* (to be punctilious): The manager suspects his chief clerk of dishonesty, and if the clerk does not *mind his Ps and Qs*, he will soon find himself without a job.
- *To muster in force* (to assemble in large numbers): The citizens *mustered in force* to welcome their beloved leader.
- *To pay one back in one's own coin* (to give tit for tat, to retaliate): Howsoever revengeful you may be, unless you are strong enough you cannot *pay him back in his own coin*.
- *To plough a lonely furrow* (to work without help or support): In the organised society of today no individual or nation can *plough a lonely furrow*.
- *To poison the ears or mind* (to prejudice another person): A judge must not allow anyone to *poison his mind* against either the plaintiff or the defendant.
- *To rest on one's laurels* (to rest satisfied with honours already won, and to make no attempt to gain further distinction): Even if he wins the biggest award, a film star will never *rest on his laurels*. He will try to rise higher and higher.
- *To rest on one's oars* (to suspend efforts after something has been attained): The agitators have been vigorously at work during the winter, but at present they seem to be *resting on their oars*.
- *To harp on the same string* (to keep repeating the same sentiment over and again): This gentleman *keeps harping on the same string*: he is from Oxford and deserves this and deserves that etc.
- *To rise like a phoenix from its ashes* (the phoenix was a fabulous Arabian bird. It had no mate but when about to die, made a funeral pile of wood and aromatic gums and on it burned itself to ashes. From the ashes a young phoenix was believed to rise): Germany was completely decimated in the Second World War. But it has *risen like a phoenix from its ashes*.
- *To rule the roost or roost* (to lord it over others in a party or group): In almost every party there is some overbearing person who tries to *rule the roost*.
- *To run in the same groove* (to move forward on the same path, to advance in harmony): It is clear that the ideas of both reformers *run in the same groove*.
- *To run in the blood* (a peculiarity which clings to certain families): Snobbery *runs in the blood* of the Englishmen.
- *To scatter to the winds* (to waste, to scatter abroad): We have *scattered to the winds* what we had gained by our independence.
- *To be on the right scent* (to be on the right track): The customs have decided to patrol the Kerala seas to nab smugglers from Dubai. They are *on the right scent* (Its opposite is to be on the wrong scent or wrong track)
- *To see how the wind blows* (to observe what influence, favourable or adverse, is likely to affect the existing state of things): In party-politics people sitting on the fence keep on watching *how the wind is blowing* before deciding on their options.

- *To see a thing through coloured glasses* (to regard something favourably because of one's prejudice): Pakistan has for long *looked at India through coloured glasses* and never trusted even the most genuine gestures for peace. (The world is a place of strife and one should not see it through coloured glasses.)
- *To show the white feather* (to show signs of cowardice): The agitators shouted and gesticulated but the moment the police appeared on the scene they seemed to *show the white feather*.
- *To sow broadcast* (to scatter widely or without stint): The emissaries of the banished king were *sowing sedition broadcast*.
- *To split hairs* (to make subtle and useless distinctions): Our rival company managed to steal a march on us by bringing out their software ahead of ours.
- *To steer clear of* (to avoid): India decided on non-alignment to *steer clear of* the hazards of alignment with one block or the other.
- *To stick at nothing* (the phrase implies readiness to stoop to baseness or deception to reach one's end): An ambitious politician will *stick at nothing* if he can only serve himself.
- *To strain every nerve* (to use one's utmost efforts): We have to *strain every nerve* to get over the poverty line.
- *To strike while the iron is hot* (to take advantage of the opportunity when it arises): If you want to succeed in life, you must *strike the iron while it is hot*. In going in for general elections immediately after the war, the Congress *struck while the iron was hot*.
- *To swallow the bait* (to catch others by guile, by offering them large promises): The candidate offered the people everything on earth and in the heavens if selected. The people *swallowed the bait* and elected him.
- *To talk shop* (to use the phrases peculiar to one's circumstances): Except for the undertakers, people of the same professions always *talk shop* at parties.
- *To tie one's hands* (to restrain one from action): I can't help you this time; my hands are tied by the club's rules.
- *To tread on the heels of* (follow close behind): Famine *treads on the heels of* drought.
- *To fish in troubled waters* (to make personal profit out of a disturbance): The super powers are *there* in West Asia *to fish in troubled waters*.
- *To pour oil on troubled waters* (to say or do anything which soothes and calms angry passions): The government *poured oil on troubled waters* by announcing a judicial enquiry into the firing
- *To win or gain laurels or to bear away palm* (to achieve success in a contest): The Indian Cricket Team *won laurels* on winning the World 20-20 Cup.
- *To worship the rising sun* (to pay respect to the man who is rising in power the influence): The newly appointed manager has taken over and his clerks *worship the rising sun*.
- *Argus-eyed* (jealously watchful): The husband of a pretty wife has got to be *Argus-eyed*.
- *Aegean stables*: (*to clean Aegean stables*, To correct a great abuse, from the stables of king Agues of Greece, whose stables had not been cleaned for thirty years): The law against prostitution has cleaned no Aegean stables; it has merely pushed it underground.
- *Backstairs influence* (influence exerted secretly and in a fashion not legitimate): The moneyed people do exercise *backstairs influence* on Parliament.
- *Bad blood*: (active enmity): There has been *bad blood* between India and Pakistan since 1947.
- *A bone of contention* : (subject of dispute): The question of a fence between the houses has become quite a bone of contention.
- *A bosom friend* (A very intimate and trusted friend): Bosom friends never betray one another.
- *A bull in a China shop*: (Someone who destroys everything at the same time he happens to be in): The plainsmen proved to be a *bull in a China shop* in the hills, ruining the hill people in all ways.
- *A close shave*: (a narrow escape from collision accident): The bus had a close shave as its driver swerved to the right a split second before the oncoming truck could run into it.
- *A cold comfort*: (something calculated to cause pain or irritation): The promise of a better future is only *cold comfort* to the frustrated youth of today.
- *A dog in the manger policy*: (said of a person who cannot himself use what another wants, and yet will not let that other have it): Stop being such a dog in the manger and let him ride your bike if you're not using it.
- *Elbow room*: (opportunity for freedom of action): Only give him *elbowroom* and he will succeed.
- *A fair-weather Friend*: (one who deserts you in difficulties): *A fair-weather* friend disappears the moment your money disappears.
- *French leave*: (*absence* without permission) He went on a *French leave* and was summoned by the direction the next day he went to office.
- *Good offices*: (recommendation): One can get a good job only through the *good offices* of someone in power.
- *A good Samaritan*: (one who befriends a stranger or a friendless person): Centuries ago, India played a *good Samaritan* to the hapless Parsees fleeing their native land.
- *The green-eyed monster*: (jealousy): The green-eyed *monster* strikes a woman the moment she sees her husband talking to a pretty woman.
- *A Herculean task* (a job requiring great efforts): Eradication of poverty is a *Herculean task* requiring the collective efforts of the entire country.
- *Lynch Law*: (the practice of punishing people where the punishment is inflicted by unauthorised persons and without judicial trial) Mob law denotes the same thing when carried out by a mob. In African countries they often resort to *lynch laws*.

- *A maiden speech* (the first speech of a new member in a public body as in Town Hall or in Parliament): Donald Trump's *maiden speech* was very impressive.
- *A nine day's wonder* (a fascinating but temporary phenomenon): *Beauty is, proverbially, a nine day's wonder.*
- *An open question*: (a matter for discussion and not yet decided): As far as India is concerned, Kashmir is no longer *an open question.*
- *A red-letter day*: (an auspicious, fortunate or important day): The 26th January, 1950 is a *red-letter day* in India's history.
- *Scot-free*: (exempt from payment, unhurt, safe): Because he had influential connections, the culprit went *scot-free.*
- *A sheet anchor*: (the chief safety, the last refuge for safety): One's faith in God is one's *sheet anchor* in times of stress and strain.
- *Tall Talk*: (boastful language): If we have no real accomplishments, we indulge in *tall talk* to delude ourselves and others too.
- *A white elephant* (an unprofitable possession): The upper Houses are *white elephants* and should be abolished.
- *A white lie*: (an evasion, a harmless and non-malicious untruth): Professional members often indulge in *white lies.*
- *A wild goose chase* (a foolish, *wild, unprofitable adventure*): Attempts towards stabilisation of prices in a developing economy, is a *wild goose chase.*
- *An apple of discord*: (a subject of envy and strife): Kashmir continues to be the *apple of discord* between India and Pakistan.
- *Cock and bull story* (a silly improbable story): I asked for an explanation, and all I got was your ridiculous cock-and-bull story!
- *A fish out of water*: (a person in uncomfortable surroundings): An Indian may earn tons of money in the Western countries, but he will always feel like a *fish out of water* there.
- *The gift of the gab*: (fluency of speech): The *gift of the gab* combined with a slight cunning makes for a successful politician.
- *Lion's share*: (an unfairly large share): The big nations continue to have the *lion's share* of world trade.
- *A mare's nest*: (a discovery that turns out to be false or worthless): There was much fanfare about the solar car. Later *it* turned out to be a *mare's nest.*
- *The milk of human kindness*: (kindly feelings a phrase used by Shakespeare.): With all their poverty, Indians do not lack *the milk of human kindness.*
- *Penelope's web* : (a work which seems to be going on and yet never comes to an end.): A housewife's chores are a *penelope's web.*
- *The pros and cons of a question*: (arguments for and against a thing) They discussed the *pros and cons* of the matter before taking a decision.
- *The skin of one's teeth*: (a phrase used when one escapes losing everything except life.): The storm broke up the ship but the sailors escaped by *the skin of their teeth.*
- *A snake in the grass*: (a secret foe.): How could I ever have trusted that snake in the grass?
- *A stone's throw*: (very near.): The Taj Hotel is at a *stone's throw* from the Gateway of India.
- *All moonshine*: (foolish, idle, untrue statement.): The talk about welfare of the poor is all *moonshine.*
- *Behind the scenes* : (of a person having secret or private information and influence): The dismissed Secretary, having been *behind the scenes*, has made some strange revelations as to the way in which the business is managed.
- *Between two fires* : (assailed or shot at from two sides): A man, arbitrating between the mother and wife, is to be *between the two fires*, for his decisions can rarely please both.
- *In a body*: (together) The striking workers went *in a body* to the Manager to present their demands.
- *Wide off the mark or beside the mark*: (irrelevant): '*Beside the mark* reasoning or argument'.
- *Cheek by jowl*: (in the same position): There was a lawyer who never had a client *cheek by jowl* with a doctor who never had a patient.
- *Out at elbows*: (destitute): The rising prices and the new taxes may soon see most of us *out at elbows.*
- *Part and Parcel*: (integral part of a society, community etc.) Some customs and traditions are a part and parcel of Indian culture.
- *A storm in a tea cup*: (a great fuss about a trifle): The crackers fired by Diwali revellers caused a *storm in the tea cup* when people thought it to be an explosion.
- *A fly in the ointment* : (a trifling circumstance which mars enjoyment): It was a wonderful picnic, the only *a fly in the ointment* being the absence of shady trees at the picnic spot.
- *Not worth his salt*: (good for nothing): A soldier who shivers at the boom of guns is not worth his salt.
- *With a pinch of salt*: (to take a statement with a grain of salt is to feel some doubt whether it is altogether true): Shaw's claim of having remained a celibate even after marriage has to be taken with a pinch of salt.
- *Null and void*: (Invalid, valueless, no longer in force): The court declared the appointment to be null and void
- *To be posted up*: (well acquainted with): I want to be posted up in Indian History.
- *To be worth its weight in gold*: (extremely valuable): In the desert a bottle of water is often worth its weight in gold.
- *To be Greek or double Dutch to one*: (unintelligible): He spoke so fast that all he said was double Dutch to the audience.
- *To be within an ace of* (to be very nearly): He was within an ace of being shot.
- *To be at the beck and call*: (to be always ready to serve): You must not expect me to be at your beck and call, I have my own business to attend to.

- *To be at daggers drawn* : (in bitter enmity): With every passing year the hostility between the Arabs and the Israelis has grown more bitter. They have always been at daggers drawn.
- *To be at sea*: (confused, uncertain of mind): I am quite at sea in Mathematics.
- *To be at one's wits end*: (perplexed): With the master shouting from the bathroom and the mistress from the kitchen the servant was at his *wits end* as to whom to attend first.
- *To be in one's element*: (*to be in agreeable company or work*): Shaw is in his element when he is writing about the social ills of his time.
- *To be on wane*: (*to be on the decline*): (After the second World War, the British Empire was on the wane.)
- *To be on the carpet*: (*to be summoned to one's employer's room for reprimand*): (The unpunctual clerk was repeatedly on the carpet).
- *To be on the last legs*: (*about to collapse*): (With science dominating life more and more, religion seems to be on its last legs).
- *Chip of the old block* (*a son who is much like his father*): (The younger Nawab of Pataudi has proved to be a chip of the old block. He is as good a batsman as his father).
- *To bring under the hammer*: *to sell it by auction*. (If a person goes insolvent, his creditors will bring everything that he owns under the hammer to recover their money).
- *To pay one's way*: (*not get into debt*): (While at college, he paid his way by working as a newspaper vendor).
- *To strike one's flag or colours or to show the white flag* : *to surrender*
- *To weather the storm*: (*to come out of a crisis successfully*): (In a crisis it is unity which helps a nation to weather the storm).
- *To sail before the wind*: (*to go in the direction towards which the wind is blowing*): *An opportunist is he who sails before the wind (Its opposite is to sail close to the wind i.e. to break a law or principle)*
- *To be in the same boat* (*To be equally exposed with a person to risk or misfortune*): In a nuclear war, the rich and the poor nations will be in the same boat. None will be able to protect themselves.
- *To sail under false colours*: (To pretend to be what one is not, to try to deceive): Phillips was sailing under false colours - he never told her he was a car mechanic.
- *To take the wind out of one's sails*: (Frustrating him by anticipating his arguments, take away his advantage suddenly): I was all ?ready to ?tell her that the ?relationship was over when she ?greeted me - that took the wind out of my ?sails.
- *Game is not worth the candle*: (The advantage or enjoyment to be gained is not worth the time spent in gaining it) Journey to the moon is an elaborate and costly affair and some people with a pragmatic approach feel the game is not worth the candle.
- *Not fit to hold a candle to*: (One is inferior): For all his pious platitudes and political stunts, Mr. Nixon is not fit to hold a candle to Lincoln or Roosevelt.
- Hope springs eternal in the human breast: *one never loses hope*.
- *Fools rush in where angels fear to tread* : said of reckless persons.
- *He who pays the piper calls the tune*: One has to act according to the wishes of one's master
- *You cannot make a silk purse out of a sow's ear*: said of something impossible.
- *A bird in hand is worth two in the bush*: right use of the present opportunity.
- *One man's meat is another man's poison* : what is good for one may be harmful for another person.
- *Out of the frying pan into the fire* : From one trouble to another.
- *The last straw breaks the camel's back*: The smallest addition to an already heavy task makes it intolerable.
- *Distance lends enchantment to the old* : Things look nice and beautiful when they are not within reach.
- *Render unto Caesar what is Caesar's* : To be wise.
- *Look before you leap* : Don't be reckless and impulsive.
- *Make hay while the sun shines*: To make use of the given opportunity
- *Never look a gift horse in the mouth*: There can be no choice about things given in charity
- *Beggars can't be choosers*: No choice in scarcity.
- *Nearer the Church, farther from heaven*: The more opportunity you have, the less you benefit from it.
- *Every cock fights best on his own dung hill*: One is very brave and confident in one's own place.
- *A rolling stone gathers no moss*: An aimless person cannot succeed.
- *Rome was not built in a day* : things take time to complete and to mature.
- *One swallow does not make a summer*: a single fortunate event doesn't mean that what follows will also be good.
- *Apparel proclaims the man*: You judge a man's worth by his clothes.
- *To run with the hare, to hunt with the hound*: To be insincere to someone
- *Sweet are the uses of adversity*: Sufferings are to be welcomed
- *Uneasy lies the head that wears the crown*: With power and authority come worries and responsibilities.

EXERCISE

Directions (Qs. 1-150): Pick out the most effective pair of words from the given pair of words to make the sentence(s) meaningfully complete.

- The teacher must.....the unique style of a learner in order to it to the desired knowledge.
(a) advocate, direct (b) perpetuate, develop
(c) appreciate, focus (d) absorb, maintain
(e) discover, harness
- Not all countries benefit from liberalisation. The benefits tend to first to the advantaged and to those with the right education to be able to benefit from the opportunities presented.
(a) equally, generate (b) richly, downgrade
(c) suitably, ascribe (d) uniformly, percolate
(e) judiciously, facilitate
- He has a.....sense of words. Therefore, the sentences he constructs are always with rich meaning.
(a) profound, pregnant (b) distinguished, loaded
(c) terrific, tempted (d) meaningful, full
(e) outstanding, consistent
- He was anmusician, had been awarded the George Medal during the Second World War and with the title of Rai Bahadur.
(a) outstanding, popularised
(b) underestimated, declared
(c) accomplished, honoured
(d) impressive, assigned
(e) obdurate, proclaimed
- Whether it be shallow or not, commitment is the , the bedrock of any loving relationship.
(a) expression, perfunctory
(b) foundation, genuinely
(c) manifestation, deep
(d) key, alarmingly
(e) basis, absorbing
- Many people take spirituality very seriously and about those who don't, worrying about them and them to believe.
(a) think, criticizing (b) pride, appraising
(c) rationalize, enabling (d) wonder, pressing
(e) ponder, venturing
- Unless new reserves are found soon, the world's supply of coal is being in such a way that with demand continuing to grow at present rates, reserves will be by the year 2050.
(a) consumed, completed (b) depleted, exhausted
(c) reduced, argument (d) burnt, destroyed
(e) utilized, perished
- If you are you tend to respond to stressful situations in a calm, secure, steady and way.
(a) resilient, rational (b) obdurate, manageable
(c) propitious, stable (d) delectable, flexible
(e) supportive, positive.
- Management can be defined as a process of..... organizational goals by working with and through human and non-human resources to improve value added to the world.
(a) getting, deliberately (b) managing, purposefully
(c) targeting, critically (d) realizing, dialectically
(e) reaching, continuously
- If you are an introvert, you to prefer working alone and, if possible, will towards projects where you can work by yourself or with as few people as possible.
(a) like, depart (b) advocate, move
(c) tend, gravitate (d) express, attract
(e) feel, follow
- The.....violence that our town is witnessing has turned it into the most town of our country.
(a) huge, offensive
(b) unrestrained, devalued
(c) perplexing, repulsive
(d) unprecedented, degenerate
(e) mammoth, wanted
- Although religion does notthe acquisition of wealth, the tenor of its teaching is to.....an attitude of indifference to worldly things.
(a) proclaim, prohibit (b) inhibit, induce
(c) manifest, proud (d) delink, develop
(e) allow, criticise
- Students should be to realise that the real goods of life are spiritual, love of things of the spirit and of their fellowmen.
(a) made, service (b) allowed, needs
(c) believed, service (d) made, devotion
(e) professed, involvement
- Extreme poverty is as..... to stagnation and impoverishment aswealth.
(a) dangerous, restrained (b) provocative, permissible
(c) supportive, foul (d) stupendous, corrupt
(e) liable, excessive
- It is accurate to refer to poets as dreamers but it is not..... to infer that the dreams of poets have no practical value beyond the.....of literary diversion.
(a) possible, shadow (b) sensible, object
(c) discerning, realm (d) valuable, field
(e) comparable, circle
- Everystep man takes in any field of life, is first taken along the dreamyof imagination.
(a) calculated, vision (b) outward, base
(c) forward, path (d) initial, thought
(e) parallel, extent
- At the dawn of history Indiaon her unending quest and trackless centuries arewith her striving and the grandeur of her success and her failures.
(a) started, filled (b) marched, evolved
(c) proceeded, pulled (d) started, vanished
(e) marched, filled

18. It is height offor men who fully appreciate in their own case the great advantages of a good education but.....these advantages to women.
 (a) arrogance, abstain (b) propensity, bestow
 (c) proliferation, advance (d) selfishness, deny
 (e) stupidity, prohibit
19. As everybody is attached to his motherland it is difficult to find a man who isof love for his motherland.
 (a) constantly, disposed (b) courageously, suspect
 (c) profoundly, deprived (d) greatly, connected
 (e) deeply, devoid
20. If we study the lives of great men we are..... that we too can achieve greatness and when we die, we leave behind our
 (a) convinced, children (b) reminded, footmarks
 (c) conveyed, followers (d) commended, belongings
 (e) proclaimed, memories
21. Handicrafts constitute an importantof the decentralised sector of India's economy and employment to over six million artisans.
 (a) factors, aims (b) extension, plans
 (c) segment, provides (d) supplier, gives
 (e) period, projects
22. Among a number of hobbies that one can, hobby of reading is the most useful and
 (a) develops, accumulative
 (b) cultivates, enlightened
 (c) nourish, cumulative
 (d) absorbs, durable
 (e) considers, appreciative
23. The quality of between individuals and the organisation for which they work can be to the benefit of both the parties.
 (a) services, evaluated
 (b) interaction, improved
 (c) sophistication, developed
 (d) work, appreciated
 (e) life, conceptualised
24. Part of the confusion in our societies..... from our pursuit of efficiency and economic growth, in the that these are the necessary ingredients of progress.
 (a) stems, conviction
 (b) derives, evaluation
 (c) emerges, consideration
 (d) obtains, exploration
 (e) extends, planning
25. The problem of housing shortage with the population explosion has also been by this policy.
 (a) coped, highlighted
 (b) dispensed, acknowledged
 (c) compounded, addressed
 (d) threatened, manifested
 (e) projected, discussed
26. When interpersonal problems..... but are not dealt with, the organisation's productivity inevitably.....
 (a) surface, develops (b) focus, increases
 (c) establish, projects (d) develop, exhibits
 (e) exist, diminishes
27. Participative management, in which everyone has a in a decision that a leader then makes, is a mechanism for employees.
 (a) share, protecting (b) value, thwarting
 (c) motivation, involving (d) reward, stimulating
 (e) input, empowering
28. Lack of..... is basic to good teamwork but our ability to work with others depends on our.....
 (a) rigidity, compatibility
 (b) dogmatism, motivation
 (c) professionalism, vulnerability
 (d) positivism, flexibility
 (e) consideration, acumen
29. Complete and constant openness is a notion that can be..... to absurdity. Am I..... to stop everyone on the street and tell them my reaction to their appearance?
 (a) consigned, communicated
 (b) reduced, required
 (c) attributed, requested
 (d) projected, destined
 (e) subjected, confined
30. When organizations..... creativity and risk-taking, the usual method of maintaining order and.....are indeed shaken.
 (a) encourage, decorum (b) exhibit, durability
 (c) propose, humility (d) enhance, supply
 (e) propagate, production
31. When I am an autocrat, I am..... in the extreme. My direct method is to..... power and control.
 (a) perfectionist, explore (b) autocratic, engulf
 (c) dominating, seek (d) possessive, reject
 (e) elaborate, develop
32. The fear..... with feeling incompetent is the fear of being humiliated, embarrassed and.....
 (a) endowed, criticized (b) afflicted, downtrodden
 (c) consistent, damaged (d) associated, vulnerable
 (e) imbued, exposed
33. Gopal was frustrated with Sundar, who would not..... himself to a deadline. Sundar claimed he was working well without a deadline, but Gopal and finally prevailed.
 (a) encourage, enforced (b) inculcate, ordered
 (c) cooperate, stipulated (d) commit, persisted
 (e) declared, pressurised
34. I am not easily..... by pressure that would interfere with accomplishing the goals of my unit. I stick to my.....
 (a) pessimistic, views
 (b) swayed, convictions
 (c) discouraged, achievements
 (d) empowered, organization
 (e) demurred, projections
35. Coercion sometimes leads to the..... of short-term goals, but its drawbacks far..... its advantages.
 (a) realization, damage
 (b) appreciation, percolate
 (c) accomplishment, outweigh
 (d) achievement, crumble
 (e) destination, magnify

36. In our country, the use of radio as an instrument of man's education has not yet been.....
- (a) fullest, exploited (b) ultimate, used
(c) meaningful, explored (d) resultant, tried
(e) present, demonstrated
37. The modern world is fast..... itself into rival camps, armed to the teeth with the sophisticated and deadly..... of destruction.
- (a) making, sources (b) changing, factors
(c) developing, procedures (d) parting, way
(e) resolving, weapons
38. The great writer.....art out of facts of life, the significant..... with which the pattern of life has been woven.
- (a) decides, factor (b) selects, element
(c) practises, boundary (d) creating, disposition
(e) chooses, part
39. We mean by civilization a way of life in which the wilder.....of humanity are restrained, the nobler instincts and inclinations are..... and allowed to prevail.
- (a) dimensions, created (b) qualities, discouraged
(c) passions, developed (d) desires, inhibited
(e) aspects, encouraged
40. We are said to be superstitious when we..... ourselves to fanciful causes for happenings that seem to be.....
- (a) bind, unwarranted (b) project, heavenly
(c) torture, harmful (d) subject, inexplicable
(e) treat, harrowing
41. Despite.....knowledgeable, he remained.....all through.
- (a) having, ignorant (b) of, doubtful
(c) owing, through (d) having, enriched
(e) being, poor
42. He used to..... the point that victory in any field needs.....courage.
- (a) emphasise, little (b) stress, exemplary
(c) refute, no (d) dismiss, formidable
(e) distract, enormous
43. We will call back the agitation if the Chairman gives an.....that there will be no.....of workers.
- (a) inkling, harassment (b) assurance, need
(c) explanation, demand (d) opportunity, place
(e) undertaking, retrenchment
44. It is a noble quality to..... the good and.....the bad.
- (a) retain, preserve (b) imitate, pretend
(c) appreciate, condemn (d) criticize, ape
(e) ignore, eliminate
45. Using.....designs to.....the importance of others is not a healthy act.
- (a) nefarious, undermine (b) architectural, elevate
(c) fictitious, enhance (d) brittle, activate
(e) proper, shrink
46. Professionals focus theiron fulfilling their responsibilities and achieving results, not on.....a particular image.
- (a) planning, devising (b) leadership, attributing
(c) abilities, contributing (d) energies, portraying
(e) skills, obtaining
47. "Patriotism is the last refuge of the scoundrel," says Johnson. In the modern world where the cunning selfish people.....and the hardworking conscientious peoplethe quotation holds good.
- (a) dominate, suppress (b) thrive, suffer
(c) enjoy, mutilate (d) empower, subjected
(e) harass, abdicate
48. We must rest assured that our sorrows, if any, are short-lived and a period of joy.....us. Such thinking will always maintain ourand peace of mind.
- (a) begets, dream (b) befits, body
(c) bemoans, skills (d) merits, life
(e) awaits, equipoise
49. When you are living with your.....values and principles, you can be straightforward, honest and
- (a) core, upfront (b) inherited, distinct
(c) innate, durable (d) cultural, perceptive
(e) inborn, vehement
50. In the role of a counsellor, you are an authority figure whose objective is toattentively and sensitively to employees who.....you with their feelings.
- (a) project, focus (b) manage, direct
(c) listen, trust (d) concentrate, believe
(e) consider, explain
51. If a junior executive neglects his professional development andeducation, he can easily and quickly become obsolete in a world changing at.....rates.
- (a) management, voluminous
(b) higher, vulnerable
(c) better, supreme
(d) continuing, dizzying
(e) value, profound
52. Harassment is just plain..... There is never a valid reason or a goodfor it.
- (a) wrong, excuse (b) murder, command
(c) falsehood, remedy (d) killing, magic
(e) offence, strategy
53. Man is He likes to know how things work. The search for understanding isin its own right.
- (a) evolving, prophetic
(b) inquisitive, legitimate
(d) appreciative, fundamental
(e) curious, philosophical
54. Leadership is one of the world's oldest..... The understanding of leadership has figured strongly in thefor knowledge.
- (a) cultures, desire (b) institutions, passion
(c) pre-occupations, quest (d) subjects, preference
(e) undertakings, conviction
55. Our.....to understand the process of learning underlying behaviour change are.....by the fact that any given behaviour is determined jointly by many processes.
- (a) nature, determined (b) scope, preceded
(c) implications, followed (d) limitations, moderated
(e) attempts, complicated

56. This book is readable, clear and.....researched withdetailed references.
 (a) fabulously, intricate (b) meticulously, extensive
 (c) leisurely, complete (d) hardly, notional
 (e) closely, scattered
57. The interest has ... innovation related to several sectors of the... pharmaceutical business and industry.
 (a) accepted, skeletal (b) insured, fateful
 (c) affected, plummeting (d) restricted, grown
 (e) accelerated, burgeoning
58. The Indian hospitality industry, which has been.....a prolonged slump, is now entering a new.....phase ready to enhance profitability.
 (a) witnessing, ambitious (b) observing, listless
 (c) demonstrating, efficient (d) recovering, debt
 (e) succumbing, lean
59. The new policy seeks to.....a process of widespread participation of people.....the way for more effective implementation.
 (a) amend, opening (b) halt, propelling
 (c) generate, paving (d) diagnose, resulting
 (e) identify, dithering
60. Journalism is afor truth, a crusade to..... injustice and wrong-doing.
 (a) product, limit (b) boon, justify
 (c) travesty, attack (d) quest, expose
 (e) search, optimise
61. The society provides the individual security of life,of thought and sustenance for action. Every individual who.....from society is indebted to the society.
 (a) serenity, gains (b) prosperity, benefits
 (c) objectivity, profits (d) seriousness, derives
 (e) semblance, evolves
62. A hobby is an activity of interestfor pleasure. It helps to break the monotony and tedium of our routine.
 (a) developed, interesting (b) pursued, humdrum
 (c) cultivated, developed (d) regularized, cultivated
 (e) arranged, pursued
63. The growth of Indian agriculture in the last three decades has earned from other countries.
 (a) pervasive, reputation (b) significant, deliverance
 (c) superior, regard (d) dynamic, accolades
 (e) distinctive, encouragement
64. College-going students should the spirit of service from the great men of.....
 (a) inculcate, power (b) develop, possession
 (c) invent, wisdom (d) analyze, distinction
 (e) imbibe, yore
65. The planting of trees on the of towns and villages helps theof a country.
 (a) surface, beautification (b) periphery, output
 (c) joints, production (d) vicinity, cultivation
 (e) outskirts, afforestation
66. The human infant is a lifelong bundle of energy with aarray of potentialities, and many.....
 (a) marvellous, vulnerabilities
 (b) peculiar, opportunities
 (c) critical, competencies
 (d) vocational, strengths
 (e) perfect, peculiarities
67. His presentation was so lengthy andthat it was difficult for us to find out the real in it.
 (a) boring, planning (b) tedious, skill
 (c) verbose, content (d) laborious, coverage
 (e) simple, meaning
68. There is nothe fact that a man of knowledgegreat power.
 (a) justifying, acknowledges
 (b) clarifying, exhibits
 (c) advocating, projects
 (d) denying, wields
 (e) proclaiming, develops
69. The.....of opinion which emerged at a recently concluded seminar was that the problem of dowry cannot be unless the law against it is made more stringent.
 (a) divergence, managed
 (b) sympathy, projected
 (c) consensus, tackled
 (d) similarity, curbed
 (e) convergence appreciated
70. Leisure must be spent carefully andonly, otherwise the devil will get theof you.
 (a) positively, care (b) constructively, better
 (c) proactively, though (d) objectively, energy
 (e) purposefully, measure
71. The manner of the officerall his fears.
 (a) haughty, aggravated (b) officious, levelled
 (c) amiable, concentrated (d) fickle, reduced
 (e) genial, dispelled
72. To his arguments, heseveral references.
 (a) vindicate, refer (b) press, announced
 (c) substantiate, cited (d) reveal, declared
 (e) clarify, averted
73. As censorship waspeople werethe furious battle being fought.
 (a) clammed, oblivious of
 (b) revoked, indifferent to
 (c) imposed, unaware of
 (d) dispelled, ignorant of
 (e) levelled, unmindful of
74. He was.....by letter that he had selected.
 (a) informed, been (b) told, not
 (c) stated, finally (d) offered, been
 (e) communicated, not
75. Giving unfair to one's relatives in the matter of appointments and such other benefits is
 (a) punishments, parochialism
 (b) advantage, nepotism
 (c) benefits, pragmatism
 (d) preferences, chauvinism
 (e) leverage, communalism
76. The Vidhan Sabha voted tothe ban drinking.
 (a) invoke, for (b) revoke, of
 (c) prohibit, prevented (d) repeal, on
 (e) refrain, from

77. Our army isthe border of the neighbouring country.
 (a) posted, with (b) accumulated, for
 (c) assembled, at (d) deployed, along
 (e) fighting, on
78. The teacherhis students being late to school.
 (a) shouted, at (b) reprimanded, for
 (c) reminded, with (d) narrated, of
 (e) taught, for
79. The dimensions of the are known and the solution is on.
 (a) problem, agreed (b) theory, dealt
 (c) measures, decided (d) risks, tempered
 (e) danger, looked
80. There is so much between the two sisters that it is to know one from the other.
 (a) resemblance, difficult (b) identity, impossible
 (c) equality, easy (d) disparity, undesirable
 (e) similarity, obvious
81. How people would.....in a particular situation cannot be.....with perfect accuracy.
 (a) think, observed (b) act, expected
 (c) behave, predicted (d) react, analyzed
 (e) feel, resolved
82. When the mob turnedthe police opened fire to control thesituation.
 (a) away, burning (b) up, untoward
 (c) around, devastating (d) quietly, aggravate
 (e) hostile, riotous
83. The Governmentdown the oppositionfor a joint parliamentary committee probe.
 (a) boiled, proposal (b) shot, demand
 (c) put, leaders (d) whipped, portfolio
 (e) struck, party
84. The handwriting on the letter was highly.....and none could..... it.
 (a) legible, write (b) illegible, read
 (c) original, recognize (d) faint, notice
 (e) shabby, identify
85. The delay in completing the taskcan be attributed to their
 (a) expeditiously, lethargy (b) fully, punctuality
 (c) economically, rigidity (d) religiously, strictness
 (e) carefully, perfectionism
86. Hefor having caused.....to the residents.
 (a) questioned, authenticity
 (b) apologized, impatience
 (c) regretted, inconvenience
 (d) wondered, disappointment
 (e) pressurised, discomfort
87. The newin the defence field are quiteand hence appreciable.
 (a) ideas, novel (b) studies, substandard
 (c) incentives, diplomatic (d) appointments, sensitive
 (e) inventions, admirable
88. He admitted havingabout theof the documents.
 (a) questioned, authenticity
 (b) regard, truth
 (c) aware, possession
 (d) predicted, correctness
 (e) enquired, preparation
89. Despiteof resources, the financially underprivileged students in their endeavour.
 (a) plenty, failed (b) availability, gave
 (c) want, surrendered (d) lack, succeeded
 (e) extremity, excelled
90. The work assigned to me is not.....though it is very.....
 (a) voluminous, careful (b) challenging, easy
 (c) impossible, stupendous (d) exceptional, ordinary
 (e) meagre, difficult
91. Nothing is impossible in the world of politics. States which werefoes and had their deadly missiles pointed at each other find themselvesin military alliances.
 (a) implacable, partners (b) intense, joining
 (c) deadly, approaching (d) known, soliciting
 (e) enviable, grouping
92.of whether leaders are born or made, it isclear that leaders are not like other people.
 (a) Pursuant, manifestly
 (b) Sequel, amply
 (c) Regardless, unequivocally
 (d) Instead, purely
 (e) In spite, normally
93. There is a common talk today that women have made the..... in many professions; that they have total freedom of opportunity. But the majority of women are still left at the unbreakable glass ceiling.
 (a) entry, inward (b) grade, gazing
 (c) progress, trying (d) mark, projecting
 (e) achievement, wondering
94. Inferring attitudes from expressed opinion has many.....People may.....their attitude and express socially acceptable opinions.
 (a) limitations, conceal (b) advantages, show
 (c) drawbacks, support (d) benefits, avoid
 (e) reasons, acknowledge
95. We should move towards a system where the banks cancapital in the market with.....safeguards so that they continue to be public sector banks.
 (a) improve, proper (b) strengthen, durable
 (c) raise, adequate (d) stimulate, effective
 (e) provide, delicate
96. Human Resource Management is an.....of mind rather than a..... of techniques.
 (a) organisation, quality (b) attempt, mix
 (c) evolution, measure (d) attitude, set
 (e) expertise, collection
97. Statistics in an..... tool for researchers that.....them to make inferences or generalisations about populations from their observations of the characteristics of samples.
 (a) outstanding, proposes (b) invaluable, proceeds
 (c) invaluable, enables (d) important, proclaims
 (e) indispensable, enables

98. The Dalits have never had a..... of freedom in the suffocating society. They are a wounded people..... and broken.
 (a) glimpse, mitigated (b) sigh, rejected
 (c) moment, criticised (d) satisfaction, prohibited
 (e) breath, battered
99. His vision could be the..... that the policy-makers use to..... the banking sector.
 (a) roadmap, restructure (b) manner, shape
 (c) blueprint, plan (d) remedy, revise
 (e) approach, represent
100. A person's formal educational background may..... rich but complex information. To some degree education..... a person's knowledge and skill base.
 (a) reveal, advocates (b) yield, indicates
 (c) exhibit, develops (d) cover, evolves
 (e) surmount, shows
101. The RBI in consultation with Government of India has..... a working group to suggest measures for..... of weak public sector banks.
 (a) commissioned, appreciating
 (b) established, accommodation
 (c) reshaped, merger
 (d) constituted, revival
 (e) organised, development
102. The textile industry in India has..... rough weather in recent times. The textile mill is one of the few companies to have..... this storm.
 (a) overcome, empowered (b) managed, absorbed
 (c) protested, fought (d) withstood, survived
 (e) ventured, managed
103. With large classes, it is difficult for teachers to..... regular essay-type questions for homework because..... long answers would take too much time.
 (a) consider, writing (b) revalue, concise
 (c) pursue, feeling (d) handle, weighing
 (e) give, marking
104. Ours is a democracy and any..... or use of force is out of question. Methods of..... and education are best suited to a democratic regime.
 (a) attempt, coercion (b) compulsion, persuasion
 (c) judgement, prayer (d) inhuman, apprehension
 (e) implied, technology
105. Despite being the..... partner in the relationship, the franchiser doesn't always have all the.....
 (a) sincere limitations (b) vulnerable..... powers
 (c) active losses (d) dominant..... advantages
 (e) authoritative legalities
106. India's _____ over the past half century since independence has been unique and _____ in many ways.
 (a) thinking feeling
 (b) development commendable
 (c) victory..... celebrating
 (d) crash overbearing
 (e) regress praiseworthy
107. The so-called civilised human race has _____ and ill-treated small and large animals in an attempt to prove his _____.
 (a) abused supremacy
 (b) misuse power
 (c) cruelty altruism
 (d) advocated worthlessness
 (e) beaten generosity
108. He objected to the proposal because it was founded on a _____ principle and also was _____ at times.
 (a) faulty - desirable
 (b) imperative - reasonable
 (c) wrong - inconvenient
 (d) sound - acceptable
 (e) conforming - deplorable
109. The criterion for _____ a player should be based on his recent performance; but unfortunately, the journalists are _____ to be carried away by earlier successes.
 (a) condemning - satisfying
 (b) judging - prone
 (c) revealing - reluctant
 (d) eager - acclaiming
 (e) criticising - clean
110. For the last half century he _____ himself to public affairs _____ taking a holiday.
 (a) by - committed (b) after - offered
 (c) devoted - without (d) sacrificed - after
 (e) prepared - before
111. You will see signs of _____ everywhere, which speak well for the _____ of these people.
 (a) decoration - senses (b) clear - debris
 (c) beauty - careful (d) industry - prosperity
 (e) repairs - extravaganza
112. The police arrested Ramesh on a _____ of theft but for lack of evidence _____ him.
 (a) crime - imprisoned (b) punished - complaint
 (c) left - condition (d) tip - absconding
 (e) charge - released
113. People _____ to work fast if you _____ certain conditions on them.
 (a) decide, negotiate (b) try, thrust
 (c) plan, invoke (d) hesitate, impose
 (e) volunteer, place
114. The recent _____ in oil prices has given an unexpected additional _____ to the cost-spiral.
 (a) slump, drawback (b) cut, blow
 (c) rise, twist (d) development, out
 (e) deterioration, impetus
115. _____ your colleagues for important decision-making activities ensures their _____ cooperation.
 (a) Counselling, whole-hearted
 (b) Helping, occasional
 (c) Guiding, meagre
 (d) Neglecting, enthusiastic
 (e) Dominating, unstinted
116. The only way to ensure best output from your vehicle is to provide it a _____ and _____ maintenance.
 (a) nurturing, expensive (b) proper, timely
 (c) careful, costly (d) trouble-free, everlasting
 (e) precious, healthy

117. The issues could be _____ amicably only because of his _____ handling of the situation.
 (a) dropped, haphazard (b) raised, careful
 (c) discussed, enthusiastic (d) suppressed, emphatic
 (e) resolved, tactful
118. Punishment isanda lot of wrong doings.
 (a) a deterrent, prevents (b) inevitable, encourages
 (c) mandatory, ensures (d) an evil, prohibits
 (e) essential, nullifies
119. The account of the crime given by the accused wasand was
 (a) dependable, non-cognizable
 (b) fictitious, unreliable
 (c) false, appreciable
 (d) complete, imaginary
 (e) exaggerated, unpardonable
120. Problems of the country can only be aggravated byand citizens.
 (a) careful, unscrupulous
 (b) extraordinary, uncompromising
 (c) dedicated, patriotic
 (d) selfish, irresponsible
 (e) independent, practical
121. Thewith which he is able to wield the paintbrush is really
 (a) practice, good (b) majesty, royal
 (c) sweep, fine (d) energy, unnecessary
 (e) ease, remarkable
122. If you kindly bear me for some time, I shallthe whole issue.
 (a) out, understand (b) on, solve
 (c) for, know (d) with, clarify
 (e) at, inform
123. The feeling of the people is not entirely.....or
 (a) sound, unfounded (b) unreasonable, imaginary
 (c) baseless, unjustified (d) cohesive, irrational
 (e) unpardonable, unimaginative
124. People who arecan their things in an orderly manner.
 (a) upright, keep (b) thrifty, perform
 (c) punctual, manage (d) indecisive, do
 (e) dependable, accumulate
125. The WHO hasthe government for taking prompt action.
 (a) lauded, preventive (b) criticised, obligatory
 (c) blamed, ineffective (d) appreciated, hectic
 (e) admired, unreasonable
126. Though the hospital is extremely rich, the conditions there are
 (a) equally, rich (b) appallingly, poor
 (c) admirably, comfortable (d) extremely, conducive
 (e) frequently, tolerable
127. Nine members have about the decision, but the tenth one views it
 (a) solution, critically
 (b) consensus, similarly
 (c) disagreement, collectively
 (d) grievance, grudgingly
 (e) agreement, differently
128. Man needs food not for the body but for the soul also. The satisfaction of his physical wants does not imply his.....
 (a) merely, contentment (b) properly, superiority
 (c) only, spirituality (d) necessarily, commitment
 (e) certainly, entitlement
129. It is said that knowledge is power. The hunger for power isand therefore most difficult to
 (a) accumulative, subsume (b) enormous, apply
 (c) empowering, delegate (d) insatiable, contain
 (e) evolutionary, rationalize
130. Nothing undermines the communication of a changed vision more than on the part of key..... that seems inconsistent with the vision.
 (a) anything, issues (b) behaviour, players
 (c) advocacy, managers (d) something, personnel
 (e) philosophy, problems
131. Mountains and hills are a sight. I have always to see them.
 (a) extraordinary, advocated
 (b) stupendous, encouraged
 (c) loving, prepared
 (d) joyful, imagined
 (e) fascinating, longed
132. Poetry is the language of the imagination and the It relates to whatever gives pleasure or pain to the human mind.
 (a) thinking, permanent (b) analysis, temporary
 (c) passions, immediate (d) circumspection, sporadic
 (e) visualization, constant
133. Success in business requires two things: a winning competitiveand superb organizational
 (a) advantage, satisfaction (b) planning, advantage
 (c) strategy, execution (d) philosophy, motivation
 (e) marketing, strategy
134. To in today's rapidly changing environment corporations need to their learning capability.
 (a) develop, enlarge (b) surpass, align
 (c) project, assimilate (d) service, mitigate
 (e) compete, strengthen
135. Areader gets much greater pleasure from reading books than a miser gets inmoney.
 (a) powerful-accumulating (b) voracious-hoarding
 (c) desirous-stocking (d) proverbial-spending
 (e) profound-lavishing
136. Vision is usuallymost effectively when many differentare used.
 (a) developed, manifestations
 (b) adapted, organisations
 (c) communicated, vehicles
 (d) exhibited, forms
 (e) described, thought
137. People who have been through difficult, painful and not very change efforts often end upboth pessimistic and angry conclusions.
 (a) successful, drawing (b) meaningful, projecting
 (c) reliable, evolving (d) strong, following
 (e) challenging, lamenting

138. The human mind is never; it advances or it
 (a) absolute, diminishes (b) dynamic, stops
 (c) perfect, disintegrates (d) stationary, retrogrades
 (e) happy, decomposes
139. If misery is the effect of ill fortune, it ought to be pitied, if of to be
 (a) virtue, criticised (b) calamity, revered
 (c) virtue, protected (d) vice, revered
 (e) virtue, revered
140. It would be impossible for us to continue living in this world if each of us exactly what fate had in for him.
 (a) follow, plan (b) appreciate, strategy
 (c) design, anticipation (d) visualize, hidden
 (e) knew, store
141. It is the of selfishness for men, who fully in their own case the great advantages of good education, to deny these advantages to women.
 (a) parody, demand (b) height, appreciate
 (c) height, assimilate (d) degree, appreciate
 (e) level, advance
142. The learner should be to take a small first step one that will provide immediate success and the learning.
 (a) encouraged, reinforce (b) forced, organise
 (c) directed, reorganise (d) cautioned, reinforce
 (e) encouraged, acknowledge
143. His death more tributes than have been paid at the of any other human being in history.
 (a) brought, passing (b) directed, helm
 (c) delivered, description (d) invited, living
 (e) acknowledged, perpetuation
144. Only with executive can the organisation concentrate its energies on competitive advantage over time.
 (a) position, embarking (b) deployment, directing
 (c) contingent, fabricating (d) commitment, sustaining
 (e) satisfaction, moulding
145. All the performances of human art, at which we look with praise or wonder, are of the restless of perseverance.
 (a) manifestations, pronouncement
 (b) projections, component
 (c) instances, force
 (d) proofs, humanity
 (e) visions, future
146. He found the jewellery box empty. All the ornaments, jewels, etc, were
 (a) protected (b) seized
 (c) sold (d) melted
 (e) stolen
147. Ill health cannot dampen his spirits. He was found quite at the ceremony.
 (a) spiritual (b) effervescent
 (c) subdued (d) uncomfortable
 (e) nervous
148. There is a growing indifference among the villagers. of them bothered to extinguish the fire which broke out in the hutments.
 (a) Most (b) Many
 (c) Few (d) None
 (e) Everyone
149. We spared no efforts to win, but the opposite side did better. The result was obviously us.
 (a) in favour of (b) rejoicing
 (c) against (d) grudging
 (e) introspecting
150. The musician had a sore throat. Despite that, performance at the concert was
 (a) outstanding (b) sub-standard
 (c) undesirable (d) excellence
 (e) happy
- Directions (Qs. 151 -191):** In each of the following questions four words are given of which two words are most nearly the same or opposite in meaning. Find the two words which are most nearly the same or opposite in meaning.
151. (A) Prolivity (B) Brevity
 (C) Agreement (D) Proposition
 (a) A - B (b) B - C
 (c) C - D (d) A - C
 (e) A - D
152. (A) Suffuse (B) Deplete
 (C) Fight (D) Delay
 (a) B - C (b) C - D
 (c) A - C (d) A - D
 (e) A - B
153. (A) Forensic (B) Delectable
 (C) Leaflike (D) Charming
 (a) A - C (b) B - D
 (c) A - D (d) A - C
 (e) A - B
154. (A) Benevolent (B) Alarming
 (C) Charitable (D) Stupendous
 (a) A - B (b) B - C
 (c) C - D (d) A - C
 (e) B - D
155. (A) Convenient (B) Intolerant
 (C) Enduring (D) Protestant
 (a) A - B (b) A - C
 (c) B - C (d) B - D
 (e) C - D
156. (A) Eject (B) Spread
 (C) Mark (D) Spout
 (a) B - D (b) A - C
 (c) B - C (d) A - B
 (e) A - D
157. (A) Push (B) Thrive
 (C) Flourish (D) Arrange
 (a) A - C (b) A - D
 (c) C - D (d) B - C
 (e) B - D
158. (A) Refuse (B) Discourage
 (C) Lurk (D) Hide
 (a) A - C (b) C - D
 (c) B - D (d) B - C
 (e) B - D

159. (A) Delirious (B) Confluent
(C) Curt (D) Gracious
(a) A - B (b) B - C
(c) C - D (d) B - D
(e) A - D
160. (A) Punishment (B) Divergence
(C) Confluence (D) Confidence
(a) B - C (B) B - D
(c) C - D (d) A - B
(e) A - C
161. (A) Audacious (B) Venturous
(C) Abstruse (D) Silent
(a) A - C (b) B - C
(c) C - D (d) A - B
(e) B - D
162. (A) Encomium (B) Extol
(C) Eulogise (D) Euphemise
(a) A - B (b) B - C
(c) B - D (d) A - D
(e) C - D
163. (A) Recluse (B) Pandemic
(C) Transparent (D) Opaque
(a) A - B (b) C - D
(c) A - C (d) A - D
(e) B - D
164. (A) Diminutive (B) Intelligent
(C) Large (D) Prolific
(a) B - D (b) C - D
(c) A - C (d) A - B
(e) C - D
165. (A) Enormous (B) Malign
(C) Absorb (D) Slander
(a) A - C (b) B - C
(c) C - D (d) B - D
(e) A - D
166. (A) Withstand (B) Climate
(C) Hot (D) Surrender
(a) A - B (b) B - C
(c) A - D (d) B - D
(e) C - D
167. (A) Perky (B) Lively
(C) Honest (D) Kind
(a) A - B (b) B - C
(c) C - D (d) B - D
(e) A - C
168. (A) Reverie (B) Stirring
(C) Serene (D) Fascination
(a) A - D (b) B - D
(c) C - D (d) A - B
(e) B - C
169. (A) Pandemonium (B) Scramble
(C) Wiggle (D) Order
(a) A - B (b) B - C
(c) C - D (d) A - D
(e) A - C
170. (A) Stimulate (B) Comprehend
(C) Facilitate (D) Understand
(a) A - B (b) B - C
(c) A - C (d) B - D
(e) C - D
171. (A) Dense (B) Graze
(C) Pristine (D) Fresh
(a) B - C (b) C - D
(c) B - A (d) A - C
(e) B - D
172. (A) Enthralling (B) Respecting
(C) Projecting (D) Alluring
(a) A - B (b) B - C
(c) C - D (d) A - D
(e) B - D
173. (A) Swoop (B) Perturb
(C) Plunge (D) Boil
(a) A - D (b) B - C
(c) A - C (d) B - D
(e) C - D
174. (A) Concise (B) Elegant
(C) Indifferent (D) Indecorous
(a) B - C (b) A - C
(c) A - B (d) C - D
(e) B - D
175. (A) Acquit (B) Defend
(C) Forbid (D) Condemn
(a) B - C (b) A - C
(c) C - D (d) B - D
(e) A - D
176. (A) Fallacy (B) Adage
(C) Dictum (D) Endorse
(a) B - D (b) C - D
(c) B - C (d) A - D
(e) A - B
177. (A) Elevate (B) Frugal
(C) Exult (D) Lament
(a) C - D (b) A - B
(c) B - C (d) B - D
(e) A - D
178. (A) Surreptitious (B) Taciturn
(C) Exaggerate (D) Covert
(a) A - D (b) A - B
(c) A - C (d) B - D
(e) C - D
179. (A) Handy (B) Sparse
(C) Redundant (D) Exhausted
(a) A - C (b) B - C
(c) B - D (d) C - D
(e) A - B
180. (A) Timid (B) Conceited
(C) Humane (D) Modest
(a) A - C (b) B - D
(c) B - C (d) A - D
(e) C - D
181. (A) Conversion (B) Desistance
(C) Substitution (D) Cessation
(a) A - B (b) C - D
(c) A - D (d) B - D
(e) A - C
182. (A) Concentration (B) Dissociation
(C) Distraction (D) Deliberation
(a) A - D (b) B - C
(c) A - C (d) C - D
(e) D - B

183. (A) Exaggeration (B) Reiteration
(C) Imagination (D) Repetition
(a) A - D (b) B - D
(c) C - D (d) B - C
(e) A - B
184. (A) Implies (B) Leads
(C) Confirms (D) Connotes
(a) C - B (b) A - D
(c) B - A (d) D - C
(e) D - B
185. (A) Surfaced (B) Nurtured
(C) Created (D) Developed
(a) B - A (b) B - C
(c) C - A (d) C - D
(e) B - D
186. (A) Expanded (B) Proclaimed
(C) Shrunk (D) Facilitated
(a) A - D (b) B - D
(c) C - D (d) B - C
(e) A - C
187. (A) Indelible (B) Erasable
(C) Insignificant (D) Temporary
(a) A - C (b) C - B
(c) A - B (d) B - D
(e) C - D
188. (A) Intangible (B) Restless
(C) Vast (D) Meagre
(a) C - A (b) C - D
(c) C - B (d) B - A
(e) B - D
189. (A) Cutting (B) Establishing
(C) Transferring (D) Pruning
(a) A - B (b) C - D
(c) B - C (d) A - C
(e) A - D
190. (A) Fixed (B) Stiff
(C) Indelible (D) Soapy
(a) A - B (b) A - D
(c) A - C (d) B - C
(e) C - D
191. (A) Interminable (B) Long
(C) Endless (D) Interfering
(a) A - C (b) B - C
(c) C - D (d) A - B
(e) B - D
- Directions (Qs. 192-206):** In each of the following questions an idiomatic expression and its four possible meanings are given. Find out the correct meaning of the idiomatic expression and mark the letter of that meaning as your answer on the answer sheet.
192. To cry wolf
(a) To come to what is most important
(b) To give false alarm
(c) To turn pale
(d) To be astonished
(e) To run away
193. To eat humble pie
(a) To go to ruins
(b) To be earnest
(c) To spread rapidly
(d) To refuse after consenting
(e) To apologise
194. To take to one's heels
(a) To act against one's own interest
(b) To assault
(c) To run away
(d) To have concern
(e) To ruin one-self
195. To be hard up
(a) To look depressed (b) To keep starvation away
(c) To act excitedly (d) To be short of money
(e) To behave like a fool
196. A wild goose chase
(a) An absurdly hopeless enterprise
(b) A fuss over a trifling matter
(c) To be insensitive to criticism
(d) To speak boastfully of one-self
(e) To protect one-self from wild animals
197. To catch a Tartar
(a) To catch a dangerous person
(b) To deal with a person who is more than one's match
(c) To trap a wanted criminal with greater difficulty
(d) To live carefully and cautiously
(e) None of these
198. In the blues
(a) Having many blue things
(b) Being colourful
(c) Behave like a lord
(d) Melancholy and low-spirited
(e) None of these
199. To show the white feather
(a) To try to be beautiful
(b) To perform a good deed
(c) To show courage before the enemy
(d) To be calm and quiet
(e) None of these
200. To play fast and loose
(a) To be narrow-minded
(b) To play a good game
(c) To act in an unreliable way
(d) To defeat a person
(e) None of these
201. Wear one's heart on one's sleeve
(a) To show one's feelings
(b) To be most intimate
(c) To love passionately
(d) To do the right thing
(e) None of these
202. The green-eyed monster —
(a) The creature of the sea
(b) An animal with green eyes
(c) Personal jealousy
(d) To get into trouble
(e) None of these
203. To burn one's fingers —
(a) To have a burning sensation at the tips of one's fingers
(b) To undergo suffering heroically for one's principles
(c) To behave as if one is very great and important
(d) To be lucky
(e) None of these

204. To end in smoke—
 (a) To die of cancer caused by smoking
 (b) To end without providing any practical result
 (c) Die in a burning house choked with smoke
 (d) To risk everything in a single venture
 (e) None of these
205. To catch a tartar—
 (a) To deal with a person who is more than one's match
 (b) To catch a dangerous person
 (c) To trap a wanted criminal with great difficulty
 (d) To meet with disaster
 (e) None of these
206. A wet blanket—
 (a) A man who is always drunk
 (b) A wife who is cold to her husband
 (c) To wear black and white clothes
 (d) A person who ends enjoyable activity
 (e) None of these

Directions (Qs. 207-211): In each sentence below four words lettered as (a), (b), (c) and (d) have been printed, one of which may be either inappropriate in the context or wrongly spelt. The letter of that word is the answer. If all the four words are correctly spelt and are appropriate in the context, mark (e), i.e. 'All correct', as the answer.

207. Kindly **note**
 (a) / our **address** (b) / and use it **in**
 (c) / all **farther** (d) / communication
 (e) All correct
208. We are
 (a) / **already** (b) / to **fight**
 (c) / the **battle**; (d) / let the **enemy** come
 (e) All correct
209. Many people in India **cherish**
 (a) / a desire to **immigrate**
 (b) / to **developed**
 (c) / countries to **make**
 (d) / a fortune
 (e) All correct
210. He took great **pains**
 (a) / to **save**
 (b) / many **dyeing**
 (c) / folk arts and helped the artists to live **an honourable**
 (d) / life.
 (e) All correct
211. Arun did his MBA from a **prestigious**
 (a) / **institute**
 (b) / by **securing**
 (c) / first class in this **calendar**
 (d) / year.
 (e) All correct

Directions (Qs. 212-216): In each question below, there are two or three sentences. Those are to be synthesised into one sentence. Such synthesised sentences are denoted by (A), (B) & (C). You have to find out which one or more of these three are most similar in meaning of the original two or three sentences.

212. Petroleum industry is going to face certain challenges. These challenges would be imminent in the next two decades. For success, it must predict these challenges now.

- A In the next two decades, petroleum industry must face the challenges which it has now predicted.
 B If petroleum industry determines to succeed in facing the challenges which are likely to be posed in the next two decades, it must be able to predict them now.
 C If petroleum industry wants to predict the challenges it is likely to face in the next two decades, it must successfully face them.
- (a) Only A or B (b) Only B or C
 (c) Only A or C (d) Only A
 (e) Only B
213. Two men can now do this job. Previously it required sixteen men.
 A Two men can now do a job formerly requiring sixteen.
 B Two men, instead of the previously sixteen, can now do this job.
 C In place of two men who can do this job now, there is a requirement of sixteen men in the past.
- (a) Only A (b) Only B
 (c) Only C (d) Only A or C
 (e) Only B or C
214. They were curious. They asked us a question. They wanted to know why we had left the comfortable hotel and gone to the desert.
 A Out of curiosity they inquired why we had gone to the desert leaving the comfortable hotel.
 B They asked us why we were curious to leave the comfortable hotel and go to the desert.
 C They were curious to know the reason for our leaving the comfortable hotel and going to the desert.
- (a) Only A or B (b) Only B or C
 (c) Only A or C (d) All the three
 (e) None of these
215. They could play exceedingly well. They were defeated in the last round. The captain motivated them to overcome the defeat.
 A The captain's motivation helped them to overcome the earlier defeat and play exceedingly well.
 B Despite earlier defeat they played exceedingly well due to the captain's efforts to motivate them.
 C Despite the captain's motivation, they were defeated earlier but could play exceedingly well now.
- (a) Only A (b) Only B
 (c) Only C (d) Only A or B
 (e) None of these
216. His marriage is at a far-off place. I do not want to undertake such a long journey to attend it. In fact, there is no earthly reason to justify such a long journey.
 A There is no reason to justify such a distant place for his marriage as it would take me a long time to reach it.
 B There is no earthly reason for me to undertake a long journey to attend his marriage.
 C Because his marriage is at a far-off place, I would not be able to undertake such a long journey as it is not justifiable.
- (a) Only A or B (b) Only B or C
 (c) Only A or C (d) Only C
 (e) Only B

ANSWER KEY

1	(e)	23	(b)	45	(a)	67	(c)	89	(d)	111	(d)	133	(c)	155	(c)	177	(a)	199	(e)
2	(d)	24	(a)	46	(d)	68	(d)	90	(c)	112	(e)	134	(e)	156	(e)	178	(a)	200	(c)
3	(a)	25	(c)	47	(b)	69	(c)	91	(a)	113	(d)	135	(b)	157	(d)	179	(b)	201	(a)
4	(c)	26	(e)	48	(e)	70	(b)	92	(c)	114	(c)	136	(d)	158	(b)	180	(b)	202	(c)
5	(b)	27	(a)	49	(a)	71	(e)	93	(b)	115	(a)	137	(a)	159	(c)	181	(d)	203	(e)
6	(d)	28	(a)	50	(c)	72	(c)	94	(a)	116	(b)	138	(d)	160	(a)	182	(c)	204	(b)
7	(b)	29	(b)	51	(d)	73	(c)	95	(c)	117	(e)	139	(e)	161	(d)	183	(b)	205	(a)
8	(a)	30	(a)	52	(a)	74	(a)	96	(d)	118	(a)	140	(e)	162	(b)	184	(b)	206	(d)
9	(e)	31	(c)	53	(d)	75	(b)	97	(e)	119	(b)	141	(b)	163	(b)	185	(e)	207	(c)
10	(c)	32	(d)	54	(c)	76	(d)	98	(e)	120	(d)	142	(a)	164	(c)	186	(e)	208	(a)
11	(d)	33	(d)	55	(e)	77	(d)	99	(a)	121	(e)	143	(a)	165	(d)	187	(c)	209	(e)
12	(b)	34	(b)	56	(b)	78	(b)	100	(b)	122	(d)	144	(d)	166	(c)	188	(b)	210	(b)
13	(a)	35	(c)	57	(e)	79	(a)	101	(d)	123	(b)	145	(c)	167	(a)	189	(e)	211	(e)
14	(e)	36	(a)	58	(a)	80	(a)	102	(d)	124	(c)	146	(e)	168	(e)	190	(a)	212	(e)
15	(b)	37	(e)	59	(c)	81	(c)	103	(e)	125	(a)	147	(b)	169	(d)	191	(a)	213	(a)
16	(c)	38	(b)	60	(d)	82	(e)	104	(b)	126	(b)	148	(c)	170	(d)	192	(b)	214	(c)
17	(a)	39	(c)	61	(a)	83	(b)	105	(d)	127	(e)	149	(c)	171	(b)	193	(e)	215	(d)
18	(d)	40	(d)	62	(b)	84	(b)	106	(b)	128	(a)	150	(a)	172	(d)	194	(c)	216	(b)
19	(e)	41	(e)	63	(d)	85	(a)	107	(a)	129	(d)	151	(a)	173	(c)	195	(d)		
20	(b)	42	(b)	64	(e)	86	(c)	108	(c)	130	(b)	152	(e)	174	(e)	196	(a)		
21	(c)	43	(e)	65	(e)	87	(e)	109	(b)	131	(e)	153	(b)	175	(d)	197	(b)		
22	(c)	44	(c)	66	(e)	88	(e)	110	(c)	132	(c)	154	(d)	176	(c)	198	(d)		

Hints & Explanations

182. (c) opposite
 183. (b) same
 184. (b) Same
 185. (e) same
 186. (e) opposite
 187. (c) opposite
 188. (b) opposite
 189. (e) same
 190. (a) same
 191. (a) same
 192. (b) He has often worried the villagers by crying wolf even in trivial matters.
 193. (e) He first made tall claims, but had to eat humble pie when results started coming in.
 194. (c) As the thief saw the police he took to his heels.
 195. (d) As the coastal area of Orissa has been severely hit by poverty, the people there are hard up.
 196. (a) Trying to catch him riding on bike by chasing on foot is a wild goose chase.
 203. (e) burn one's fingers means to have a bad result from something, esp. to lose money. He burned his fingers on those stocks.
 207. (c) It should be further in place of farther.
 208. (a) It should be all ready in place of already.
 209. (e) When a person emigrates, he leaves one country to live in another; when he immigrates he arrives in that other country. Immigrate is usually followed by to, and emigrate is usually followed by from.
 210. (b) It should be dyeing in place of dyeing.



Grammar

We can communicate well verbally but when it comes to answering grammar-based questions, we commit mistakes. Grammar is not a set of rules but in reality a mere description of the language used by all of us. Grammar forms an important part in the English section of any competitive examination. The typical kind of questions can be categorized as follows: (a) Fill in the blanks (b) Identifying errors in sentences and (c) Correcting the sentences. The questions can be handled easily and you can score well if your basics are clear.

HOW THIS CHAPTER WILL HELP YOU

This chapter will help you to understand how language and components of language work. It is oriented towards making you more confident user of English by giving you an insight into correct usage. The material provided is user-friendly with adequate examples and 'practice exercises'.

If you make a concentrated effort, it will not only prepare you for the forthcoming competitive exams but also fine-tune your communication skills.

READING: To supplement your efforts, you should build up reading habits. This can be of any kind - magazines, newspapers or novels. But, one should consciously look at the usage. Good reading habits will definitely build up your understanding of grammatical usage and help you in being successful in competitive exams.

NOUNS

A Noun is a word used as a name of a person, place or thing.

There are five kinds of Noun –

- | | |
|---------------------|-------------------|
| (a) Proper Noun | (b) Common Noun |
| (c) Collective Noun | (d) Abstract Noun |
| (e) Material Noun. | |

FOLLOWING ARE CERTAIN RULES OF GRAMMAR REGARDING NOUNS THAT WOULD BE USEFUL IN A COMPETITIVE EXAM:

- Proper nouns are sometimes used as common nouns.

For example :

- Amitabh is **Gandhiji** of our class. (Incorrect)
- Amitabh is the **Gandhiji** of our class, (Correct)

Here Gandhiji does not mean Mahatma Gandhi. The word here stands for the possessor of the qualities that Gandhiji is most known for - truth and non-violence. Thus Gandhiji is being used as a metaphorical common noun.

FOLLOWING ARE RULES REGARDING THE NUMBER OF THE NOUN :

- Some nouns have the same form both in singular as well as in plural.

For example :

- A deer **was** caught.
- Deer **were** caught.

Here, the singular and plural form of the noun Deer is the same. Like Deer there are other nouns that have the same form **in singular as well as plural form**. *For example:* sheep, apparatus, species, series, hundred, dozen, hair etc. Preceding adjectives and articles decide whether the word is used in the singular form or plural form.

For example :

- He paid eight **hundred** rupees for this pair of shoes.
- India again won the **series**.

- Nouns denoting large numbers are used both in singular and plural form

For example :

- Three **hundred** people attended the function.
- Hundreds** of people attended the party.

In sentence (a), 'hundred' is preceded by number 'three'. So 'hundred' will take no plural form. Word 'three hundred' indicates plurality. But in sentence (b), 'hundred' is not preceded by any number. So to indicate plurality, we will write 'hundreds'. **So, rule is that when words like hundred, dozen, thousand, pair, score are not preceded by any word denoting number then they take the plural form, otherwise not.**

Consider some more *examples :*

- Coca-Cola paid **lakhs** of rupees to Aamir Khan for promoting their product.
- I brought two **dozen** bananas.

- Tell which sentence is correct:

- Since long no news **has** been heard.
- Since long no news **have** been heard.

Sentence a is correct. The reason is that **some nouns are always used as singular though they look like plural nouns**.

That's why we should never use the plural verb with these words. Other similar words are politics, mathematics, physics, gallows, means, billiards, ethics, summons, innings.

For example :

- Politics** is not my cup of tea.
- I received **summons**.
- Sachin once again played a superb **innings**

5. Tell which sentence is correct:
 (a) The spectacles that you are wearing **are** really nice.
 (b) The spectacles that you are wearing **is** really nice.
 Sentence a) is correct. The reason being that **some noun words are always used in the plural form.**

For example : trousers, arms, drawers, assets, scales, alms, thanks, cards; ashes, riches, premises, scissors, credentials, proceeds.

6. Tell which sentence is correct:
 (a) The cattle **was** grazing in the field.
 (b) The cattle **were** grazing in the field.
 Sentence (b) is correct. The reason being that **some nouns are always used as plurals though they look like singular.** Other nouns like this are public, people, folk, mankind, poultry, sheep, police, gentry, peasantry, bulk, majority, etc.

For example :

- (a) The majority **are** with the leader.
 (b) Police, though late, **have** come.
 (c) Public wants results.
7. Tell which sentence is correct.
 (a) This project will lead to lots of **expenditures**
 (b) This project will lead to lots of **expenditure.**
 Sentence (b) is correct. The reason is that **some nouns are always used as singular. Preceding adjectives or the verb form indicates the singularity or plurality.** Other nouns are expenditure, furniture, information, machinery, issue, offspring, alphabet, scenery, poetry.

For example :

- (a) All the **furniture** was bought last year.
 (b) All the **Information** was given to him.
8. Meaning of some nouns in plural form is very **different** from the meaning of nouns in singular form. Hence, that form should be used which will convey the right meaning.

For example :

- (a) I opened the letter and read its **contents.**
 (b) Her mouth was fixed in a smile of pure **content.**
 (c) The conflict between **good** and evil is age-old.
 (d) We must produce **goods** at competitive prices.
 (e) Delhiites breathe the most polluted **air** in the world.
 (f) She was just putting on **airs** when she came to visit me.
 (g) We should renounce the use of **force** to settle our dispute.
 (h) Families of people who died as a result of services in the **forces** should not be ignored.
 (i) I was very excited on my **return** to my home village.
 (j) Early **returns** in the ballot indicate majority for opposition.

Other nouns having different meanings in the singular and plural form are:

Singular with meaning	Plural with meaning
Advice - counsel	Advises - information
Respect - regard	Respects - compliments
Compass - extent or range	Compasses - instrument

Custom - habit	Customs - duties levied on
Ground - Earth	Grounds - reasons
Iron - metal	Irons - fetters made of iron
Mean - average	Means - way or method
Respect - regard	Respects - polite greetings

Colour - hue	Colours - appearance
Physic - medicine	Physics - natural science

9. Please go through the following singulars and plurals as plural forms are commonly known but their **singular forms are not commonly known.**

Singular Form	Plural form
Agendum	Agenda
Alumnus	Alumni
Index	Indices
Phenomenon	Phenomena
Criterion	Criteria
Radius	Radii
Formula	Formulae
Memorandum	Memoranda

10. Some noun words have **two plurals with different meanings.** So, that plural form should be selected which will convey the right meaning.

For example :

- (a) I have one **brother** and one sister (meaning- children of the same parents).
 (b) Why should only select **brethren** be allowed to attend the meeting? (meaning - members of the same society, organisation)
 (c) I took off my shoes and **clothes** (meaning- things that people wear).
 (d) Cotton, Nylon, Silk are different kinds of **cloths** (meaning- kinds or pieces of cloth).

Other nouns having two plurals with different meanings are:

Singular	Plural with different meaning
Die	Dies - stamps Dice - small cubes used in games
Genius	Geniuses - persons of great talent Genie - spirit
Quarter	Quarter - fourth part Quarter(s) - lodging
Manner	Manner - Method Manners - Correct behaviour
Pain	Pain - Suffering Pains - Careful efforts
Spectacle	Spectacle - sight Spectacles - eye-glasses
Penny	Pence - indicate amount of money Pennies - number of coins

FOLLOWING ARE RULES REGARDING GENDER OF THE NOUN:

11. Collective nouns, even when they denote living beings, are considered to be of the **neuter gender.**

For example :

- (a) Mr. Smith had a herd of cows. He kept a herdsman to look after **her.**

- (b) Mr. Smith had a herd of cows. He kept a herdsman to look after **it**.

Sentence b) is correct. Though herd consists of cows (females), herd is not a feminine noun as it a collective noun.

12. Young children and the lower animals are also referred to as of the **neuter gender**.

For example :

- (a) The baby loves **his** toys. (Incorrect)
 (b) The baby loves **its** toys. (correct)
 (c) The mouse lost **his** tail when the cat pounced on him. (Incorrect)
 (d) The mouse lost its tail when the cat pounced on it. (correct)

We are often uncertain regarding the gender of the animals. The mouse here may be a male or a female. So, English language prefers the easy way out: treat it as of the neuter gender.

13. When objects without life are personified they are considered of

- (i) The masculine gender if the object is remarkable for strength and violence. Ex. Sun, Summer, Winter, Time, Death etc.
 (ii) The feminine gender if the object is remarkable for beauty, gentleness and gracefulness. Ex: Earth, Moon, Spring, Nature, Mercy etc.

For example:

- (a) The Sun came from behind the clouds and with **her** brilliance tore the veil of darkness. (Incorrect)
 (b) The Sun came from behind the clouds and with **his** brilliance tore the veil of darkness. (Correct)

Convention does not see brilliance as a womanly quality, but a manly one.

- (a) Nature offers **his** lap to him that **seeks** it. (Incorrect)
 (b) Nature offers **her** lap to him that **seeks** it. (Correct)

The offering of a lap is usually the mother's role. Hence, Nature here should be treated as a feminine noun.

Tell which sentence is correct.

- (a) The earth goes round the sun in 365 days. Can you **calculate her speed**?
 (b) The earth goes round the sun in 365 days. Can you **calculate its speed**?

Sentence b) is correct. The error being made here is that personification is being brought where it does not exist. In the above statement the earth is being treated as a body (a thing), not a person. The scientist here is not concerned with the womanly qualities of the planet. So, neuter gender should be applied.

FOLLOWING ARE RULES REGARDING APOSTROPHE :

14. Rules regarding apostrophe S ('s):

- (a) Singular noun: 's is added after the word.

- (b) Singular noun: Only an apostrophe is added when there are too many hissing sounds. *For example:* Moses' laws, for goodness' sake, For justice' sake.

- (c) Plural nouns ending in s like boys, cows: only (') is added after the word

- (d) Plural nouns not ending in s like men, children: ('s) is added after the word.

- (e) 'S is added primarily after the living things and personified objects. *For example:* Governor's bodyguard, horse's head, Nature's law, Fortune's favourite.

- (f) 'S is not used with inanimate or non-living things. *For example:* leg of the table, cover of the book.

- (g) But in nouns that denote time, distance or weight, ('s) is used. *For example:* a stone's throw, in a year's time, the earth's surface.

- (h) Some other common phrases where ('s) is used are to his heart's content, at his wit's end, out of harm's way.

- (i) When a noun consists of several words, the possessive sign is attached only to the last word.

For example:

- (a) The Queen's **of England** reaction is important in the Diana episode. (Incorrect)

- (b) The Queen **of England's** reaction is important in the Diana episode. (Correct)

Do not be mistaken that since it is the Queen's reaction, the ('s) should come after queen. You might think that putting it after England would make the reaction England's and not the Queen's. This is short-sightedness. Do not see Queen and England in isolation, Queen of England is one whole unit and the apostrophe should come at its end.

- (j) When two nouns are in apposition, the possessive sign is put to the latter only.

For example :

- (a) I am going to Stephen **Hawking's the scientist's country**. (Incorrect)

- (b) I am going to Stephen **Hawking the scientist's country**. (Correct)

- (k) When two or more nouns show joint possession, the possessive sign is put to the latter only.

For example:

- (a) Amitabh and Ajitabh are Bachchanji's sons. So Bachchanji **is Amitabh's and Ajitabh's father**. (Incorrect)

- (b) Amitabh and Ajitabh are Bachchanji's sons. So Bachchanji **is Amitabh and Ajitabh's father**. (Correct)

- (l) When two or more nouns show separate possession, the possessive sign is put with both.

For example.

- (a) The audience listened to Javed and Vajpayee's poems. (Incorrect)

- (b) The audience listened to Javed's and Vajpayee's poems. (Correct)

PRONOUNS

A pronoun is a word used instead of a noun.

Now consider the following cases :

1. Since a pronoun is used **instead of a Noun**, it must be of the same number, gender and person as the noun for which it stands. *For example*: Those **beggers** are idle. **They** refuse to work for their living.
2. Consider the following two sentences.
 - (a) After a few hearings the jury gave its verdict. (Pronoun 'its' is used in place of noun 'jury').
 - (b) The **jury** were divided in **their** opinions. (Pronoun 'their' is used in place of noun 'jury')

You must be wondering why different pronoun 'its' and 'their' is used in place of the same noun 'jury' The reason is when a pronoun stands for a **collective noun** it must be in the singular number and neutral gender. (Sentence a). But when collective noun conveys the idea of separate individuals comprising the whole, the pronoun standing for it must be of the plural number. In sentence b, it is clear that members of the jury are not behaving as whole.

For example :

 - (a) The **committee** is reconsidering its decision.
 - (b) The **committee** decided the matter without leaving their seats.

PRONOUNS IN SENTENCES FOUND BY CONJUNCTION :

3. When two or more singular nouns are joined by '**and**', the pronoun used for them must be **plural**.
For example : Rama and Hari work hard. **Their** teachers praise **them**.
But when two Singular nouns joined by '**and**' refer to the same person or thing, the pronoun should be singular.
For example : The Secretary and Treasurer is negligent of **his** duty.
Here the same person is acting as Secretary and Treasurer. That's why singular pronoun is used.
4. When two singular nouns joined by '**and**' are preceded by 'each' or 'every', then the pronoun must be singular
For example : Every soldier and every sailor was in **his** place.
5. When two or more singular nouns are joined by '**or**', '**either...or**', '**neither...nor**', the pronoun is generally singular.
For example :
 - (a) Neither Abdul nor Rehman has done his lessons.
 - (b) Either Rama or Hari must help **his** friend.
6. When a plural and a singular noun are joined by '**or**' or '**nor**', the pronoun must be in the plural
For example : Either the manager or his assistants failed in **their** duty.
7. When two things which have been **already mentioned** are referred to, 'this' refers to the thing last mentioned and 'that' to the thing first mentioned.
For example : Alcohol and Tobacco are both injurious: **this** perhaps less than **that**.

RULES REGARDING PERSONAL PRONOUNS :

8. Tell which sentence is correct-
 - (a) The presents are for you and **me**.
 - (b) The presents are for you and **I**.

Sentence a is correct. Pronoun has to agree with the case. Here it is the **objective case**. So, 'me' should be used instead of 'I'. *For example* : My uncle asked my brother and me to dinner.
9. Tell which sentence is correct
 - (a) He loves you more than **I**.
 - (b) He loves you more than **me**.

Sentence a is correct 'Than' is a conjunction joining clauses. And the case of the pronoun to be used may be found by writing the clauses in full. So, in sentence a.) two clauses joined by 'than' are 'He loves you more' and 'I love you'. Being a subjective case, 'I' should be used.
For example :

 - (a) He is taller than **I** (am).
 - (b) He loves you more than (he loves) **me**.
10. When a pronoun refers to more than one noun or pronouns of different persons, it must be of the first person plural in preference to the second and of the second person plural in preference to the third.
For example :
 - (a) You and I, husband and wife, have to look after **your** home. (Incorrect)
 - (b) You and I, husband and wife, have to look after **our** home. (Correct)

Now, common sense tells us that if we are a couple, wife and husband, the feeling of togetherness is expressed by our home, not your home. And so does grammar.

Rule: 123. I stands for first person, 2 for second person and 3 for third person. The order of precedence is: 1 before 2 and 2 before 3. In the given example, we have 2 and 1. So I will apply; that is, first person. The number, of course, will be plural.

Let us take another *example*.

 - (a) You and Hari have done **their duty**. (Incorrect)
 - (b) You and Hari have done **your** duty. (Correct)

Applying 123 rule. You = 2 and Hari = 3. So, 2. Second person plural gives 'your'.

Similarly, when all the three persons are taken into account, it has to be I; that is, first person plural.

 - (a) You, he and I have not forgotten your roots. (Incorrect)
 - (b) You, he and I have not forgotten **our roots**. (Correct)
11. **Each, either and neither** are always singular and are followed by the verb in the singular.
For example :
 - (a) Neither of the accusations **is** true.
 - (b) Each boy took **his** turn.
 - (c) Each of the ladies performs **her** duty well.
12. (A) Please consider the following sentences.
 - (a) This is the boy. **He** works hard. (**He** subjective case)

- (b) This is the boy. **His** exercise is done well. (**His** is possessive case)
- (c) This is the boy. All praise **him**. (**Him** is objective case)
13. An apostrophe is never used in 'its', 'yours' and 'theirs'.
14. The complement of the verb **be**, when it is expressed by a pronoun, should be in the nominative form.
For example:
(a) It was **he** (not **him**),
(b) It is **I** (not **me**) that gave the prizes away.
(c) It might have been **he** (not **him**).
15. The case of a pronoun following **than** or **as** is determined by mentally supplying the verb.
For example :
(a) He is taller than **I (am)**.
(b) I like you better than **he (likes you)**.
(c) They gave him as much as (**they gave**) **me**.
16. A pronoun must agree with its Antecedent in **person, number and gender**.
For example:
(a) All passengers must show **their (not his)** tickets.
(b) I am not one of those who believe everything **they (not I)** hear

RULES REGARDING DEMONSTRATIVE PRONOUNS :

17. **That** is used-
- A. **After adjectives in the superlative degree.**
For example-
(a) This is the best **that** we can do.
(b) He is the best speaker **that** we ever heard.
- B. **After the words all, same, any, none, nothing, only.**
For example:
(a) Man is the only animal **that** can talk.
(b) He is the same man **that** he has been.
- C. **After two antecedents**, one denoting a person and the other denoting an animal or a thing.
For example : The man and his pet **that** met with an accident yesterday died today.
18. **What** and **That** refer to persons as well as things.

RULES REGARDING RELATIVE PRONOUNS :

19. On combining each of the above pairs into one sentence
(a) This is the boy **who** works hard (Who in place of He)
(b) This is the boy **whose** exercise is done well. (**whose** in place of His)
(c) This is the boy **whom** all praise. (**Whom** in place of Him)

The above sentences show when to use who, whose and whom. Who is the subjective case, Whose the possessive case and Whom the objective case.

20. **Who** is used for persons only. It may refer to a singular or plural noun.
For example :
(a) He **who** hesitates is lost.
(b) Blessed is he **who** has found his work.
21. **Whose** can be used for persons as well as things without life also.
For example :
(a) This is the hotel **whose** owner is a criminal.
(b) This is the person **whose** will power is extraordinary.

22. **Which** is used for inanimate things and animals. 'Which' is used for both singular and plural nouns.
For example :
(a) I have found the book **which** I had lost last week.
(b) The horse, **which** won the race yesterday, is my favourite.
23. When 'which' is used for selection, it may refer to a person as well as things.
For example :
(a) Which of the packets is yours?
(b) Which of the boys has not done his homework?
24. **Who, Which, Whom, That, Whose** should be placed as near to the antecedent as possible.
For example :
(a) I with my family reside in Delhi, which consists of my wife and parents.
This sentence is wrong as **which** relates to 'my' family'. So 'which' should be placed as near to family' as possible. So, the correct sentence is
(b) I with my family which, consists of my wife and parents, reside in Delhi.
25. **Who** is used In the **nominative** cases and **whom** in the **objective** cases.
For example :
(a) There is Mr. Dutt, **who** (not **whom**) they say is the best painter in the town.
(b) The Student, whom (not who) you thought so highly of, has failed to win the first prize.
26. When the **subject** of a verb is a **relative pronoun**, the verb should agree in number and person with the antecedent of the **relative**.
For example :
(a) This is **one** of the most interesting **novels that have** (not **has**) appeared this year. (Here, antecedent of **relative pronoun that** is **novels** and not **one**)
(b) This is the only **one** of his **poems that is** (not **are**) worth reading. (Here the antecedent of **that** is **one** and not **poems**. Kindly note the difference between sentence **a** and **b**)

OTHER USEFUL RULES :

27. **None** is used in the singular or plural as the sense may require.
For example:
(a) Each boy was accompanied by an adult but there were none, with the orphan (Incorrect)
(b) Each boy was accompanied by an adult but there **was** none with the orphan. (Correct)
(c) I am used to many guests everyday but there **was** none today. (Incorrect)
(d) I am used to many guests everyday but there **were** none today. (Correct)
28. When 'one' is used as **pronoun**, its possessive form 'one's' should follow instead of his, her etc.
For example : One must put **one's best** efforts if one wishes to succeed.
29. With **let** objective case of the pronoun is used.
For example : let **you** and **me** do it.

30. If a pronoun has two antecedents, it should agree with the **nearer one**.
For example :
 (a) I hold in high esteem everything and **everybody who** reminds me of my failures.
 (b) I hold in high esteem everybody and **everything, which** reminds me of my failures.
31. In referring to **anybody, everybody, anyone, each** etc., the pronoun of the masculine or the feminine gender is used according to the context.
For example.
 (a) I shall be glad to help **everyone** of my **boys** in **his** studies.
 (b) I shall be glad to help **everyone** of my **girls** in **her** studies.
- (c) I shall be glad to help everyone of my **students** in **his** studies.
 But when gender is not determined, the pronoun of the **masculine gender** is used as in sentence c.
32. (A) The pronoun **one** should be used throughout, if used at all.
For example:
 (a) **One** must use **one's** best efforts if one wishes to succeed.
 (b) **One** should be careful about what one says.
 (B) **Plural** is commonly used with **none**.
For example.
 (a) **None** of his poems are well known.
 (b) **None** of these words are now current.
33. **Anyone** should be used when **more than two** persons or things are spoken of.
For example : She was taller than **anyone** of her five sisters.

TENSES

1. Tense is the form taken by a verb to indicate time and **continuance** or **completeness** of action. The continuance or completeness of action is denoted by four subcategories.
(a) Simple Tense : It is used for habitual or routine actions in the Present Tense, action which is over in the Past Tense & action to happen in the Future Tense.
(b) Continuous Tense : The action is incomplete or continuous or going on.
(c) Perfect Tense : The action is complete, finished or perfect with respect to a certain point of time.
(d) Perfect Continuous Tense : The action is going on continuously over a long period of time and is yet to be finished.
2. The different tenses and the verb forms used in each tense are given below :
- | Singular with meaning | Plural with meaning |
|---------------------------------|-------------------------------------|
| Name of Tenses | Verb form used in Tenses |
| Present simple / indefinite | Verb / verb + s/es |
| Present continuous/Progressive | Is/am/are + verb + ing |
| Present perfect | Has / have + third form of verb |
| Present perfect continuous | Has/have + been + verb + ing |
| Past simple / indefinite | Second form of verb only |
| Past continuous / Progressive | Was/were + verb + ing |
| Past perfect | Had + third form of verb |
| Past perfect continuous | Had been + verb + ing |
| Future simple / indefinite | Shall / will + verb |
| Future continuous / Progressive | Shall / will + be + verb + ing |
| Future perfect | Shall/will + Have + past participle |
| Future perfect continuous | Shall/will + have been + verb + ing |
3. The **simple Present tense** is used
 A. To express a **habitual action**.
For example : I **get** up every day at five o'clock.
- B. To express **general truths**.
For example : Fortune **favours** the brave.
- C. In **vivid narrative**, as substitute for the simple past.
For example : Immediately the Sultan **hurries** to his capital.
- D. To indicate a **future event that is part of a fixed programme or time table**.
For example : The train **leaves** at 5:20 am.
Note: We can also use **will leave** in place of **leaves**.
- E. It is used to introduce **quotations**.
For example : Keats **says**, 'A thing of beauty is a joy forever'.
- F. In exclamatory sentences beginning with **here** and **there** to express what is actually taking place in the present.
For example : Here comes the bus!
- G. When two actions of the **future** are being talked about, one dependent on the other, the former action is represented by present simple and the latter by future simple.
For example : We shall go when the child comes back home.
4. **The present continuous tense** is used
 (I) For an action **going on at the time of speaking**.
For example : The boys are **playing** cricket in the ground.
 (II) For a temporary action that may not be actually happening at the time of speaking but was happening in the recent past and is still happening in recent future.
For example : I **am reading** Sidney Sheldon now a days.
 (III) To express **changing or developing situations**.
For example : India is **progressing** day by day.
 (IV) For an action that is planned or arranged to take place in the **near future**.
For example : I am **going** to cinema tonight.
Note: But it is not good to use the present continuous for slightly distant future. So, don't say

- (a) I am **going** to cinema next week.
Rather, use the future simple. So, it is better if you say
- (b) I **will go** to cinema next week.
- (V) When the reference is to a particularly obstinate habit, the present continuous is used instead of present simple. An adverb like always, continually, constantly is also used.
For example : It is no use scolding him; he always **does** what is forbidden. (Incorrect)
Note: that his doing what is forbidden has become a die-hard habit. The habit persists in spite of advice or warning. So, we should use the present continuous.
For example : It is no use scolding him; he **is always doing** what is forbidden. (Correct)
5. The **present perfect tense** is used
- (I) To indicate the completed activities in the **immediate past**.
For example : He has just gone out.
- (II) Action completed in the immediate past or an action of the past whose effect lingers in the present.
For example : **I wrote** three books. (Incorrect)
The given sentence appears to be incomplete. The reader of the sentence immediately queries. ‘When did you write three books?’ It would be a different case if you said
For example : **I wrote books**.
Then the reader would infer that you wrote books in the past as a profession or hobby. But when you are being so specific as to say “three books”, we immediately feel the need of a time frame. Since no time frame is mentioned, we assume it to be ‘by now’. So, we have something to the effect.
For example : I have **written** three books by now.
This ‘by now’ is implied and need not be written. So,
For example : I have **written** three books. (Correct)
- (III) The present perfect is never used with adverbs of the past time. In such cases the past simple should be used.
For example : India **has** won the match last week (Incorrect)
“Last week” is not immediate past. You may therefore be tempted to use the present perfect. But remember that the immediate past here does not go unindicated. Last week is being used as an adverb of past time. So,
For example : India **won** the match last week. (Correct)
- (IV) To express past actions whose time is not given and not definite - actions with their effect continuing in the present.
For example :
a) I **have** never **known** him to be angry.
b) **Have you read** ‘Gulliver’s Travels’?
- (V) To describe the past events when we think more of their effect in the present than of the action itself.
For example : I **have** cut my finger.
- (VI) For long actions and situations which started in the near past and went on until very recently.
For example : I **have read** three chapters since this morning.
6. The **present perfect continuous** tense is used for an action, which began at some time in the past and is still continuing. With the present perfect continuous tense an adverb or phrase that expresses time is used.
For example :
(a) I **have been reading** this book since morning.
(b) They **have been building** the bridge for several months.
7. The **simple past tense** is used
- (I) To indicate an action **completed in the past**. Generally, adverbs or adverb phrases of past time are used in the past simple tense.
For example :
(a) The steamer **sailed** yesterday.
(b) He **went** home some time back.
- (II) To express imaginary present situations or imaginary future events that may not happen.
For example :
(a) If I **had** longer holidays, I would be very happy.
(b) If I **got** rich, I would travel all over the world.
- (III) When this tense is used without an adverb of time, then time may be either implied or indicated by the context.
For example : I **didn’t** sleep well. (i.e., last night)
- (IV) For past habits ‘used to’ is added to the verb.
For example : She used to **carry** an umbrella.
8. The **past continuous** tense is used
- (I) To denote an action going on at some time in the past. The time of the action may or may not be indicated.
For example :
(a) It **was getting** darker.
(b) We **were listening** to the radio all evening.
- (II) When a new action happened in the middle of a longer action. In this case Past simple and Past continuous are used together. Past simple is used for the new action.
For example : The Light **went** out while I **was reading**.
- (III) For persistent habits in the past.
For example : She **was always chewing** gum.
9. The **past perfect tense** is used when **two actions happened in the past**. In this case it is necessary to show which action happened earlier than the other. Here **past perfect is used for the action, which happened earlier**.
For example :
(a) When I reached the station the train **had started**.
(b) **I had done** my exercise when Hari **came** to see me.
10. **Past perfect continuous tense** is used when an action that began before a certain point of time in the past & was continuing at the given point of time in the sentence. A time expression like **since last year, for the last few days** is generally put after perfect continuous tense.
For example : At that time he **had been writing** a novel for **two months**.
Here, **At that time** is the given point of time and **for two months** is the point of time in the past.
11. The **simple future** is used for an action that has **still to take place**.
For example :
(a) I **shall** see him tomorrow.
(b) Tomorrow **will** be Sunday.

12. The **future continuous** tense
- (I) Represents an action as going on at **some time in the future**.
For example : I **shall be reading** the paper then.
- (II) Represents the future events that are planned.
For example : He **will be meeting** us next week.
13. The **future perfect tense** is used to indicate the **completion of an event by a certain future time**.
For example : I **shall have written** my exercise by that time.
14. The **future perfect continuous tense** indicates an action represented as being in progress over a period of time that will end in the future. Generally time period is mentioned along with it.
For example : By next July we shall have been living here for four years.
15. Other rules to be followed : Events occurring at the same time must be given in the same tense.
For example : When he fainted his brother was with him.
16. Will or Shall cannot be used twice in the same sentence even if both the actions refer to the future tense.
For example :
- (a) I shall come if he will call me. (Wrong)
(b) I shall come if he calls me. (Right)
17. With the phrases as if and as though the past tense and plural form of the verb should be used.
For example :
- (a) He behaves as if he is a king. (Wrong)
(b) He behaves as if he were a king. (Right)
18. With the word 'wish' four verbs are used namely were, had, could, would. 'Were' is used when the wish seems to be unrealisable.
For example : I wish I were a king.
'Had' is used when our wish is a lament over the past happening. *For example* : I wish I had accepted that job.
'Would' is used when we refer to the future. *For example* : I wish I would get a ticket.
'Could' is used when we wish that something that has happened already should have happened otherwise.
For example : He did not go because he was busy yesterday. I wish he could go with you.
19. 'For' is used for a period of time. *For example* : He has been working for two hours.
'Since' is used with a point of time. *For example* : He has been working since morning.
20. In case of conditional sentences 'had' and 'would have' are used.
For example : If I had met him I would have invited him.

ARTICLES

1. **A** or **an** does not refer to a particular person or thing. It leaves indefinite the person or thing spoken of.
For example : I saw a doctor. (means I saw any doctor)
2. **An** is used before a word beginning with vowel sound (please note a word beginning with vowel sound and not necessarily a vowel itself).
For example : an ass, an enemy, an inkstand, an orange, an umbrella, an hour.
3. **An** is placed before an abbreviation if the first letter of an abbreviation is F, H, L, M, N, R, S or X.
For example :
- (a) An MBA was required for the post.
(b) An SAO is an officer of high rank
4. **A** is used before a word beginning with a consonant sound.
For example : a boy, a woman a horse, a one-rupee note, a university, a European (both university and European begin with a consonant sound of 'yu')
5. **A** and **an** are used with words 'few' and 'little' if they refer to a small number or a small amount. Words 'few' and 'little' without the articles means almost none.
For example :
- (a) We have little time to spare. (means almost no time)
(b) We have a little time to spare. (means some time)
(c) Few persons were present at the meeting. (means almost no one was present)
(d) A few persons were present at the meeting. (means some were present)
6. **A** is used in the following senses :
- A) In its original numerical sense of one.
For example :
- (a) Not a word was said.
(b) A word to the wise is sufficient.
- (B) In the vague sense of a **certain time**.
(C) In the sense of any, to single out an individual as the representative of a class.
For example : A pupil should obey his teacher.
(D) To make a common noun of a proper noun.
For example : A Daniel came to judgement. (A Daniel = A very wise man)
7. **The** points out a particular person or thing or someone or something already referred to.
For example :
- (a) I saw the doctor. (means I saw some particular doctor)
(b) The book you want is out of print.
8. **The** is used with names of gulfs, rivers, seas, oceans, groups of islands and mountain ranges.
For example :
- The Persian Gulf, The Red Sea, The Indian Ocean, The British Isles, The Alps.
9. **The** is used before the name of certain books.
For example : The Vedas, The Puranas, The Ramayana. But we never say 'The Valmiki's Ramayana'. The is not used when the name of a book is mentioned along with the author's name. So, 'Valmiki's Ramayana' is correct.
10. **The** is used before the names of things unique of their kind.
For example : the sun, the sky, the ocean, the sea.
11. **The** is used before a plural common noun if it refers to a particular group among the class and not the whole class.
For example : Drive away the cows from the field.
12. **The** is used before a proper noun only when it is qualified by an adjective.
For example : The great Rani of Jhansi, the immortal Kalidas.

13. **The** is used before superlatives.
For example :
(a) Sachin was the best batsman in the world.
(b) The best person should win.
14. **The** noun if emphasis is laid on the use of such a noun. Here, noun can be proper or abstract noun
(a) the time for doing it.
(b) occasion to help the distressed.
15. **The** is used with ordinals.
For example :
(a) He was the first student to finish his homework.
(b) The second chapter of the book is very interesting.
16. **The** is used before an adjective when the noun is understood.
For example :
(a) The poor are always with us. (Here poor means poor people which is understood.)
(b) The weak and the strong. (Here weak means weak people and strong means strong people.)
17. No article is used before a common noun when it refers to all the members of the class.
For example :
(a) Man is mortal.
(b) Fish has high protein content.
(c) What kind of flower is it?
18. **The** is used before a common noun to give it the meaning of an abstract noun.
For example : The devil in him begins its misdeeds now and then.
19. No article is used before the names of materials such as gold, stone, wine, iron, wheat, wood, cloth.
For example :
(a) Gold is a precious metal.
(b) Wheat grows in Uttar Pradesh, Haryana and Madhya Pradesh.
(c) Iron is a useful metal.
Note: But it is correct to say
For example : An iron is a useful gadget.
Because here we are not taking about material iron, but the object which is used to make clothes smooth.
20. No article is used before proper nouns.
For example :
(a) Delhi is the capital of India.
(b) Newton was a great philosopher.
But consider the following examples where an article is used before a proper noun.
(a) This man is a second Newton.
(b) Bombay is the Manchester of India.
Here Newton and Manchester are not used as proper nouns but as common nouns. The first sentence means that this man is as great as Newton and the second sentence means that Bombay is a great manufacturing city like Manchester.
21. No articles are used before a common noun used in its widest sense.
For example :
(a) The science has developed much in the past hundred years. (Incorrect)
(b) Science has developed much in the past hundred years. (Correct).
22. No article is used before the noun following 'Kind of':
For example :
(a) What kind of a hobby is this? (Incorrect)
(b) What kind of hobby is this? (Correct)
23. No article is used before abstract nouns.
For example :
(a) Wisdom is the gift of heaven.
(b) Honesty is the best policy.
But consider the following examples where an article is used before an abstract noun.
(a) The wisdom of Solomon is famous.
(b) I cannot forget the kindness with which he treated me.
Here the article is used before the abstract noun as the abstract noun has been qualified by an adjective or adjectival clause.
24. No article is used before languages, subject of arts and science.
For example :
(a) We are studying English.
(b) Geometry is the toughest subject I have ever studied.
25. No article is used before words such as school, college, church, bed, table, hospital, market, prison.
For example :
(a) I went to school till last year.
(b) I have never been to hospital.
But an article is used before these words when reference is made to a definite place.
26. No article is used before the name of relations like father, mother, aunt, uncle.
For example : Mother would like to see you.
But if someone else's mother is being talked about then **the** should be used.
For example : The mother would like to see you.
27. Article should not be used before positions that are held at one time by one person only.
For example :
(a) S D Sharma was elected the president of the country. (Incorrect)
(b) S D Sharma was elected president of the country. (Correct)
28. Please consider this sentence
(a) I have a black and white cat.
Here I mean that I have one cat that is partly black and partly white.
Now, consider this sentence
For example : I have a black and a white cat.
Here I mean that I have two cats one is black and the other white. Hence the rule is that when two or more adjectives qualify the same noun, the article is used before the first adjective only. But when they qualify different nouns, the article is used before each adjective separately.
Consider one more *example*.
(a) The President and Chairman is absent.
(b) The President and the Chairman are present.
Sentence a means that only one person is acting as president as well as chairman. Sentence b means that two different persons are acting as the President and the Chairman and both the persons are present.

ADJECTIVES

Adjectives are the words that describe the qualities of a noun or pronoun in a given sentence.

CONSIDER THE FOLLOWING :

1. Tell which sentence is correct
 - (a) Flowers are plucked freshly.
 - (b) Flowers are plucked fresh.

Sentence b is correct as, adjective is correctly used with a verb when some quality of the subject rather than verb is to be expressed. Here, fresh describes the word Flowers (a noun) and not plucked (a verb).

RULES REGARDING DEMONSTRATIVE ADJECTIVE :

2. **This** and **that** are used with the singular nouns and these and those are used with plural nouns
For example :
 - (a) This mango is sour.
 - (b) These mangoes are sour.
 - (c) That boy is industrious
 - (d) Those boys are industrious.
3. **This** and **these** indicate something near to the speaker while that and those indicate something distant to the speaker.
For example :
 - (a) This girl sings.
 - (b) These girls sing.
 - (c) That girl sings.
 - (d) Those girls sing.

RULES REGARDING DISTRIBUTIVE ADJECTIVES:

4. **Each** is used when reference is made to the individuals forming any group. Each is also used when the number of the group is limited and definite.
For example :
 - (a) I was in Shimla for five days and it rained each day.

Every is used when reference is made to total group or when the number is indefinite.
For example :
 - (a) Every seat was taken.
 - (b) I go for a movie every week.
 - (c) Leap year falls in every fourth year.
5. Each, either, neither and every are always followed by the singular noun.
For example :
 - (a) Each boy must take his turn.
 - (b) Every word of it is false.
 - (c) Neither accusation is true.

RULES REGARDING ADJECTIVES OF QUANTITY:

6. **Some** is used in affirmative sentences to express quantity or degree.
For example : I shall buy some bananas.
 Any is used in the negative or interrogative sentences to express quantity or degree.
For example :

(a) I shall not buy any bananas.

(b) Have you bought any bananas?

But some is an exception to the above rule. Some is used in interrogative sentences, which are commands or requests.
For example : Will you please lend me some money?

7. **Few** is used for countable objects and **little** is used for non-countable objects.
8. Little means not much. So use of the word little has a negative meaning.

For example :

(a) There is little hope of his recovery.

(b) He has little appreciation of hard work.

A little means some though not much. So, use of a little has a positive meaning.

For example :

(a) There is a little hope of his recovery.

(b) He has a little appreciation of hard work.

The little means not much but all there is.

For example :

(a) The little information he had was quite reliable.

(b) The little knowledge of management he possessed was not sufficient to stand him in good stead.

9. Few means not many. So use of the word few has a negative meaning.

For example : Few men are free from faults.

A few means some. So use of 'a few' has a positive meaning.

For example : A few men are free from faults.

The few means not many, but all there are.

For example : The few remarks that he made were very good.

10. Only uncountable nouns follow much, little, some, enough, sufficient and whole.

For example :

(a) I ate some rice.

(b) There are not enough spoons.

RULES REGARDING INTERROGATIVE ADJECTIVES :

11. **What** is used in the general sense and **which** is used in a selective sense.

For example :

(a) Which of you haven't brought your book?

(b) What sort of man is he?

RULES REGARDING DEGREES OF COMPARISON OF ADJECTIVES :

12. The comparative form ending in 'er' is used when we are comparing one quality in two persons.

For example : Anjali is wiser than Rahul.

But if we wish to compare two qualities in the same person then the comparative form ending in 'er' is not used.

For example : Anjali is wise than brave.

13. When two objects are compared with each other, the latter term of comparison must exclude the former.

- For example :*
 (a) Delhi is bigger than any other city in India.
 If we say
 (b) Delhi is bigger than any city in India.
 Then we are saying Delhi is bigger than Delhi, as any city in India includes Delhi also. And this is obviously wrong.
14. In a comparison by means of a superlative the latter term should include the former.
For example :
 (a) Delhi is the biggest of all cities in India.
 (b) Of all men he is the strongest.
 Kindly note the difference in this and the previous rule.
15. **Later** and **latest** refer to time.
For example :
 (a) He came later than I expected.
 (b) This is the latest news.
Latter and **last** refer to position.
For example :
 (a) The last player could not bat as he was injured.
 (b) The latter chapters are very interesting.
Latter is used when there are two only, last when there are more than two.
For example :
 (a) Of Manohar, Syam and Joshi, the latter is a driver. (Incorrect)
 (b) Of Manohar, Syam and Joshi, the last is a driver. (Correct)
16. **Elder** and **eldest** are used only of persons (usually members of the same family).
For example :
 (a) My elder sister is doing MBA from IIM, Ahmedabad.
 (b) My eldest brother is getting married today.
Older and **oldest** are used of both persons and things.
For example :
 (a) This is the oldest building in the city.
 (b) Anthony is the oldest boy in the class.
17. Further means more distant or advanced whereas farther is a variation of further and means at a distance – both the words can be used to indicate physical distance.
For example :
 (a) No one discussed the topic further.
 (b) Calcutta is farther from the equator than Colombo.
18. The comparative degree is generally followed by ‘than’, but comparative adjectives ending in ‘is’ or ‘are’ are followed by the preposition ‘to’.
For example :
 (a) Raj is inferior to Aman in intelligence.
 (b) Aman is superior to Raj in intelligence.
 (c) He is junior to me.
 (d) Who was captain prior to Dhoni?
19. Adjectives such as square, round, perfect, eternal, universal, unique do not admit of different degrees. So they cannot be compared. Thus strictly speaking we cannot say that a thing is more square more round or more perfect. But sometimes we do make exceptions to this rule.
For example : This is the most perfect specimen I have seen.
20. When the comparative form is used to express selection from two of the same kind or class, it is followed by ‘of’ and preceded by ‘the’.
For example :
 (a) Raj is stronger of the two boys.
21. When ‘than’ or ‘as’ is followed by the third person pronoun, the verb is to be repeated.
For example : Raj is not as clever as his brother is.
22. When ‘than’ or ‘as’ is followed by first or second person pronoun, the verb can be omitted.
For example : He is more intelligent than you.
23. In comparing two things or classes of things the comparative should be used.
For example :
 (a) Of two evils choose the lesser (not least).
 (b) Which is the better (not best) of the two?
24. A very common form of error is exemplified in the following sentence.
 (a) The population of London is greater than any town in India.
 (b) The population of London is greater than that of any town in India.
 Sentence b is correct as the comparison is between the population of London and the population of any town in India.
25. Double comparatives and superlatives should be avoided.
For example :
 (a) Seldom had the little town seen a more costlier funeral. (Wrong)
 (b) Seldom had the little town seen a costlier funeral. (Right)
 (c) Seldom had the little town seen a more costly funeral. (Right)
26. Preferable has the force of comparative and is followed by to. Phrase ‘more preferable’ should not be used.
For example :
 (a) Coffee is more preferable to tea. (Wrong)
 (b) Coffee is preferable to tea. (Right)
27. Less refers to quantity whereas fewer refers to number.
For example :
 (a) No fewer than fifty miners were killed in the explosion.
 (b) We do not sell less than ten kg of tea.
28. Certain adjectives do not really admit of comparison because their meaning is already superlative. Such words are unique, ideal, perfect, complete, universal, entire, extreme, chief, full, square, round. Therefore phrases like most unique, more round, fullest etc. are wrong.
29. If there is a gradual increase it is generally expressed with two comparatives and not with positives.
For example :
 (a) It grew hot and hot. (Incorrect)
 (b) It grew hotter and hotter. (Correct)

OTHER COMMON RULES :

30. ‘Verbal’ means ‘of or pertaining to words’ whereas ‘oral’ means ‘delivered by word of mouth or not written’. Hence the opposite of written is oral, not verbal.
For example :
 (a) His written statement differs in several important respects from his oral (not verbal) statement.
 (b) The boy was sent with a verbal message to the doctor.

31. 'Common' means shared by all concerned. If a fact is a common Knowledge, it means the knowledge of the fact is shared by all. Everyone knows about it. 'Mutual' means in relation to each other. If you and I are mutual admirers, it means I admire you and you admire me. We might also have a common admirer who admires both of us.
- (a) We stopped smoking on the advice of a mutual friend. (Incorrect)
- (b) We stopped smoking on the advice of a common friend (Correct)
- It is apparent that there are two or more than two of us. Apart from us, there is a person (friend). Since he is a friend to all of us, this friend is being shared by all of us. So, he is a common friend. Now, look at this sentence.

For example : We stopped smoking on mutual advice. It means I advised you not to smoke and you advised me not to smoke.

OTHER COMMON ERRORS:

32. Other common errors.
- (a) These kind of questions is often asked in the examinations. (Incorrect)
- (b) This kind of question is often asked in the examinations. (Correct)
- (c) He is as good if not better than his brother. (Incorrect)
- (d) He is as good as if not better than his brother. (Correct)
- (e) The future do not hold much for you. (Incorrect)
- (f) The future does not hold much for you. (Correct)

VERBS

1. Two or more singular subjects connected by 'and' usually take a verb in the plural.
For example : Hari and Rama are there.
2. If two singular nouns refer to the same person or thing, the verb must be singular.
For example : My friend and benefactor has come.
3. If two subjects together express one idea, the verb may be in the singular.
For example : The horse and carriage is at the door.
4. Two or more singular subjects connected by 'or', 'nor', either... or, neither...nor take a verb in the singular.
For example : Neither he nor I was there.
But when subjects joined by 'or', 'nor' are of different numbers, the verb must be plural, and the plural subject must be placed next to the verb.
For example : Rama and his brothers have done this.
When the subjects joined by 'or', 'nor' are of different persons, the verb agrees in person with the nearest one.
For example :
- (a) Either he or I am mistaken.
- (b) Neither you nor he is to blame.
5. When words are joined to a singular subject by 'with', 'together with', 'in addition to', 'as well as', then also number of the verb remains singular.
For example : The Chief with all his men, was massacred.
6. Following examples exemplify the common mistakes committed:
- (a) His diet was abstemious, his prayers long and fervent. (Wrong as subjects are not in the same number.)
- (b) His diet was abstemious, his prayers were long and fervent. (Right)
- (c) He never has and never will take such strong measures. (Wrong)
- (d) He never has taken, and never will take such strong measures. (Right)
- (e) Ten new members have been enrolled and seven resigned (Wrong)
- (f) Ten new members have been enrolled and seven have resigned. (Right)

- (g) Being a very hot day, I remained in my tent. (Wrong as participle being is referring to none)
- (h) It being a very hot day, I remained in my tent. (Right)
- (i) Sitting on the gate, a scorpion stung him. (Wrong as participle sitting is not referring to any word)
- (j) While he was sitting on the gate, a scorpion stung him (Right)

7. The verb lay (lay, laid, laid) is transitive and is always followed by an object. The verb lie (lie, lay, lain) is intransitive and cannot have an object.

For example :

- (a) Lay the child to sleep.
- (b) Let me lie here.
- (c) I laid the book on the table.

AGREEMENT OF THE SUBJECT WITH THE VERB:

1. A verb must agree with its subject in number and person. Often due to "Error of Proximity" the verb is made to agree in number with a noun near it instead of with its proper subject.
For example :
- (a) The quality of the mangoes were not good. (Wrong since subject is quality, a singular and not mangoes.)
- (b) The quality of the mangoes was not good (Right).
- (c) His knowledge of Indian vernaculars are far beyond the common. (Wrong)
- (d) His knowledge of Indian vernaculars is far beyond the common. (Right)
2. Verb should be singular even when some words are joined to a singular subject by 'with', 'as well as' etc,
For example :
- (a) The chairman, with the directors, is to be present.
- (b) Silver, as well as cotton, has fallen in prices.
3. Two or more singular subjects connected by 'or', 'nor' require singular verb.
For example :
- (a) No nook or corner was left unexplored.
- (b) Our happiness or our sorrow is largely due to our own actions.

4. If two singular nouns express one idea, the verb is in the singular.

For example :

- (a) Bread and Butter are essential for one's life. (Incorrect)
 (b) Bread and Butter is essential for one's life. (Correct)
5. **Either, neither, each, everyone, many a** must be followed by a singular verb.

For example :

- (a) Neither of the two men was very strong.
 (b) Every one of the prisons is full.
 (c) Many a man has done so.
 (d) He asked whether either of the applicants was suitable.
6. When the subjects joined by 'or', 'nor' are of different numbers, the verb *must* be plural, and the plural must be placed next to the verb.

For example :

- (a) Neither Rekha nor her friends was present at the party. (Incorrect)
 (b) Neither Rekha nor her friends were present at the party. (Correct)
7. When a plural noun denotes some specific quantity or amount considered as a whole, the verb is generally singular.
- For example :*
- (a) Five hours are too short a time to judge one's character. (Incorrect)

- (b) Five hours is too short a time to judge one's character. (Correct)

This is so because five hours is considered as one chunk.

8. **Two nouns** qualified by each or every, even though connected by 'and' require a singular verb.

For example : **Every boy and every girl was given a packet of sweets.**

9. 'None' though singular commonly takes a plural verb.
For example : None are so deaf as those who will not hear.
10. Tell which sentence is correct.
 (a) Put in to bat first, a huge total was expected from India.
 (b) Put in to bat first, India was expected to pile up a huge total.

Now: who has been put in to bat first? A huge total of India? Common sense tells us it must be India. But the sentence a, as it stands, appears otherwise. So, sentence b is correct.

- (a) Being a rainy day, I decided to take my umbrella.
 (b) It being a rainy day, I decided to take my umbrella.
- The sentence a, as it stands, gives us the impression that being a rainy day qualifies I. This is simply not true. I am not a rainy day. So sentence b is correct.

11. **When** a plural noun denotes some specific quantity or amount considered as a whole, the verb is generally singular.

For example :

- (a) One hundred paise is equal to one rupee.
 (b) Six miles is a long distance.
 (c) Fifty thousand rupees is a large sum.

ADVERBS

A word that modifies the meaning of a verb is called an Adverb.

SOME IMPORTANT RULES :

1. Adverbs of manner such as well, fast, quickly, carefully, calmly etc. are placed after the verb if there is no object and after the object if there is one.

For example :

- (a) It is raining heavily.
 (b) She speaks English well.
2. Adverbs of time such as always, often, sometimes, never, generally, ever, merely, seldom etc. are placed before the verb they qualify.

For example :

- (a) I seldom meet him. (Right)
 (b) I meet him seldom. (Wrong)

Adverbs of degree refer to words which show "how much", "in what degree" or "to what extent" does the action takes place.

CONSIDER THE FOLLOWING :

3. Meaning of too is more than enough. Too denotes some kind of excess.

For example :

- (a) He is too weak to walk.
 (b) It is never too late.
 Hence, use of very in place of too is wrong.

For example : Instead of saying that

- (a) Cow's milk is too nutritious

We should say that

- (b) Cow's milk is very nutritious.

4. Enough is placed after the word it qualifies.

For example : Everyone should be strong enough to support one's family.

It will be wrong if we write 'Everyone should be enough strong to support one's family'.

5. Much is used with past participles.

For example :

- (a) He was much disgusted with his life.
 (b) The news was much surprising.

Very is used with present participles.

For example :

- (a) He is very disgusted with his life.
 (b) The news is very surprising.

6. Very and much are also used to emphasise superlative form of adjectives/adverbs-

For example :

- (a) Rishi is the very best boy in his class.
 (b) Rishi is much the best boy in his class.

Adverbs of Affirmation or Negation refer to words that assert the action emphatically.

Consider these *examples* :

- (a) He certainly was a winner among them.
- (b) Luckily he survived the crash.

CONSIDER THE FOLLOWING :

7. No sooner should always be followed by than.
For example :
(a) No sooner I saw him I trembled with fear. (Wrong)
(b) No sooner did I see him than I trembled with fear. (Right)
8. 'Not' should not be used with the words which have negative meaning if we want the sentence to be negative.
For example :
(a) I received no letter neither from him nor from her. (Wrong)
(b) I received letter neither from him nor from her. (Right)
9. 'Of course' is used to denote a natural consequence. It should not be used in place of certainly, undoubtedly.
For example :
(a) Of course he is the best player. (Wrong)
(b) He is certainly the best player. (Right)

FOLLOWING ARE COMMON RULES OF ADVERBS IN GENERAL :

10. Only is used before the word it qualifies.
For example :
(a) Only I spoke to him.
(b) I only spoke to him.
(c) I spoke to him only.
11. Else is followed by but and not by than.
For example : It is nothing else but hypocrisy.
12. 'As' is often used in a sentence though there is no need for it. *For example* :
(a) He is elected as the President. (Wrong)
(b) He is elected President. (Right)
13. 'Perhaps' means possibly whereas 'probably' means most likely. *For example* :
(a) Where is Govinda? Perhaps he is not here. (Wrong)
(b) Where is Govinda? Probably he is not here. (Right)

PREPOSITIONS

1. **In** is used with the names of countries and large towns; **at** is used when speaking of small towns and villages.
For example :
(a) I live in Delhi.
(b) I live at Rohini in Delhi.
2. **In** and **at** are used in speaking of things at rest; **to** and **into** are used in speaking of things in motion.
For example :
(a) He is in bed.
(b) He is at the top of the class.
(c) He ran to school
(d) He jumped into the river.
(e) The snake crawled into its hole.
3. **On** is often used in speaking of things at rest; and **upon** for the things in motion. *For example* :
(a) He sat on a chair.
(b) The cat sprang upon the table.
4. **Till** is used for time and **to** is used for place.
For example :
(a) He slept till eight o'clock.
(b) He walked to the end of the street.
5. **With** often denotes the instrument and **by** the agent.
For example :
(a) He killed two birds with one shot.
(b) He was stabbed by a lunatic with a dagger.
6. **Since** is used before a noun or phrase denoting some point of time and is preceded by a verb in the perfect tense.
For example :
(a) I have eaten nothing since yesterday.
(b) He has been ill since Monday last.
From is also used before a noun or phrase denoting some point of time but is used with non-perfect tense.
For example :
(a) I commenced work from 1st January.
(b) He will join school from tomorrow.

For is used with a period of time.

For example :

- (a) He has been ill for five days.
 - (b) He lived in Bombay for five years.
7. Use of **in** before a period of time means at the end of period, but use of **within** before a period of time means before the end of the period.
For example :
(a) I shall return in an hour. (means I shall return at the end of an hour).
(b) I shall return within an hour. (means I shall return before the end of an hour).
 8. **Scarcely** should be followed by **when** and not by **but**.
For example : Scarcely had he gone, when (**not** than) a policeman knocked at the door.
 9. The phrase 'seldom or ever' is wrong 'Seldom or never' is right.
For example : Such goods are made for export, and are **seldom or never** used in this country.
 10. Examine the following sentence
(a) This is as good, if not better than that. (Wrong)
(b) This is as good as, if not better than, that. (Right)
(c) This is as good as that, if not better. (Right)
 11. **Beside** means at the side of while **besides** means in addition to. *For example* :
(a) Beside the ungathered rice he lay.
(b) Besides being fined, he was sentenced to a term of imprisonment.
 12. **Above** and **Below** merely denote position While **over** and **under** also carry a sense of covering or movement.
(a) The bird flew above the lake. (Wrong)
(b) The bird flew over the lake. (Correct)
Here over is used to denote upward position and movement also.

13. **During** is used when reference is made to the time within which something happens. **For** is used when we are talking about how long something lasts.
- (a) There are few incidents of irregularity **for** the emergency years. (Wrong)
- (b) There are few incidents of irregularity **during** the emergency years. (Correct)
14. **Compare** is followed by **to** when it shows that two things are alike. It is followed by **with** when we look at the ways in which two things are like and unlike each other. *For example* :
- (a) Sanath Jayasuria's batting may be compared to the sales of a useful book, they score right from the beginning. (Right)
- (b) Sanath Jayasuria's batting may be compared with the sales of a useful book; they score right from the beginning. (Wrong)
- (c) If we compare Delhi University with the regional ones, we find the former to be much more efficient. (Right)
- (d) If we compare Delhi University to the regional ones, we find the former to be much more efficient. (Wrong)

CONJUNCTIONS

1. **Since** as conjunction means
- (A) From and after the time when.
For example :
- (a) Many things have happened since I left the school.
- (b) I have never seen him since that unfortunate event happened.
- (B) Seeing that,
For example :
- (a) Since you wish it, it shall be done.
- (b) Since that is the case, I shall excuse you.
2. **Or** is used
- (A) To introduce an alternative.
For example :
- (a) You must work or starve.
- (b) You may take this book or that one.
- (c) He may study law **or** medicine **or** engineering **or** he may enter into trade.
- (B) To introduce an alternative name or synonym.
For example : The violin **or** fiddle has become the leading instrument of the modern orchestra.
- (C) To mean otherwise.
For example : We must hasten or night will overtake us.
3. **If** is used to mean
- (A) On the condition or supposition that.
For example :
- (a) If he is here, I shall see him.
- (b) If that is so, I am content.
- (B) Admitting that.
For example : If I am blunt, I am at least honest.
- (C) Whether
For example : I asked him if he would help me.
- (D) Whenever.
For example : If I feel any doubt I enquire.
4. **That** is used
- (A) To express a reason or cause.
For example :
- (a) Not that I loved Caesar less but that I loved Rome more.
- (b) He was annoyed that he was contradicted.
- (B) To express a purpose and is equivalent to in order that.
For example : He kept quiet that the dispute might cease.
- (C) To express a consequence, result or effect.
For example : He bled so profusely that he died.
5. **Lest** is used to express a negative purpose and is equivalent to 'in order that... not', 'for fear that'.
For example :
- (a) He lied lest he should be killed.
- (b) I was alarmed lest we should be wrecked.
6. **While** is used to mean
- (A) During that time, as long as.
For example : while there is life there is hope.
- (B) At the same time that.
For example : While he found fault, he also praised.
7. **Only** means except that, but, were it not that.
For example :
- (a) A very pretty woman, only she squints a little.
- (b) The day is pleasant, only rather cold.
8. The conjunctions **after, before, as soon as, until** are not followed by clause in the future tense. Present simple or present perfect tense is used to express a future event.
For example :
- (a) I will phone you after I arrive here.
- (b) I will phone you after I have arrived here.
9. **As if** used in the sense of as it would be is generally followed by a subject + were + complement.
For example :
- (a) He loves you as if you were his own child.
- (b) Sometimes she weeps and sometimes she laughs as if she were mad.
10. The clause that begins with **as if** should be put into the simple past tense, if the preceding clause expresses a past action. But if it expresses a past action it should be followed by the past perfect tense.
For example :
- (a) He behaves as if he were a lord.
- (b) He behaved as if he had been a lord

11. While **as long as** is used to express time in sense of how long, **Until** is used to express time in sense of before.
For example :
(a) Until you work hard you will improve. (Wrong)
(b) As long as you work hard you will improve. (Right)
(c) He learnt little as long as he was 15 years old. (Wrong)
(d) He learnt little until he was 15 years old. (Right)
12. **No sooner** should be followed by verb + subject and than should begin another clause.
For example :
(a) No sooner had I reached the station than the train left.
(b) No sooner did the bell ring than all the students rushed in.
13. When **as well as** is used, finite verb should agree in number and person with the first subject.
For example : He as well as us is innocent.
14. **As well as** should never be used in place of **and** if the first subject is preceded by the word 'both'.
For example :
(a) Both Rani as well as Kajol came. (Wrong)
(b) Both Rani and Kajol came. (Right)
15. **Because** is generally used when the reason is the most important part of a sentence.
For example : Some people like him because he is honest and hard working.
Since is used when the reason is already known or is less important than the chief statement.
For example : Since you refuse to cooperate, I shall have to take legal steps.
For is used when reason is given is an afterthought.
For example : The servant must have opened the box, for no one else had the key. For never comes at the beginning of the sentence and for is always preceded by a comma.
16. **Scarcely** should be followed by when and not by than.
(a) Scarcely had he arrived than he had to leave again. (Wrong)
(b) Scarcely had he arrived when he had to leave again. (Right)
17. Conjunctions such as either..or, neither.. nor, not only..but also, both..and, whether, or etc. always join two words or phrases belonging to the same parts of speech.
For example :
(a) Either he will ask me or you. (Wrong)
(b) He will ask either me or you. (Right)
(c) Neither he reads nor write English (Wrong)
(d) He neither reads nor writes English. (Right)
(e) Either you shall have to go home or stay here. (Wrong)
(f) You shall have either to go home or stay here. (Right)
18. Conjunctions like neither...nor, either..or, should be followed by the same part of speech.
For example :
(a) He neither agreed to my proposal nor to his. (Wrong)
(b) He agreed neither to my proposal nor to his. (Right)
19. Conjunction is not used before an interrogative adverb or interrogative pronoun in the indirect narration.
For example :
(a) He asked me that where I stayed. (Wrong)
(b) He asked me where I stayed. (right)
20. **Although** goes with yet or a comma in the other clause.
For example :
(a) Although Manohar is hardworking but he does not get a job. (Wrong)
(b) Although Manohar is hard working, yet he does not get a job. (Right)
21. **Nothing else** should be followed by 'but' not by 'than',
For example :
(a) Mr. Bureaucrat! This is nothing else than red-tapism. (Wrong)
(b) Mr. Bureaucrat! This is nothing else but red-tapism. (Right)
22. The correlative conjunctions **indeed... but** are used to emphasise the contrast between the first and the second parts of the statement.
For example :
(a) I am indeed happy with my school but it produces famous men. (Wrong)
(b) I am indeed happy with my school but it does not produce famous men. (Right)
(c) I am indeed happy with my school that it produces famous men. (Right)
23. In a "**not only ... but also...**" sentence, the verb should agree with the noun or pronoun mentioned second, that is; the one after 'but also', because this is the part being emphasised.
For example :
(a) Not only the students but also the teacher were responsible for what happened in the class. (Wrong)
(b) Not only the students but also the teacher was responsible for what happened in the class. (Right)
24. **Such ... as** is used to denote a category whereas **such ...that** emphasises the degree of something by mentioning its consequence.
For example :
(a) Each member of the alliance agrees to take such action that it deems necessary. (Wrong)
(b) Each member of the alliance agrees to take such action as it deems necessary. (Right)
Here "it seems necessary" is not a consequence of "such action". The sentence wants to imply that the action belongs to the category "as it deems necessary" In other words, what kind of action? Such action as it deems necessary.
(a) She looked at him in such distress as he had to look away. (Wrong)
(b) She looked at him in such distress that he had to look away. (Right)
Here, "he had to look away" is a consequence of "she looked at him in such distress." In other words, the degree of the distress of looking at him was such that (not as) he had to look away.

PHRASAL VERBS

Phrasal Verbs are a particular kind of expression, wherein the verb is made of two or more components. Mostly the combining components are verbs and prepositions. When divided these components will have a meaning of their own but would not suggest anything about the meaning of the phrasal verb. Consider the following sentences.

- | | |
|--|---|
| <p>(a) This sword has been handed down from father to son in the family for many generations.</p> <p>(b) I have been looking forward to meeting you since long now.</p> <p>(c) The patient came out of the delirium only when given tranquilizers.</p> <p>(d) We had almost decided to give up on the search when we made the discovery.</p> | <p>(m) come forth – to find something</p> <p>(o) switch on – to start something</p> <p>(p) turn down – to refuse or reject an offer</p> <p>(q) turn in – to expose</p> <p>(r) look into – probe, or investigate a matter</p> <p>(s) look after – take care of</p> <p>(t) take off – to remove something</p> <p>(u) put out – to extinguish</p> <p>(v) try on – to wear some clothes for first time</p> <p>(w) turn down – lower the volume</p> <p>(x) turn on – to start a machine</p> <p>(y) put in – to invest something (matter or abstract)</p> <p>(z) look out – be careful of some danger</p> |
|--|---|

Phrasal verbs are idiomatic expressions and have a particular meaning different from that of the combining verbs and prepositions. Following are some phrasal verbs with their meanings.

- (a) sit in – to attend or take part as a visitor
- (b) sit out – to stay till the end of
- (c) come round – to accept circumstances and adjust yourself to them
- (d) get on – to manage one's life
- (e) turn out – to have a particular result
- (f) turn up – to arrive unexpectedly
- (g) show off – to brag or boast
- (h) sort out – to successfully deal with a problem
- (i) hand in – to give something to someone in authority
- (j) sit down – to take a seat
- (k) sit up – to rise from a supine position
- (l) give in – to yield to some pressure

Following are some sentences using Phrasal Verbs

- Don't **throw away** your opportunity to enter this University.
- Many people **believe in** astrology and tarot cards now-a-days.
- Quickly **get in** the car, we're getting late.
- You can **put forward** your point in today's meeting.
- To **sit through** his speech was very difficult.
- I don't understand why you **put up** with his insolent behaviour.
- I could **see through** his intentions the first time I met, but kept quiet to give him a chance to reform.
- Please, **fill in** all the necessary information in this form.
- I am sure you will not **let me down**; I've full faith in your capacities.
- Why are you **taking it out** on me? I'm not the one responsible for the mishap.

QUESTION TAGS

Consider the following examples

- (1) You wanted that, didn't you?
- (2) He is coming tonight, isn't he?
- (3) You wouldn't report me, would you?

Now, look at the last part of all the above sentences preceded by the comma. These are very small questions added to the sentence and are called question Tags. Remember only the question tag is a question and not the entire sentence. So, one can say that a Question Tag is an added brief question to a statement. Usually a question tag consists of two words- an auxiliary verb in the positive or negative form and a pronoun.

How to form question tags?

Three things are to be kept in mind while making a question tag :

- (a) The right auxiliary Verb to be used in the question.
- (b) The right pronouns to be used in the tag.
Both (a) and (b) should be in agreement with the verb and noun in the main statement.
- (c) Whether the verb in the question tag should be positive or negative.

Rules to form Question Tags

- I. If the main statement is positive, the auxiliary verb will be negative and vice versa e.g.
 - He saw that, didn't he?
 - But he isn't going to England, is he?

- II. If there is a single subject/noun/pronoun in the main sentence, the corresponding pronoun/the same pronoun will be used in the question tag. e.g.,
- **You** are coming with us, aren't **you**?
 - **Reena** is leaving tonight, isn't **she**?
- III. If there is more than one noun/pronoun in the main sentence then the corresponding pronoun to the active subject will be used in the Question tag. e.g.
- After all this time **you'd** think he'd have forgotten, wouldn't **you**?
 - **You** wouldn't refuse me, would **you**?
- IV. If the verb in the main sentence is an active verb without any auxiliary verb, then the verb used in the Question tag will be the form of verb 'do' that corresponds with the tense in the main sentence.
- He knows it's true, **doesn't** he?
 - You wanted to come with me, **didn't** you?
 - I told you so, didn't I?
 - She never informed us, did she?
 - If the main sentence has an auxiliary then it is used in the question tag, but with opposite affirmation, i.e., a positive auxiliary in the main sentence transforms to a negative auxiliary in the question tag and vice versa e.g.
 - He **will** be coming, **won't** he?
 - You **were** there at the party, **weren't** you?
 - You would appear for this exam, **wouldn't** you?
 - He **didn't** call us, **did** he?
 - She **doesn't** live here anymore, **does** she?

MODALS

The verbs like can, could, may, might, would, shall, should and ought are called modal verbs or modals. They are used with ordinary verbs to express meanings such as possibility, permission, certainly, etc.

- (1) **Can** usually expresses ability or capacity
I can swim across the river.
Can you lift this table?
- (2) **Can** is also used to express permission
You can go now.
- (3) **May** is a more formal modal used to express permission
You may come in.
May I leave the room now?
- (4) **May** is also used to suggest possibility in an affirmative sentence.
He may be at home
It may rain tomorrow.
- (5) **Can** is used to suggest possibility in negative/interrogative sentence.
Can this be true?
It cannot be so.
- (6) **May** when used in a negative sentence suggests an improbability whereas can suggests impossibility.
He may not come today.
She cannot sing.
- (7) **Could** and **might** are used as past tense forms of can and 'may'.
I could swim across the river when I was young.
I thought he might be at home.
- (8) **Might** suggests less possibility or probability than may.
I might go to Bangalore next week suggests the probability of going is less than a sentence with 'may' will suggest.
- (9) **Could** is used as a polite form of seeking permission or making a request.
Could you pass me the plate?
Could I please talk to Mr. Grover?
- (10) **Shall** is used with first person and will in all the persons to denote future action.
I shall need the money tomorrow.
When will you come next?
- (11) **Shall** is used with the second and third person to express command, promise or threat.
You shall never come near my child.
You shall be punished for this.
We shall go for a picnic this Sunday.
- (12) Will You? indicates an invitation or request.
Will you dine with us tonight?
Will you lend me your car for a week?
- (13) **Should** and **would** are used as past forms of shall and will.
I expected that I would get a first class.
She would sit for hours listening to the radio.
- (14) **Should** is used to express duty or obligation.
We should obey the laws.
You should keep your promise.
- (15) **Should** is used to express a supposition
If it should rain, they will not come.
- (16) **Should** can also be used to express probability.
He should be in the library.
- (17) **Must** is used to express necessity.
You must improve your spelling.
- (18) **Must** is also need to express obligation, and is a stronger word than should.
We must follow the law.
- (19) **Must** is also used to express logical certainty.
Living alone in such a big city must be difficult.
- (20) **Ought** is used to express moral obligation and is stronger than both should and must.
We ought to love our parents.
- (21) **Ought** is also used to express probability sometimes when the probability is very strong.
The book ought to be very useful.

POINTS TO REMEMBER

1. **Abstract Noun** : Abstract noun refers to quality, action or state of a thing that can only be felt by us.
For example : Laughter, greatness, faith, poverty, courage, kindness, fear, bravery, childhood etc. Abstract noun is always uncountable and has no plural form.
2. **Accusative Case** : See Objective case.
3. **Active Voice** : A verb is in the active voice when its form shows that the person or thing denoted by the subject does something or, in other words, is doer of the action.
4. **Adjectives** : Adjective is a word used with a noun to add something to its meaning. Adjective is used with the noun to describe or point out the person, animal, place or thing the noun names, or to tell the number or quantity.
5. **Adverbs** : Adverb is a word that modifies the meaning of a verb, an adjective or another adverb.
For example :
(a) P T Usha runs fast.
(b) Govinda reads quite clearly.
6. **Antecedent** : Antecedent is a noun or noun-equivalent to which a relative pronoun refers.
For example : 'Cloud' is antecedent in the sentence. The cloud that thunders does not rain.
7. **Apposition** : When one noun follows another to describe it, the noun which follows is said to be in apposition to the noun which comes before it. Both the nouns are in the same case.
For example : In the sentence, Stephen Hawking, the scientist, has written A Brief History of Time. The noun scientist is in apposition to the noun Stephen Hawking.
8. **Case** : The use of different forms of a noun or pronoun to show its relation to the remaining sentence is called case. Three different types of cases are Nominative case, Objective or Accusative case and Possessive or Genitive case.
9. **Collective Noun** : Collective noun refers to a group of similar persons or things. Though collective noun refers to more than one thing, it is always singular in form.
For example : Army, Family, Herd, and Committee.
10. **Common Noun** : Common noun is a name that can be applied to all the members of a class. In other words it refers to all the persons and things of the same kind. Like proper noun it does not refer to a particular person or thing.
For example : man, woman, elephant, village, crowd, army, family, nation.
11. **Complement** : Complement of the verb is the word or words which are used to make the sense of, the sentence complete.
For example :
(a) They made him.
(b) They made him king.
Sentence a carries no complete sense or meaning. But when the word king is added to it, the sentence carries full sense. So, here king is the complement.
12. **Concrete Noun** : Concrete noun is the opposite of abstract noun. Concrete noun refers to a thing that can be identified or sensed by our senses.
For example : House, Brick, Telephone, Rose.
13. **Countable Noun** : As the name suggests, a countable noun is one that can be counted.
For example : ten Girls, 25 rupees. Depending upon how the plural form of a countable noun is obtained, countable noun can be categorised as Regular countable noun and Irregular countable noun.
14. **First Person**: First person denotes the person or persons speaking.
First Person(Masculine or Feminine)

Case	Singular	Plural
Nominative	I	We
Possessive	My, mine	Our, ours
Objective	Me	Us
15. **Intransitive Verb** : When a verb is so used in a sentence that its effect is limited to its subject or the doer of the action only, it is called intransitive.
For example : Compare these two sentences.
a) This boy is eating.
b) This boy is eating mango.
In sentence a), effect of eating mango is limited to subject, (boy) only. But in sentence b), the effect of eating mango passes from subject (boy) to an object (mango). It is intransitive verb if we get answer to; 'who eats it?' Hence, sentence a uses intransitive verb but sentence b is not using intransitive verb. It is called transitive verb.
16. **Irregular Countable Noun** : Plural form of these countable nouns is not obtained by adding 's', 'es' or 'ies' after the word.
For example : plural of person is people, tooth is teeth.
17. **Nominative Case** : Here noun or pronoun is used as the subject of a verb. To find the nominative put "who or what" before the verb.
18. **Noun** : A noun is a word used as the name of a person, place, thing or idea. A noun can be a Common noun or a Proper noun, an Abstract noun or a concrete noun, a countable noun or non-countable noun and a collective noun.
19. **Object**: Also called Predicate. The part which tells something about the subject is called object.
20. **Objective Case**: Also called Accusative Case. Here noun or pronoun is used as the object of the verb. To find the objective case put 'whom' or 'what' before the verb and its **subject**
21. **Passive Voice** : A verb is in the passive form when its form shows that something is done to the person or thing denoted by the subject.
22. **Personal Pronoun** : Personal pronoun refers to an individual or Individuals. Personal pronouns are of three different types - First person, Second person and Third person.
23. **Possessive Case** : In this form of the noun, ownership or possession is shown. Possessive case is also used to denote authorship, origin, kind etc. The possessive case answers the question 'whose.'
24. **Predicate** : Please see Object.

25. **Preposition** : A preposition is a word placed before a noun or pronoun to show in what relation the person or thing denoted by it stands in regard to something else.
26. **Pronoun** : A pronoun is a word used instead of a noun. Pronouns are classified as personal, relative, reflexive, demonstrative, indefinite, interrogative, reciprocal pronoun.
27. **Proper Noun** : Unlike common noun, proper noun refers to a particular member of a class. Proper noun is the name of some particular person or thing. Proper nouns are always written with a capital letter at the beginning. *For example* : names of all people, places.
28. **Regular Countable Noun** : Plural form of these words is obtained by adding 's', 'es' or converting 'y' to 'ies' after the word. *For example* : plural form of Book is books, city is cities.
29. **Relative Pronoun** : Relative pronoun refers or relates two clauses. Relative pronoun refers to some noun which is called its antecedent.
For example : I met Hari who has just returned.
30. **Second Person** : Second person denotes the person or persons spoken to.
- | Second Person (Masculine or Feminine) | | |
|---------------------------------------|-------------|-------------|
| Case | Singular | Plural |
| Nominative | You | You |
| Possessive | Your, yours | Your, yours |
| Objective | You | You |
31. **Sentence** : Sentence is a group of words which makes completes sense. In a sentence we name some person or thing and say something about that person or thing.
32. **Subject** : The part which names the person or thing we are speaking about is called subject of the sentence.

33. **Third Person** : Third person denotes the person or persons spoken of,

Third Person				
Singular/ Plural				
Case	Masculine	Feminine	Neuter	All Genders
Nominative	He	She	It	They
Possessive	His	Her, hers	Its	They, their
Objective	Him	Her	It	Them

34. **Transitive Verb** : When an action/word or verb is so used in a sentence that its effect is not limited to its subject only but passes to another person or thing, it is called Transitive verb.
For example : A boy is eating a mango. For details kindly see definition of Intransitive Verb.
35. **Uncountable Noun** : Unlike countable nouns it cannot be counted. *For example* : Water, Milk, Sand, News, information. But if an uncountable thing is placed in a thing that can be counted, then the uncountable noun can be counted.
For example : one bottle of milk. Uncountable nouns can never be plural, though some uncountable nouns may appear to be plurals. *For example* : News.
36. **Voice** : Voice is that form of a verb which shows whether what is denoted by the subject does something or has something done to it. *For example* :
- Rama helps Hari.
 - Hari is helped by Rama.
- In sentence a, the form of the verb denotes that the person denoted by the subject, Rama, does something. In sentence b, the form of the verb shows that something is done to the person denoted by the subject, Hari.

EXERCISE

Directions (Qs. 1-61): Read each sentence to find out whether there is any error in it. The error, if any, will be in one part of the sentence. The letter of that part is the answer. If there is no error, the answer is (e). (Ignore errors of punctuation, if any).

1. (a) The driver of that car / (b) is sounding horn for / (c) the last ten minutes / (d) but nobody tells him to stop. / (e) No error
2. (a) If you go on letting / (b) your dog chase cars / (c) he will end by being / (d) run down one day. / (e) No error
3. (a) He heard the guard / (b) blowing the whistle and knew / (c) it is time for him / (d) to enter the train. / (e) No error
4. (a) He telephoned from a public call-box / (b) so that the call / (c) would not be traced / (d) to his own address. / (e) No error
5. (a) It has been better / (b) to put your money in a bank / (c) than to keep it under / (d) your bed in a suitcase. / (e) No error
6. (a) If you would have read / (b) the instructions carefully / (c) you would not have / (d) answered the questions wrongly. / (e) No error
7. (a) I can see through / (b) her sudden friendliness; / (c) she wants me to look over / (d) her dog while she is away. / (e) No error
8. You may not know it (a) / but this engine is (b) / claimed to have twice (c) / as powerful as the previous one. (d) / No error (e)
9. Nothing ever becomes real (a) / till it is experienced. (b) / Even a proverb is no proverb to you (c) / till your life has illustrated with it. (d) / No error (e).
10. I remember my childhood days (a) / when I was used to go (b) to the farm with my father (c) and help him in his work. (d) / No error (e).
11. I missed the last train (a) / which I usually catch (b) / and have to stay at the station (c) / on my way back home yesterday. (d) / No error (e).
12. Sureshababu, who has been living (a) / in this town since 1955, (b) / is a well-known scholar of history (c) / and a distinguished musician. (d) / No error (e).
13. If you had read (a) / the relevant literature carefully (b) / You would have answered (c) / most of the questions correctly. (d) / No error (e).
14. The house where the dead man was found (a) / is being guarded by police (b) / to prevent it from being entered (c) / and the evidence interfered with (d) / No error (e).
15. We were happy that (a) / the audience responded well (b) / and gave all the speakers (c) / a patiently listening. (d) / No error (e).
16. He received timely support (a) / from his elder brother (b) / who is working abroad (c) / for the last six years. (d) / No error (e).
17. The notorious gang opened (a) / the door quietly and (b) / escaped in the dark with (c) / whatever they would collect. (d) / No error (e).
18. One of the security men (a) / rushed forward and asked (b) / me whether (c) / had anything objectionable. (d) / No error (e).
19. We could not (a) / believe that one (b) / of us was (c) / responsible with the act. (d) / No error (e).
20. We are now (a) / reliably learnt that (b) / he was involved (c) / in the bank robbery. (d) / No error (e).
21. I do not know (a) / what most people feel (b) / depressed and dejected (c) / even with the slightest provocation. (d) / No error (e).
22. She had such pretty (a) / that she thinks (b) / she can afford to be (c) / careless about her clothes. (d) / No error (e).
23. After carefully examining (a) / all the medicine bottles (b) / he submitted a detailed report (c) to the higher authorities. (d) / No error (e).
24. All of you have the liberty (a) / to come home (b) / as per the convenient (c) / and discuss the problems. (d) / No error (e).
25. He was persuaded (a) / by his friends (b) / to end his fast (c) / because of his condition deteriorated. (d) / No error (e).
26. I know who (a) / this job should be (b) / entrusted to (c) / for smooth handling. (d) / No error (e).
27. They have the nasty habit of (a) / looking down upon people (b) / and criticised them (c) / for no reason. (d) / No error (e).
28. Nowadays, the cost of living (a) / is so high that (b) / people find it difficult (c) / to make both ends meeting. (d) / No error (e).
29. Karnavati is (a) / one of the leading (b) / business centres (c) / in our state. (d) / No error (e).
30. As I reached the hospital (a) / I had found, a great rush of visitors (b) / whose relatives had been admitted there (c) / for one or the other ailment. (d) / No error (e)
31. One should study the history (a) / of his country because it alone can satisfy (b) / one's natural curiosity to know (c) / what happened in the past. (d) / No error (e)
32. It is interesting to note (a) / that the greatest lines in poetry are simple (b) / and yet there is with them some quality (c) / which makes them outstandingly great. (d) / No error (e)
33. In order to make human life happy, (a) / man should live (b) / as far as possible (c) / in perfect harmony with nature. (d) / No error (e)
34. You have heard (a) / of Socrates, I suppose. (b) / Undoubtedly he was one (c) / of the greatest man of the world. (d) / No error (e)
35. My daughter never (a) / would write to me (b) / so I never know (c) / what she is doing. (d) / No error (e).
36. Whenever we have a puncture (a) / she just sits in the car (b) / and reads a book (c) / while I changed the wheel. (d) / No error (e).
37. He walked to the market (a) / with both his servants (b) / on either side of his (c) / to help him buy things. (d) / No error (e).
38. Ganesh, who has been (a) driving all day (b) / was extremely tired (c) / and wanted to stop. (d) / No error (e).
39. Everyone was reading quietly (a) / when suddenly the door (b) / burst open and a (c) / complete stranger rushed in. (d) / No error (e).

40. My secretary is so (a)/careful of her work that (b)/none has so far found (c)/any error in her work. (d)/ No error (e)
41. Our conclusion is that (a)/ between Vinayak and (b)/ Lobo, Vinayak is (c)/ the most honest. (d)/ No error (e)
42. The new project group (a)/ would first look into the tender conditions (b)/ of both basic and value-added (c)/ services before submit its bid. (d)/ No error (e)
43. I would have committed (a)/the same mistake of signing (b)/ the sale deed if my agent (c)/ would not have forewarned me. (d)/No error (e)
44. The team leaders encourages (a)/ the participants who have (b)/ difficulty in performing (c)/ the assigned task. (d)/ No error (e)
45. We are happy that (a)/ our prime minister (b)/ with the members (c)/ of his cabinet are to be present at the function. (d)/No error (e)
46. Neither the size nor the colour (a)/ of clothes which (b)/ I purchased for him (c)/ yesterday were right. (d)/ No error (e)
47. I heard to my surprise (a)/ that the present (b)/ I send him was not (c)/ to his taste. (d)/ No error (e)
48. Let us refer (a)/ this matter to the principal. (b)/ We shall abide (c)/ with his decision. (d)/ No error (e)
49. If I would have come (a)/ a little earlier, I would have (b)/got a glimpse (c)/ of my beloved leader. (d)I No error (e)
50. Why you buy something (a)/ on the instalment system (b)/ you are not required to pay (c)/ the whole price at once. (d)/No error (e)
51. I am waiting for you (a)/ for the last two hours (b)/ but you did not bother (c)/ to turn up in time (d)/ No error (e)
52. He is certainly a man (a) / whom I know very well (b) / is trustworthy beyond doubt (c) / and meticulous in his habits. (d) / No error (e) /
53. No sooner did (a) / we reach the station (b) / than the train had (c) / started moving out of the station. (d) / No error (e) /.
54. I am sure about it, (a)/ nobody has lived (b) / in that house (c) / for a hundred years. (d) / No error (e) /
55. There were no less (a) / than forty boys (b) / in the class (c) / when this happened. (d) / No error (e) /
56. I am glad to hear (a) / that you narrowly escaped (b) / being run over by (c) / a speeding car yesterday. (d) / No error (e) /
57. This laboratory of physics is (a)/ not only equipped with (b)/ all state-of-the-art instruments (c)/ but also with outstanding physicists. (d)/ No error (e)
58. No method of making (a)/ other people agree to (b)/ your view-point is (c)/ as effective as this method. (d)/ No error (e)
59. I was pretty sure that (a)/ he would support my views (b)/ for changing the age-old (c)/ and static structure of our organisation. (d)/No error (e)
60. I did not like his (a)/ comments on my paper (b)/ but I had no alternative (c)/ as I had agreed to keep quiet. (d)/No error (e)
61. The report is candid in admitting (a)/ that the investment by the government (b)/ in health and family planning (c)/ have been eroded considerably. (d)/ No error (e)
- Directions (Qs.62 -68):** Read each sentence(s) to find out whether there is any grammatical error in it. The error, if any, will be in one part of the sentence. The letter of that part is the answer. If there is no error, the answer is (e), i.e., No error'. (Ignore the errors of punctuation, if any).
62. (a) The judge asked the man
(b) if the bag he had lost
(c) contain five thousands rupees.
(d) The man replied that it did
(e) No error
63. (a) I trust you will
(b) show forbearance to me
(c) a few minutes more
(d) so that I can finish this work.
(e) No error
64. (a) The ground outside the village
(b) abounding with frogs and snakes
(c) the enemies of mankind
(d) is soft and marshy.
(e) No error
65. (a) We are all short-sighted
(b) and very often see but one side of the matter
(c) our views are not extended
(d) to all that has a connection with it.
(e) No error
66. (a) Just laws are no restraint on
(b) the freedom of the good,
(c) for the good man desires nothing
(d) which a just law interfere with.
(e) No error
67. (a) Had he done
(b) his home work well
(c) he would not have
(d) suffered this embarrassment.
(e) No error
68. (a) He was angry with me
(b) because he thought my
(c) remark was
(d) aimed before him.
(e) No error
- Directions (Qs.69-178):** Which of the phrases (a), (b), (c) or (d) given below should replace the phrase given in bold in the following sentence to make the sentence meaningful and grammatically correct? If the sentence is correct as it is and no correction is required mark (e) as the answer.
69. He admitted admiringly that he had never come across a painting which **did not please him more**.
(a) pleased him more
(b) would have pleased him
(c) had not pleased him more
(d) had been pleased him any more
(e) No correction required
70. It **has always been** better to use preventive measures than to cure illness
(a) had always been
(b) is always
(c) was always
(d) would have always been
(e) No correction required
71. He had deliberately kept the matter pending so that people **should be bribed** him.
(a) could be bribed
(b) should bribe
(c) could be bribing
(d) should have bribed
(e) No correction required

72. Because of a shortage the government had appealed to the people **to be extravagant** with water.
- for being extravagant
 - to be saving
 - to be economical
 - to be economic
 - No correction required
73. He **was found absorbing** in his studies when I reached there.
- was to find absorbed
 - was found absorbed
 - had been found absorbing
 - had to be found absorbing
 - No correction required
74. The guide warned us that we **had better be prepared** for a long, hard day.
- had been better prepared
 - should better be prepared
 - should be prepared with
 - had been better preparing
 - No correction required
75. Income tax rates are usually **associated to one's** annual income.
- related to one's
 - dependent to one's
 - depended on one's
 - associated with one's
 - No correction required
76. All that I have described **have been taken** place in the last four decades.
- have taken
 - has been taken
 - has taken
 - was taken
 - No correction required
77. The fees charged by the architect for the plans of the new building **were unreasonable high**.
- were unreasonably high
 - were unreasonably higher
 - had been unreasonably higher
 - had been unreasonable high
 - No correction required
78. There are many **new emerging** fields in information technology and electronics.
- newly emerging
 - new emergent
 - new emergency
 - newly emergent
 - No correction required
79. People in underdeveloped countries **are distressing because of** the antagonistic attitude of developed countries.
- have been distressing with
 - are distressed because
 - are distressed at
 - were distressing by
 - No correction required
80. He **had been behaved** impolitely and suffered owing to that.
- was behaved
 - had behaved
 - have been behaved
 - would have behaved
 - No correction required
81. It has become a **commonly practise to talk about** women's liberation.
- commonly practised talk about
 - common practice to talk about
 - common practice of talking with
 - commonly practising to talk about
 - No correction required
82. He is so brisk himself that he cannot **tolerate any efficiency**.
- tolerate hardly any inefficiency
 - hardly tolerates lethargy
 - tolerate any haste
 - tolerate any delay
 - No correction required
83. No person with a **reasonably self-esteem** would ever like to succumb to any pressure.
- reasonable self-esteem
 - reasonable self-esteemed
 - reasonably self-esteemed
 - reasonably a self-esteem
 - No correction required
84. It is the temple where religious rites are celebrated **as they were for** centuries.
- as they have been for
 - so were they for
 - as they are for
 - as they were before
 - No correction required
85. By the time he had won his commission, the senior officer **had to start seeking** employment elsewhere.
- had started seeking
 - were started seeking
 - had been started to seek
 - were to have started seeking
 - No correction required
86. The congestion on the streets must **be seen to believe**.
- have been to believe
 - have been seen for believing
 - have seen for belief
 - be seen to be believed
 - No correction required
87. He had begun to develop the qualities that he **was going to need** in later years.
- was going to be needed
 - had gone to need
 - was later to need
 - had been gone to need
 - No correction required
88. All **round is emptiness and silence**, the silence, it seems, of a land that man has not yet set foot upon.
- around is emptiness and silence
 - round is empty and silent
 - round are emptiness and silence
 - around are empty and silence
 - No correction required

89. He was quite sure that none of them **were aware of** the truth.
 (a) were aware from
 (b) was aware of
 (c) were beware of
 (d) had aware of
 (e) No correction required
90. I was **too overwhelmed to** make any decision.
 (a) too much overwhelm to
 (b) so overwhelmed to
 (c) extremely overwhelmed about
 (d) quite overwhelming to
 (e) No correction required
91. **Shocked of finding** an unknown person, the army officer briskly caught hold of him.
 (a) Shockingly found
 (b) Shocked at finding
 (c) Shocked by finding
 (d) Finding as a shock
 (e) No correction required
92. No sooner did he reach the station than the train **had started moving**.
 (a) had started movement
 (b) had been moving
 (c) had been started movement
 (d) started moving
 (e) No correction required
93. He **has even venturing into** areas which he had shunned.
 (a) had even venturing into
 (b) even is being venture into
 (c) has even been venturing into
 (d) has even been ventured in
 (e) No correction required
94. **When the boy regain** consciousness he wanted to eat something.
 (a) If the boy regain
 (b) When the boy regained
 (c) Despite the boy regain
 (d) On the boy regaining
 (e) No correction required
95. The social worker wanted **to bring about** little changes in the lives of the people of that village.
 (a) to bring back
 (b) to bring up
 (c) to bring forth
 (d) bringing about
 (e) No correction required
96. Raghunath proposes to **lay claim for** the insurance company as soon as he recovers from the accident.
 (a) lay claim to
 (b) lay claim on
 (c) laying claim towards
 (d) lay claim against
 (e) No correction required
97. The new concession announced by the Government will have only a **marginalised effect on** the lives of the people.
 (a) marginal effect off
 (b) margin of effect on
 (c) marginal effect on
 (d) marginalising effect in
 (e) No correction required
98. The Charitable Hospital works **under the auspices from the** Welfare Trust of an Industry.
 (a) under the auspices by
 (b) by the auspices from
 (c) through the auspices from
 (d) under the auspices of
 (e) No correction required
99. Government **should not stop to spending** money on arms and ammunition in the wake of the present strained relations.
 (a) should not stop spending
 (b) shall not be stopped to spend
 (c) will not stop to spend
 (d) should not be stopping to spend
 (e) No Correction Required
100. The one-act play was so humorous that it **was hardly impossible** to keep a straight face.
 (a) is hardly impossible
 (b) was almost impossible
 (c) is hardly possible
 (d) was barely impossible
 (e) No Correction Required
101. One of the politicians **have open admittance** that he had resorted to corrupt practices.
 (a) have opened admittance
 (b) has opened admittance
 (c) has openly admitted
 (d) have been open admittances
 (e) No Correction required
102. The unkind **comments passed by** her superiors made her resign.
 (a) unkindly comments passing by
 (b) unkind comments passing on
 (c) unkind comments posed by
 (d) unkindly comments passed on
 (e) No correction Required
103. The ban on public meetings **have been lifted temporarily** in view of the auspicious occasion.
 (a) have been temporarily lifted
 (b) have been lifting temporarily
 (c) had been lifting temporary
 (d) has been lifted temporarily
 (e) No Correction Required
104. **Finishing his breakfast**, he started working on the problem that had been awaiting disposal for a long time.
 (a) His breakfast finished
 (b) His breakfast having finished
 (c) Having finished his breakfast
 (d) Finished his breakfast
 (e) No correction required
105. **One of the function of** a teacher is to spot cases of maladjustment.
 (a) One of the functions of
 (b) Most of the functions of
 (c) Some of the functions
 (d) One of the functions by
 (e) No correction required

106. In our friends' circle it is customary for each of the members **to buy their own tickets.**
- buying their own tickets
 - are buying their own tickets
 - buying his own tickets
 - to buy his own ticket
 - No correction required
107. Where the distance is not too much I prefer walking on foot **than waiting for a bus.**
- than wait for the
 - than no waiting for
 - to waiting for a
 - rather than waiting for a
 - No correction required
108. **Being a pleasant morning,** he went out for a walk along the seashore.
- With a pleasant morning
 - It being a pleasant morning
 - Being a pleasing morning
 - As a pleasant morning
 - No correction required
109. We are happy to recommend that his son **to be considered for** the post.
- considers for
 - be considered with
 - be considered for
 - may consider for
 - No correction required
110. A majority of the students believe that the examinations **are unnecessary.**
- have been not necessary
 - have unnecessary
 - are being unnecessary
 - were being unnecessary
 - No correction required
111. **No sooner the advertisement appeared** in the newspapers than there was a rush on the booking window.
- No sooner had the advertisement appear
 - The advertisement appear no sooner
 - The advertisement no sooner having appeared
 - No sooner did the advertisement appear
 - No correction required
112. May I know **whom I am talking to?**
- who I am talking
 - to whom I am talking
 - whom I talk
 - who I have talked
 - No correction required
113. I **am working** on this job since last Monday.
- was working
 - have been working
 - being worked
 - were to have worked
 - No correction required
114. The modifications made by them in the draft were so drastic that the entire emphasis **had been shifted.**
- shall have been shifted
 - had shifted
 - was being shifted
 - had been shifting
 - No correction required
115. It **is reliable to learn** that there is not substantial evidence to prove his innocence.
- is reliably learnt
 - reliably to learn
 - was reliable to learn
 - has been reliable learning
 - No correction required
116. He has now **succeeded in overwhelming the** grief.
- successful in overwhelming
 - successful to overwhelm
 - succeeded to overwhelm
 - succeeded in overcoming
 - No correction required
117. Despite their best efforts, they could not convince the members **by changing their** decision.
- and changed their
 - to change their
 - with changing their
 - in changing his
 - No correction required
118. The novel ideas suggested by the employee **were appreciated by** the management.
- have appreciated by
 - have been appreciated for
 - were appreciative of
 - had appreciated by
 - No correction required
119. The two brothers were **so much similar in** appearance that nobody believed that they were twins.
- very much similar in
 - so much similar at
 - so different in
 - so different from
 - No correction required
120. The sight of the accident was **so frightened that** the bystanders could not utter a single word.
- so very frightening because
 - so frightening that
 - extremely frightening as
 - extremely frightened
 - No correction required
121. The police **break-up** the trunk and found the looted jewellery.
- broke opened
 - broke open
 - break opened
 - breakingly opened
 - No correction required
122. The advertisement offered a reward for information **relating to the** activities of the terrorists.
- relative to the
 - as related to the
 - which relate to
 - regarding to the
 - No correction required
123. He travelled by bus but **would have travelled** by train to save time.
- must have travelled
 - should be travelling
 - could be travelling
 - should have travelled
 - No correction required

124. He claims that his proposal is **preferable than that of** any other employee.
 (a) preferable than for
 (b) preferable for than
 (c) preferably more than that of
 (d) preferable to that of
 (e) No correction required
125. The social worker **has championed the cause from** the weak and oppressed for the last four decades.
 (a) has been championing the cause of
 (b) had championed the cause for
 (c) has been championing the cause for
 (d) had been championed the cause for
 (e) No correction required
126. Initially the hijackers seemed determined not to submit but ultimately they **were given in**.
 (a) were given up
 (b) gave in
 (c) had been given up
 (d) had been given in
 (e) No correction required
127. Every one of us must have experienced how people **have to put up with a good deal of** discomfort while travelling.
 (a) have to be put with a good deal of
 (b) have been putting up a good deal with
 (c) have to put up a good deal with
 (d) are putting up with a good deal with
 (e) No correction required
128. Disputes are mainly maintained by those who **are nothing else to do**.
 (a) have nothing else to do
 (b) are nothing to do else where
 (c) had nothing to be done
 (d) do not have nothing else to do
 (e) No correction required
129. The judge noticed that the two statements made by the accused **were not consistent from** each other.
 (a) were not being in consistence for
 (b) were being inconsistent at
 (c) had not been consistent for
 (d) were not consistent with
 (e) No correction required
130. The economic reforms initiated in 1991 **have borne fruit**.
 (a) has born fruit
 (b) have burnt fruit
 (c) have been borne fruits
 (d) have been bearing the fruits
 (e) No correction required
131. Our business firms **were full aware of** the problems they were going to face on the threshold of the year 2000.
 (a) have been full aware of
 (b) were fully aware of
 (c) had been fully aware at
 (d) were fully aware into
 (e) No correction required
132. The habit of smoking **has been grow upon** the youngsters.
 (a) is growing up
 (b) has been grown up
 (c) has been growing upon
 (d) has grown up
 (e) No correction required
133. To succeed in a difficult task, **persistent is needed**.
 (a) persistent is what one needs
 (b) persistence should have needed
 (c) one needs to be persisted
 (d) persistence is needed
 (e) No correction required
134. **Despite being tried his best to** persuade people to give up smoking, he could not attain success.
 (a) Despite his best trying
 (b) Despite of his best
 (c) In spite of being tried his best
 (d) Despite trying his best
 (e) No correction required
135. His suggestions **were so trivial and hence** nobody took any cognizance of them.
 (a) so trivial that and have (b) very trivial and hence so
 (c) too trivial to and hence (d) very trivial and hence
 (e) No correction required
136. **But for your time of helping**, we could not have accomplished our goal in such a small time span.
 (a) But for your timely help
 (b) Because of your timely helping
 (c) Despite your time of helping
 (d) But your time for helping
 (e) No correction required
137. He failed in his attempt to disperse the mob before the miscreants **sets the fire on the bus**.
 (a) set the bus on fire (b) setting fire on the bus
 (c) set fire to the bus (d) set the fire on to the bus
 (e) No correction required
138. Even on most critical moments, he is calm, but today he **appears very much disturbed**.
 (a) appeared very much disturb
 (b) appears very much to disturb
 (c) appeared to be very much disturbing
 (d) is appearing very much disturbing
 (e) No correction required
139. Their attempt of rioting was foiled because **of the police squad arrived** on time.
 (a) of the police squad being arrived
 (b) of the arrival of the police squad
 (c) the police squad arrival
 (d) of the police squad had arrived
 (e) No correction required
140. How can one mobilise support from colleagues without **being cordially to** them?
 (a) being cordially for (b) been cordially to
 (c) being cordial to (d) cordially being to
 (e) No correction required
141. For every citizen it is mandatory to help the civic administration **for keep up the city clean**.
 (a) for upkeep clean the city
 (b) for clean and keep the city
 (c) for keeping of the city cleanliness
 (d) to keep the city clean
 (e) No correction required

142. Anyone **who known to India's villages knows** the meaning of scarcity.
 (a) knowing India's villages knows
 (b) is known to India's villages knows
 (c) knows India's villages knows
 (d) knew India's villages knowing
 (e) No correction required
143. In our country women **have opportunities to rise** to the top in every walk of life.
 (a) have been having opportunities
 (b) have had opportunities for a raise
 (c) have opportunities to raise
 (d) having opportunities to rise
 (e) No correction required
144. If Indian people are united, this nation **can become a source** of strength for the entire world.
 (a) could become a resource of
 (b) can become resourceful for
 (c) would be a source in
 (d) can became a source with
 (e) No correction required
145. All their efforts **were direct to** promote harmony among various groups of people.
 (a) were directing to (b) were directed at
 (c) have directed for (d) were directed to
 (e) No correction required
146. **What did happen** there in the first place is not a matter of our concern.
 (a) What happens
 (b) What would have happened
 (c) What happened
 (d) What should have happened
 (e) No correction required
147. The speaker highlighted the contribution of women **for bringing about** social changes.
 (a) for bringing in (b) in bringing of
 (c) for the brought over (d) in bringing about
 (e) No correction required
148. Such inequalities **can be founded** enshrined in the constitutions of other countries also.
 (a) could have been founded
 (b) can be found
 (c) could be founded
 (d) could have found
 (e) No correction required
149. The local authorities **were never bothering to** care about the unfortunate happenings.
 (a) were never bothered to (b) never bothered to
 (c) never were bothering to (d) were never bothering to
 (e) No correction required
150. India's outlook on the world **is composing of** these various elements.
 (a) is composed of (b) is composed by
 (c) is composed with (d) has been composing at
 (e) No correction required
151. How religious intolerance can blight social peace and harmony can be gauged from events **take place around** the globe.
 (a) taken place over (b) taking place around
 (c) took place around (d) taken place in
 (e) No correction required
152. This exploitation of the helpless tribals **needs to the condemned.**
 (a) need to be condemned (b) needs condemnation
 (c) needs to be condemned (d) need to condemnation
 (e) No correction required
153. The fact-finding team **which had been at** the area found villagers giving information to the police.
 (a) which had been for (b) that led to
 (c) which led to (d) that had been to
 (e) No correction required
154. The new facts he has discovered **could not change** my opinion.
 (a) has not changed (b) could not be changed
 (c) cannot be changed (d) may be not changed
 (e) No correction required
155. On firm ground the tent **had held in** place by pegs driven into the ground.
 (a) has been held at (b) was held in
 (c) was being held with (d) should be held at
 (e) No correction required
156. In the midst of his laborious work, **came a stroke of** good fortune.
 (a) comes a strike of (b) came a strike of
 (c) a strike comes of (d) came a stroke for
 (e) No correction required
157. Tourists **have still come** to Egypt and are probably still inscribing their names on the old stones.
 (a) are still coming (b) have come still
 (c) still have come (d) will have still come
 (e) No correction required
158. There was a pause when we had finished and then a **strangely subdued** voice broke the silence.
 (a) the strange subdueing
 (b) a strange subdueing
 (c) the strange subdued
 (d) a stranged and subdueing
 (e) No correction required
159. I overheard him saying something to me when I **was quit.**
 (a) was almost quit (b) was about to quit
 (c) had about to quit (d) had been quitting
 (e) No correction required
160. We had **not only helped them with** money but also with new machinery and raw material.
 (a) not only helped them by
 (b) helped them not only with
 (c) helped not only to them with
 (d) not only been helped them by
 (e) No correction required
161. I was shocked to learn that no one **was knowing** where the files were kept.
 (a) had been knowing (b) had been known
 (c) knew (d) was known
 (e) No correction required

162. All **you really need is** a mask, a tube, flippers and a spear gun.
 (a) you really need are (b) your real need are
 (c) you real need is (d) you really needed is
 (e) No correction required
163. By contrast the construction of great temples which **had seemingly have presented** great engineering difficulties, was relatively easy.
 (a) had seemingly been presented
 (b) had been seemed present
 (c) was seemingly presented
 (d) would seemingly have presented
 (e) No correction required
164. I am glad to hear that you narrowly escaped **being run over by** a speeding car yesterday.
 (a) by being run over by (b) to run over by
 (c) run over down by (d) to being over run by
 (e) No correction required
165. It is with a heavy heart that I pen these few lines to **condole for you on** the death of your beloved mother.
 (a) condole with you in (b) condole upon you on
 (c) condole with you on (d) condole for you with
 (e) No correction required
166. You should visit France when you **had been to England**.
 (a) had gone to England
 (b) go to England
 (c) were going to England
 (d) should have gone to England
 (e) No correction required
167. He is one of the best players **that has ever lived**.
 (a) that would have ever lived
 (b) that have ever lived
 (c) that would have been ever lived
 (d) that would ever live
 (e) No correction required
168. He asked me if he **did shut the window**.
 (a) will shut the window
 (b) can shut the window
 (c) may shut the window
 (d) should shut the window
 (e) No correction required
169. The teacher told us that the prize **would be presented the next day**.
 (a) will be presented tomorrow
 (b) would have been presented the next day
 (c) shall be presented tomorrow
 (d) should be presented tomorrow
 (e) No correction required
170. His speech was optimistic, but at the end of it he **stroke a note of caution**.
 (a) strike a note of caution
 (b) strut for a note of caution
 (c) striked a note of caution
 (d) struck a note of caution
 (e) No correction required
171. **Men have been known** how important the sun is to them
 (a) Men have long known
 (b) Men have to know long
 (c) Men had long known
 (d) Men have long know
 (e) No correction required
172. I did not like his comments on my paper but I had no alternative as **I have agreed to keep quiet**.
 (a) I have to agree to keep quit
 (b) I had agreed to keep quiet
 (c) I had agreed for keeping quiet
 (d) I have to agree for keeping quiet
 (e) No correction required
173. Please do not give him any food **if his temperature will rise**.
 (a) if his temperature rises
 (b) if his temperature would rise
 (c) if his temperature shall rise
 (d) unless his temperature rises
 (e) No correction required
174. It is only in the 1980s that **a new kind of unity appeared among** the capitalist powers.
 (a) a kind of new unity appeared among
 (b) the kind of new unity appeared among
 (c) a new kind of unity appeared with
 (d) a new kind of unity was appeared among
 (e) No correction required
175. Change in agricultural growth and rural prices are **determinations of important change** in rural poverty.
 (a) important changes of determinations
 (b) changes of important determinations
 (c) important for determining of change
 (d) important determinants of changes
 (e) No correction required
176. It is easy to prove the **guilt but not innocent** of a person.
 (a) guilty but not innocent
 (b) guilt but not innocence
 (c) guilty and not innocent
 (d) guilt and not innocent
 (e) No correction required
177. As a professional economist he **had throughout pre-occupied with** the basic problems of Indian society.
 (a) was throughout pre-occupied by
 (b) is pre-occupied throughout by
 (c) was throughout pre-occupied with
 (d) had been pre-occupied throughout
 (e) No correction required
178. Census reports in India have **voiced concerned over the declining** trends in the sex ratio.
 (a) voiced concern over the declining
 (b) voiced concerned over the declining
 (c) voice concerned by the declined
 (d) voiced concern by the declined
 (e) No correction required

Directions (Qs. 179 -184): In each of the following questions two/three sentences are given. These sentences are combined into a single sentence and given as four alternatives below each question. You have to select one sentence which is grammatically correct and conveys the same meaning as conveyed by the two/three sentences and mark the letter of that sentence as your answer. If none of the four sentences given as alternatives below each question is correct, mark 'e', None of the above sentences is correct, as the answer.

179. Her father was listening keenly. Rupa noticed this.
 (a) Rupa noticed that her father had listened keenly.
 (b) Rupa had noticed that her father was listening keenly.
 (c) Rupa noticed that her father is listening keenly.
 (d) Rupa noticed that her father was listening keenly.
 (e) None of the above sentences is correct.
180. The sun is very important to men. Men have long known this.
 (a) Men have long known how important the sun is to them.
 (b) The sun is very important to them is known to men.
 (c) The sun has been very important for men is known to them.
 (d) The men know the sun is very important to them.
 (e) None of the above sentences is correct.
181. He got up. He wound the cloth around his head.
 (a) Having got up, he had wound the cloth around his head.
 (b) Getting up he did wound the cloth around his head.
 (c) Getting up, he wound the cloth around his head.
 (d) Having getting up, he wound the cloth around his head.
 (e) None of the above sentences is correct.
182. They watched. They wondered. They were unable to find the reason.
 (a) They watched and wondered till they were unable to find the reason.
 (b) They watched and wondered but were unable to find the reason.
 (c) They had watched and wondered but were unable to find the reason.
 (d) They watched and wondered despite being unable to find the reason.
 (e) None of the above sentences is correct.
183. I was very much overwhelmed. I did not make any decision.
 (a) I was so overwhelmed to make any decision.
 (b) I could not make any decision as I was very much overwhelmed.
 (c) I was too overwhelmed to make any decision.
 (d) Being very much overwhelmed, I did not make any decision.
 (e) None of the above sentences is correct.
184. He is sure to receive his pay. It is due to him. Why then does he worry?
 (a) Why does he worry, till he is sure to receive his pay due to him?
 (b) Why should he worry as the pay due to him is sure to be received?
 (c) Why does he worry as he should be sure to receive the pay due to him?
 (d) Why does he worry, since the pay due to him is sure to be received?
 (e) None of the above sentences is correct.
185. Should you need a duplicate licence you must submit an application along with a copy of your ration card.
 (a) Unless you submit an application along with a copy of your ration card you will not get a duplicate licence.
 (b) You should require a duplicate license if you submit an application along with a copy of your ration card.
 (c) If you submit your application along with your ration card you do not need duplicate license.
 (d) If you submit an application along with your ration card you will get only a license.
 (e) None of these
186. Although the strike of transporters continues, I shall come.
 (a) I shall come if the strike of transporters continues.
 (b) I shall not be able to come if the strike of transporters continues.
 (c) Even though I come, the strike of transporters is going to continue.
 (d) Whether or not the transporters strike continues I shall come.
 (e) None of these
187. The Manager would like you to help him locate the default.
 (a) If you help him locate the default, the Manager would like you.
 (b) The Manager desires that you should provide him the necessary assistance to locate the default.
 (c) The Manager feels that if you do not help him the fault will not be located.
 (d) The Manager expects that the default should be located only with your help.
 (e) None of these
188. The judge remarked that not all the accused were really guilty.
 (a) The judge remarked that some of the accused were guilty while others were not.
 (b) The judge remarked that all the accused were not innocent.
 (c) The judge remarked that all those accused cannot be necessarily guilty.
 (d) The judge remarked that all those who are accused may contain some who are really guilty.
 (e) None of these
189. Unlike the tribals who are very hardworking, the urban communities cannot withstand physical strain.
 (a) The tribals do not like to withstand physical strain as the urban communities do.
 (b) The urban communities are hardworking but they do not like to undertake physical strain.
 (c) The tribals can withstand physical strain whereas urban communities cannot.
 (d) Because the tribals are hardworking they can tolerate physical strain.
 (e) None of these

Directions (Qs. 185 - 189): For each statement there are four different sentences given below it. Pick out the one that most appropriately conveys the meaning of the statement. The number of that sentence is the answer. If none of them conveys the meaning of the statement the answer is (e), i.e., 'None of these'.

Directions (Qs. 190-194): In each of the following questions there is a sentence with a phrase/idiom printed in bold, followed by five options. Find out the option which expresses the meaning of the phrase/idiom correctly.

190. To speak of one language for the world as leading to one purpose is to **put the cart before the horse**.
- reverse the proper order of events
 - invite dictatorship
 - accelerate a backward movement
 - indulge an unrealistic proposition
 - None of these
191. He was somewhat **taken aback** by the news that the police intended to prosecute him.
- strike
 - terror-stricken
 - surprised and upset
 - fainted
 - enchanted
192. I have got enough money in my pocket to last me the rest of my life provided **I drop dead** this afternoon.
- save
 - rescue
 - commit suicide
 - die suddenly
 - None of these
193. Not one of his insulting remarks **caused a ripple** on the surface of her composure.
- caused anger
 - had noticeable effect
 - caused injury
 - evoked attention
 - None of these
194. Suresh knows that the good times are over, but he says, "we still feel **footloose and fancy-free**."
- a comeback
 - easy
 - original condition
 - the presence
 - boundless
- Directions(Qs. 195-209):** In each question below, two sentences are given. These two sentences are to be combined into a single sentence without changing their meaning. Three probable starters of the so combined sentence are given which are denoted by (A), (B) and (C). Any one or more or none of them may be correct. Find out the correct starter(s), if any, and accordingly select your answer from among the given five answer choices.
195. He has lost his immunity. Therefore, he is vulnerable to any disease.
- His loss of immunity....
 - Because of his vulnerability to his...
 - His vulnerability to any disease...
- Only (A)
 - Only (B)
 - Only (C)
 - Only (A) and (C)
 - Only (A) and (B)
196. You must sign your railway ticket, write your name and age on it. It becomes valid only after that.
- To make your railway ticket valid, the railway authorities should sign...
 - Without validating your railway ticket, you cannot...
 - To validate your railway ticket, you must...
- Only (A)
 - Only (B)
 - Only (C)
 - (A) and (B) only
 - (B) and (C) only
197. Are you satisfied with this information? Please contact me for any further clarification.
- If you need...
 - In case you need...
 - Should you need...
- None
 - All the three
 - (A) and (C) only
 - (A) and (B) only
 - (B) and (C) only
198. How much you earn is less important. What is more important is how you earn, i.e., your methods of earning?
- How you earn is as important
 - How much you earn is as important
 - How you earn is not as important
- Only (A)
 - Only (B)
 - Only (C)
 - All the three
 - None of these
199. You must submit the proof of your being a US citizen. Only then your NRI account will be made operative.
- Unless you prove...
 - Unless your NRI account is made operative...
 - Without your NRI account, you must...
- Only (A)
 - Only (B)
 - Only (C)
 - All the three
 - None of these
200. The hijackers' real identity will always remain a secret.
- No one will ever know the hijackers'...
 - The secret identity of the really...
 - The real identity of the hijackers would have remained...
- Only (A)
 - Only (B)
 - Only (C)
 - Either (A) or (C)
 - Any one of the three
201. "I'm extremely sorry. I'm late," said Sushma.
- Sushma apologized for my being...
 - Sushma tendered apology for her...
 - Sushma apologized for her being...
- Only (A)
 - Only (B)
 - Only (C)
 - Either (A) or (C)
 - Either (B) or (C)
202. They have displayed arrogant behaviour; they will therefore be punished.
- As a result of their arrogance, they...
 - They will be punished because...
 - They will punish because they have...
- Only (A)
 - Only (B)
 - Only (C)
 - Either (A) or (B)
 - Any one of the three
203. Not everyone among them was able to perform the act flawlessly.
- None among them could...
 - Few of them could not perform...
 - Some of them could perform...
- Only (A)
 - Only (B)
 - Only (C)
 - Either (A) or (B)
 - Either (B) or (C)
204. Most US citizens have made generous donations for rehabilitation of the victims of war.
- These generous donations...
 - The generous donations made by the victims of...
 - The rehabilitation of victims of war was generous...
- Only (A)
 - Only (B)
 - Only (C)
 - Either (A) or (B)
 - None of these

205. This judgement has been given by the highest court in the land. It therefore assumes finality from legal point of view.
 (A) Being the judgement of...
 (B) In spite of the judgement...
 (C) As it is the judgement of...
 (a) Only A (b) Only B
 (c) Only C (d) Only A and B
 (e) Only A and C
206. On this special occasion the Chief Minister of the state would be welcomed first. After that the Prime Minister would be extended a warm welcome.
 (A) Although the Prime Minister would ...
 (B) As per the prevalent practice the Prime Minister...
 (C) In spite of the Chief Minister...
 (a) Only A (b) Only B
 (c) Only C (d) Only A and B
 (e) Only A and C
207. India is rich in bio-resources. It has no clear legislative framework to regulate access to and use of these resources.
 (A) As India is rich...
 (B) But India is rich...
 (C) Although India is rich...
 (a) Only A (b) Only B
 (c) Only C (d) Only A and B
 (e) Only A and C
208. I did not receive any packet from Dipti. I also did not receive any phone call from her.
 (A) Neither did I receive...
 (B) Clearly I did not...
 (C) Because I did not ...
 (a) Only A (b) Only B
 (c) Only C (d) Only A and B
 (e) Only A and C
209. I was to reach home a little early but I got delayed. On reaching home I found that guests had left a little while ago.
 (A) Hardly had I reached...
 (B) As long as I reached...
 (C) Besides few minutes...
 (a) Only A (b) Only B
 (c) Only C (d) Only A and B
 (e) Only A and C

Directions (Qs. 210-214): In each question below, an incomplete sentence is given which is followed by three possible fillers denoted by (A), (B) and (C). Find out which one, two or three of these fillers can make the sentence meaningfully complete and grammatically correct.

210. ____ when the audience started throwing rotten eggs towards him.
 A No sooner did he stand up to address
 B No much before he stood up
 C He had hardly stood up
 (a) Only C (b) Only B
 (c) Only A or B (d) Only B or C
 (e) Any one of the three
211. ____ sacrifice their own self for the welfare of the common man.
 A Not all men devoted to social service
 B Only dedicated men
 C In exceptional cases certain anti-social elements

- (a) Only C (b) Only A or C
 (c) Only B or C (d) Only A or B
 (e) Any one of the three
212. Natural calamities such as floods, earthquakes, etc occur so suddenly and unexpectedly that ____
 A people get hardly any time to save themselves
 B man realises his limitations and supremacy of nature
 C devastation cannot be prevented
 (a) Only A (b) Only B
 (c) Only A or B (d) Only A or C
 (e) Any one of the three
213. ____ the poor students had managed to come out successfully with flying colours.
 A Despite lack of resources
 B Owing to adverse circumstances
 C It was a mere coincidence that
 (a) Only A (b) Only A or C
 (c) Only B or C (d) Only A or B
 (e) Any one of the three
214. They appreciated my act of bravado because the life I saved was ____.
 A insignificant for them
 B extremely precious
 C reverent to them
 (a) Only B (b) Only C
 (c) Only A or B (d) Only B or C
 (e) Any one of the three

Directions (Qs. 215 - 219): In each question below, two sentences are given. These two sentences are to be combined into a single sentence without changing their meaning. Three probable starters of the combined sentence are given which are denoted by (A), (B) and (C). Any one or more or none of them may be correct. Find out the correct starter(s) and accordingly select your answer from among the given five answer choices.

215. He always delays in taking any action. It makes others suffer a lot.
 A. His taking action on time makes...
 B. Others suffer a lot because of ...
 C. On account of his procrastination ...
 (a) A, B and C (b) A and B only
 (c) B and C only (d) A and C only
 (e) None of these
216. Don't add so much chilli powder to the soup. Consumers are only small children.
 A. Because small children do not allow chilli powder ...
 B. Since, small children do not consume more soup...
 C. Adding more chilli powder to soup makes the small children like ...
 (a) None (b) A only
 (c) B only (d) C only
 (e) A and C only
217. The quality of the fabric was not impressive. We changed our plan of purchasing.
 A. The quality of the fabric being ...
 B. We changed our ...
 C. In spite of the unimpressive ...
 (a) Only A (b) Only B
 (c) Only C (d) A and B only
 (e) All the three A, B and C

218. Madhuri has been consistent in her studies. Her performance in the examination was nothing else but excellent.
- A. Despite being consistent in her studies ...
 B. Madhuri's performance in the examination was not excellent because...
 C. Because Madhuri was only consistent and not intelligent, her performance...
- (a) Only A (b) Only B and C
 (c) Only A and C (d) All the three A, B and C
 (e) None of these
219. It is very cold here. You must bring warm clothes with you.
- A. Since, you must ...
 B. As it is very ...
 C. If it is very ...
- (a) Only A (b) Only B
 (c) Only C (d) A and C only
 (e) B and C only
- Directions (Qs. 220-234):** In each of these sentences, parts of the sentence are numbered (a), (b), (c), (d) and (e). One of these parts has some error in it. The error may be either of spelling or grammar or wrong word or unnecessary word etc. The letter of the part that contains the error is the answer.
220. **It was** (a)/ **natural that** (b)/ some difficulties **crop up** (c)/ in his life, **while** (d)/ **he was** (e)/ studying.
221. **Chatting on** (a)/ the Internet with **people only not** (b)/ **makes us** (c)/ feel friendly **but also** (d)/ **increases our** (e)/ knowledge.
222. Knowledge will not **attract money** (a)/ **unless it is** (b)/ organised and **intelligently directed** (c)/ **through practical plans** (d)/ of action, to the definite end **of accumulation** (e)/ of money.
223. **As the experiences** (a)/ of other **countries have shown**, (b)/ an ailing (c)/ financial sector **can very quickly** (d)/ **render wreck** (e)/ the entire economy.
224. **If you are** (a)/ **one of the** (b)/ who have **often wondered how** (c)/ **great fortunes are** (d)/ made, this story **will be enlightening**. (e)
225. **My only concern** (a)/**is that** (b) **at this juncture** (c)/ communal **sentiments are rather** (d)/heightened **up-wardly**. (e)
226. **However**, (a)/ this **division** (b)/ of power is not **quiet** (c)/ as neat **as it may** (d)/ appear **at first**. (e)
227. He strongly felt **that** (a)/ that **explanation** (b)/ which **was given** (c)/ **during the meeting** (d)/ was not at all **truth**. (e)
228. We **decided to** (a)/ dedicate this article **on the women** (b)/ who have been **instrumental in** (c)/ training **generations of** (d)/ young girls to **create a healthy** (e)/ atmosphere.
229. When the **opportunity came** (a)/ **it appeared** (b)/ in a **different form** (c)/ and **from a different** (d)/ direction **then he had** (e)/ expected.
230. The **roll** (a)/ of the institute is to provide technical support to other institutions and to constantly **monitor** (b)/ their **facilities** (c)/ and **performance**. (d)/ No error. (e)
231. The **competitive** (a)/ edge for **survival** (b)/ **lays** (c)/ in the **effective** (d)/ use of information technology. No error. (e)
232. The most **popular** (a)/ method **adopted** (b)/ by an organisation to **communicate** (c)/ job vacancies to the public is through **advertisement**. (d)/ No error. (e)
233. The act of **extending** (a)/ **preferential** (b)/ treatment to service providers was **high** (c)/ **appreciated**. (d)/ No error. (e)
234. The **significant** (a)/ **future** (b)/ is that none of the ancient Indian scientists **claimed** (c)/ **originality** (d)/ of their theories. No error. (e)

ANSWER KEY

1	(b)	24	(c)	47	(c)	70	(b)	93	(c)	116	(d)	139	(b)	162	(e)	185	(a)	208	(a)	231	(c)
2	(c)	25	(d)	48	(d)	71	(b)	94	(b)	117	(b)	140	(c)	163	(d)	186	(d)	209	(a)	232	(e)
3	(c)	26	(a)	49	(a)	72	(c)	95	(e)	118	(e)	141	(d)	164	(e)	187	(b)	210	(a)	233	(c)
4	(c)	27	(c)	50	(d)	73	(b)	96	(d)	119	(c)	142	(a)	165	(a)	188	(a)	211	(e)	234	(b)
5	(a)	28	(d)	51	(a)	74	(b)	97	(c)	120	(b)	143	(e)	166	(b)	189	(c)	212	(d)		
6	(a)	29	(d)	52	(a)	75	(a)	98	(d)	121	(b)	144	(e)	167	(b)	190	(a)	213	(a)		
7	(c)	30	(b)	53	(c)	76	(c)	99	(a)	122	(e)	145	(d)	168	(d)	191	(c)	214	(a)		
8	(c)	31	(b)	54	(b)	77	(a)	100	(b)	123	(d)	146	(c)	169	(e)	192	(d)	215	(c)		
9	(d)	32	(c)	55	(a)	78	(e)	101	(c)	124	(d)	147	(d)	170	(d)	193	(b)	216	(a)		
10	(b)	33	(a)	56	(e)	79	(c)	102	(e)	125	(a)	148	(b)	171	(a)	194	(e)	217	(d)		
11	(c)	34	(d)	57	(b)	80	(b)	103	(d)	126	(b)	149	(a)	172	(b)	195	(d)	218	(e)		
12	(d)	35	(b)	58	(a)	81	(b)	104	(c)	127	(e)	150	(a)	173	(a)	196	(c)	219	(b)		
13	(e)	36	(d)	59	(c)	82	(d)	105	(a)	128	(a)	151	(b)	174	(e)	197	(b)	220	(c)		
14	(d)	37	(c)	60	(c)	83	(a)	106	(d)	129	(d)	152	(c)	175	(d)	198	(e)	221	(b)		
15	(d)	38	(a)	61	(d)	84	(a)	107	(c)	130	(e)	153	(d)	176	(b)	199	(a)	222	(d)		
16	(e)	39	(d)	62	(c)	85	(a)	108	(b)	131	(b)	154	(e)	177	(c)	200	(a)	223	(e)		
17	(c)	40	(b)	63	(c)	86	(d)	109	(c)	132	(c)	155	(b)	178	(a)	201	(e)	224	(b)		
18	(d)	41	(d)	64	(e)	87	(e)	110	(e)	133	(d)	156	(e)	179	(d)	202	(d)	225	(e)		
19	(d)	42	(d)	65	(d)	88	(a)	111	(d)	134	(d)	157	(a)	180	(a)	203	(c)	226	(c)		
20	(a)	43	(d)	66	(d)	89	(b)	112	(e)	135	(d)	158	(e)	181	(c)	204	(e)	227	(e)		
21	(b)	44	(a)	67	(e)	90	(e)	113	(b)	136	(a)	159	(b)	182	(b)	205	(e)	228	(b)		
22	(a)	45	(d)	68	(d)	91	(b)	114	(c)	137	(a)	160	(b)	183	(d)	206	(e)	229	(e)		
23	(e)	46	(d)	69	(a)	92	(d)	115	(a)	138	(e)	161	(c)	184	(e)	207	(c)	230	(a)		

Hints & Explanations

1. (b) It should be 'has been sounding horn'.
2. (c) Replace 'by' with 'up'.
3. (c) It should be 'was' in place of 'is'.
4. (c) Change 'would not be traced' to 'could not be traced'.
5. (a) Change the first part as ——— It is/would be better ...
6. (a) The sentence should start as ——— If you had read ...
7. (c) The right phrase will be 'to look after' in place of 'to look over'.
35. (b) Replace *would write* by *writes*.
36. (d) Replace *changed* by *change*
37. (c) Replace *his* by *him*.
38. (a) Replace *has* by *had*.
40. (b) Replace 'of' with 'in'.
41. (d) Here there is a comparison between two persons, so it should be 'more honest' in place of 'most honest'.
42. (d) 'Submit' should be 'submitting'.
43. (d) Replace 'would not have' with 'had not'.
44. (a) 'team leaders encourages' should be replaced by 'team leaders encourage' or 'team leader encourages'.
45. (d) Replace 'are' with 'is' because the subject (prime minister) is singular here.
46. (d) Replace 'were' with 'was'.
47. (c) It should be 'the present I sent for him'.
48. (d) It should be *by* his decision.
49. (a) The sentence should begin as, 'if I had come ...'
50. (d) Replace 'at once' with 'at the beginning'
51. (a) The sentence should start as, I had been waiting for you.....'
52. (c) It should be "*and who is ...*" In the given form, the subject 'of is' is missing.
53. (c) Delete had. In a "No sooner...than..." structure, than is followed by a subject followed by past simple tense.
54. (b) *For a hundred years* indicates that the verb should be in the perfect continuous tense. Hence replace 'has lived' by 'has been living'.
55. (a) *Boys* is countable. Hence replace 'less' by 'fewer'.
57. (b) It should be "equipped not only with" instead of "not only equipped with".
58. (a) Here, as we are comparing two methods for a single purpose, the sentence should start as – 'No other method'.
59. (c) Views should always be followed by 'on' instead of 'for'.
60. (c) Delete 'I'.
61. (d) It should be 'has been' instead of 'have been'.

134. (d) *He* is the agent of the verb *try*; hence the active voice.
135. (d) Another correct alternative could have been *so trivial* that.
136. (a) *But for* means 'without'.
139. (b) *Because of* should be followed by a noun.
140. (c) Adverb *cordially* should be replaced by adjective *cordial* because it refers to pronoun *one*.
141. (d) "*Help + object*" is followed by the infinitive.
205. (e) (A) Being the judgement of the highest court in the land, it assumes finality from legal point of view.
(C) As it is the judgement of the highest court in the land, it assumes finality from legal point of view.
206. (e) (A) Although the Prime Minister would be welcomed after the Chief Minister of the state on this special occasion, he would be extended a warm welcome.
(C) In spite of the Chief Minister being welcomed first on this special occasion, the Prime Minister would be extended a warm welcome.
207. (c) (C) Although India is rich in bio-resources, it has no clear legislative framework to regulate access to and use of these resources.
208. (a) (A) Neither did I receive any packet from Dipti nor any phone call.
209. (a) (A) Hardly had I reached home when the guests left.
215. (c) B. Others suffer a lot because of his procrastination in taking any action.
C. On account of his procrastination others suffer a lot.
217. (d) A. The quality of the fabric being unimpressive, we changed our plan of purchasing.
B. We changed our plan of purchasing on finding the quality of the fabric unimpressive.
219. (b) B. As it is very cold you must bring warm clothes with you.
220. (c) Replace 'crop up' with 'cropped up'.
221. (b) Replace 'only not' with 'not only'.
222. (d) Replace 'through' with 'at'.
223. (e) Replace 'render wreck' with 'wreck' only.
224. (b) Replace 'one of the' with 'one of those'.
225. (e) Remove the word 'upwardly'.
226. (c) Replace 'quiet' with 'quite'.
227. (e) Replace 'truth' with 'true'.
228. (b) Replace 'on the women' with 'to the women'.
229. (e) Replace 'then' with 'than'.
230. (a) The word 'roll' makes no sense here. So replace it with 'role', which means 'function'.
231. (c) Replace 'lays' with 'lies'.
233. (c) Replace 'high' with 'highly'.
234. (b) It should be 'feature' instead of 'future' to make the sentence meaningful.



Reading Comprehension

INTRODUCTION

If one wants to find a success mantra in today's highly competitive world with ever expanding boundaries of knowledge, then it has to be – “know the right thing at the right time, make right use of it in just the right words” – we all have our own bank of knowledge, some have more than others, but what is the point of knowing if you don't know how to use your knowledge well. It is just like owning a guitar without knowing how to play it. But the good thing is you can easily learn to play it if you are committed and have the right guidance.

It is also true about reading comprehension which is all about knowing the right thing, making the right use of it, in the right words. It is the magical guitar on which you can play your success tune. But to learn to play this guitar you need constant effort and a right direction. So, why not begin now ?

Why do you think reading comprehension questions are asked from the primary level in school examinations to a level as high as competitive examinations for management or administrative work? Very simply put, in the present era which has a plethora of information, facts, knowledge, it is important for any officer, most of all, for a manager to be able to extract out relevant information from the given draft in minimum possible time and use it for the execution of the assigned project in the best possible way. Remember, as a Manager, you will be required to know details of your company, your staff, your client, your projects, your rivals. But it does not stop here for this you can find out and store on your desktop easily, the real managerial task is to use the available information cleverly to achieve maximum profit target. And this is what reading comprehension exercises give you a practice in. Therefore, a student must approach this section not only as a preparation exercise but as skill that he/she will use for the rest of his/her life. Having said how important Reading comprehension is, I would like the students to know that the reading comprehension section checks not your IQ rather your ability to analyse data and produce conclusions most useful and tangible for positive results. Every student should therefore, keep in mind that this section demands Aptitude more than Intelligence. So, with right direction and determined practice even an average student can excel in this area. Remember you can play guitar if you want to, hard enough.

Let's proceed with understanding reading comprehension.

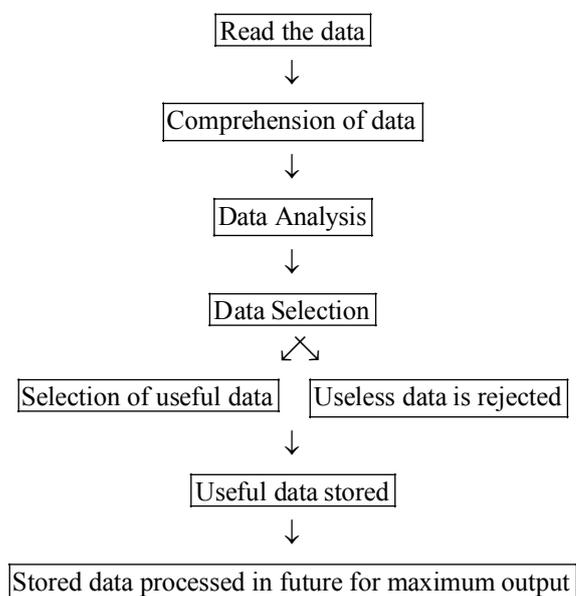
WHAT IS READING COMPREHENSION?

Interestingly, Reading Comprehension is an activity your brain is constantly engaged in. Whatever you do is reading Comprehension for brain. e.g. Reading newspaper, watching billboards on roadside, watching TV, talking with a person, listening to music etc. Reading a newspaper is obviously reading comprehension you would have understood. We read the news

printed on the paper, we understand what it means, we analyse the news for ourselves, by which I mean, sometimes we agree or disagree with the opinion expressed in the newspaper article. If it is a report we select the useful portion of news and store it in our memory to be used later. We like or dislike the subject chosen by the writer, sometimes we are made to think or question our beliefs or mindset by some articles, this is data analysis, then we remember what seems important or useful to us in the newspaper and forget much of the news in the paper everyday.

The same procedure happens even when you are watching hoarding on the roadside. The advertisements are the data for your brain. It is raw information that your brain understands and processes. Remember how many times you say after watching an Ad, “Oh, this is not real”, “Oh! Does it happen this way, I didn't know that”, “This is a good Ad”. All of the above reactions when studied closely are a judgment, fact-collection, opinion formation.

You don't remember everything about every Ad, only the part appealing to you finds a place in your memory. This is Data Selection. Same for watching TV and listening to music, your mind reads information, comprehends it, processes it, selects the useful section and stores it for future, rejects the useless part. So, to make Reading Comprehension easy we can draw a flow chart of the entire process.



The entire process of Reading Comprehension could be divided into 7 simple steps. But here is a need for a reckoner. Though reading comprehension is what our brain practices all the time, yet we do not always perform very well when attempting a reading comprehension question, why?

Because what the brain does is at an ordinary simplistic level and we are unaware of even that. But what is required of an aspiring student is a conscious, skilful, determined effort to master the art of reading comprehension.

Let's illustrate all the seven steps involved in Reading Comprehension describing what we ordinarily do and what are the special concepts a students should keep in mind while attempting the Reading Comprehension section with some useful tips.

STEP 1 : Reading is the obvious important pre-requisite of the RC section. How well you read, in what manner do you read a given passage, would determine the level of your comprehension and consequently the analysis of information. Reading in the right way is very important.

WHAT is the RIGHT way of READING ?

As I have mentioned before that we are constantly engaged in the process of reading information from our surroundings. Only we do not do it skilfully in the right direction. This is what a student has to practice doing to read everything rightly. **HOW?** Even an apparently simple process of reading involves many factors that affect the output of reading. How intelligently can you mould these factors will, in turn, improve the quality of reading. These factors are :

- Subject of data
- Interest areas of the reader
- Concentration span of the reader
- Reading speed
- Retaining capacity
- Reading Aptitude

I. SUBJECT OF DATA

It is proven by research that our brains or brains of different people do not respond to different kinds of data in a similar manner or to a similar extent. Just like we all have our area of expertise, I might know a lot about space science while your knowledge of Automobile may be vast. On the other hand, my idea of latest cars, engines and their power may be meagre and you may find yourself fumbling if questioned about planetary movements, composition of stars etc. This is a reflection of reading habits. Ordinarily, we do selective reading, e.g; while reading a newspaper many students are used to skipping the Business news and jumping straight to sports page while many others simply refuse to look at the editorial page and drool all over the page 3 or entertainment section. Whereas reading has many advantages, it is neither feasible nor advisable for a student to read everything available on all topics under the sun. But it is important, nevertheless, for you to have some basic knowledge about most subjects. This will

- (1) **improve your general awareness,**
- (2) **boost your confidence,**
- (3) **sharpen your analytical skills** because you would be able to use information from different sections and even do a comparative study, if needed, it will also.
- (4) **improve your thinking skills** because as the quantity of facts will increase, you will be pushed to think about all of them. In this manner you will improve many of your skills, not just one. Also, one should not forget

that as a manager one needs to know about not just one field but many. Marketing requires more than just the knowledge of specific sector.

So, to begin with a student should open oneself to reading about varied subjects and not just a selected few. Then it becomes important to decide how much to read and from where to read. The best and age-old golden option is Newspaper. A good student **MUST** develop a habit of reading a newspaper properly everyday. You would say that you do already. In that case, answer the following questions and check yourself?

- * What is the most influential political news of the last week ?
- * What important discovery or research has been made in the field of science, technology or medicine in the gone month?
- * Which book was released by an Indian or American author in the gone week ?
- * Who is the Chief Minister of Gujarat ?
- * When did Einstein die ?
- * What is article 377 of the Indian constitution?
- * What was Rowlatt Act ? Which year was it passed?
- * Who is rated the best Badminton player in the world ?
- * Who is playing Danial Pearl's wife in the Hollywood film being made on the Journalist's life and murder by terrorists ?
- * Which film received the National Award this year?

Check your calibre as a reader now on the basis of the following result card.

Correct Answers	Result
0 – 3	Poor Reader
4 – 7	Average Reader
8 – 10	Good Reader

Now, you know yourself and what are your weaknesses. You would have noticed for yourself while answering the questions.

That despite reading the newspaper everyday you are not updated about the goings-on in every field. This is the first step towards becoming a good reader. You should choose wisely what newspaper or magazines you read. Most advisable would be The Hindu, Indian Express, The Times of India. You can choose from the following magazines India Today, Frontline, Outlook, The Economist. You should also read some books on History, Philosophy and literature as and when you have the time. Though reading must be done selectively so as not to waste time, don't read all articles and reports in the newspaper but intelligently choose after having read all headlines.

TIP

Use this reading habit to improve your vocabulary. Each day list the new words you come across. Classify them under subjects, e.g. Science, Sports, Politics, Literature. Learn their meanings and use them frequently. This will help you understand the jargon of different fields.

Now, let us quickly recall all that we have stated and discussed in this section and list the

MUST DOs FOR A GOOD READER

- * Read about different fields, don't restrict yourself to one.
- * Do intelligent reading, don't waste time reading junk information.
- * Read only from good newspapers and magazines
- * Utilise maximum time, read while travelling, waiting etc.
- * Try to indulge in a discussion everyday about what you read that day
- * Improve your vocabulary alongside reading

II. INTEREST OF READER

This factor is closely connected to the first factor. In fact, it is this factor that chiefly decides the subjects we choose to read about. Just like all fingers in a hand are not of the same size, our interest in every field cannot be of the same level. This is why we choose certain fields and eliminate others. e.g. while walking on the road, if there is a large poster of a bike newly launched in market, it is more likely that a teenage or a young boy would stop by to read the details about the bike rather than a girl who would probably stop by to read information on Jewellery or garments ranges. This is just difference of interests. This is the difference that decides the store of one's knowledge. Ordinarily, it is alright for a person to seek information about one feels drawn to the area of his/her interest. But a student should develop a habit of arousing an interest in different kind of fields equally.

Why is this important ?

Let us suppose that you have interest in fields A, B, D and F but you do not find fields C and E appealing at all. In that case, if you get a passage for Reading Comprehension from areas A, C and E, then you would attempt the first comprehension well because it is an area of your interest, therefore, you will be eager to know more about it, you will, therefore, read it with more concentration and finish reading in less time. Since you have some previous knowledge about the subject, the matter will not be completely new to you and therefore, you will be able to deal with it better. But for the other two passages, because of lack of interest in the topic, your engagement with the data will be half hearted. Owing to this, the comprehension process will slow down and the analysis will not be of the same quality as the first. It is, therefore, clear that the interest of the student in given passage greatly affects his/her performance in attempting the exercise. This is why it becomes important for an aspiring student to develop some interest at least in various fields whether it be science, politics, history, medicine, space, diplomacy, technology, literature, business, economy or world affairs etc.

This is where the first factor also comes into play. If a student reads from different topics, expands his/her reading to various field, he/she will automatically develop some interest in all the fields and also attain some knowledge about each sector. Combining the two, the efficiency of a student in attempting the RC section will be greatly improved.

TIP

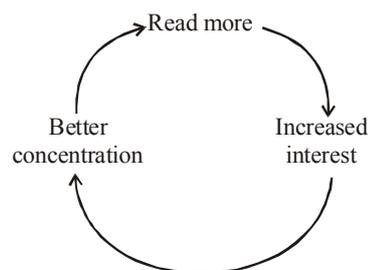
For maximum utility of time, you can depend on News Channels. You can select certain talk shows aired on some good English news channels like NDTV, CNN IBN or TIMES NOW and watch them regularly. This will improve your general awareness, give you an analytical perspective, keep you updated with news from different sectors, and also improve your English.

An Inquisitive mind is a gift for student. Always maintain a desire to know more, keep yourself curious about every subject. Do not hesitate in discussing your opinions, asking questions, expressing your views with friends, teachers or experts. This kind of interaction and communication will greatly increase your interest and knowledge and you will be drawn towards reading automatically. Always keep in mind that developing these habits will help you reap long term benefits.

III. CONCENTRATION SPAN OF READER

Not only in reading but any task to be executed requires concentration. But reading requires it more. So, most students from primary to senior level are heard complaining about lack of concentration as the reason for their poor performance. It has become a popular belief that concentration is naturally endowed on people and so some students have great concentration while others remain restless and cannot concentrate properly. Contrary to the popular belief, the truth is that even concentration can be achieved through effort.

Scientifically a human brain is not tuned to keep itself associated with a particular object for long time and that is why many of us face concentration problems. But these problems are easy to handle also. From usual experience you would know that while reading data of your interest, your mind exhibits more concentration. Why can you sit through a movie with complete concentration but not your maths book or even a newspaper for that matter? Because, things that you find entertaining stimulate your brain in a manner which is positive and, hence, you achieve higher level of concentration. Here again we see the first two factors affecting the third. If you develop interest in many subjects, your concentration will automatically increase. But there is a hitch, you can improve concentration by increasing interest and you can increase interest by reading more. But if you have poor concentration then you cannot read more. It is, therefore, a vicious circle.



It, therefore, becomes important to improve your concentration first, to be able to then work on other factors. There are certain tricks that a student may follow to improve his/her concentration.

TIP 1

Always start with shorter, simpler pieces with subject of your interest and gradually move to heavier, more difficult passage. Through this you will first strengthen your confidence, build up your momentum and will be more prepared to deal with longer passages.

TIP 2

Always supervise your reading. Mark every time you get distraction or lose concentration. In this manner you will find out how many times you lost concentration in an hour, with every passing hour make a stronger effort to be more concentrated. You will find out that with each hour number of the marks will decrease.

IV. READING SPEED

From a competitive point of view, 'Time is money,' the faster you read, the more time you will have for comprehension and analysis. If you have followed the first three factors carefully then you will realise that your reading speed will improve greatly itself. But you must keep in mind certain points while trying to read fast. Often what students do is, in their attempt to read fast, they increase the speed of reading words without trying to either understand or retain the information. Remember-
Reading Comprehension = Reading + Comprehension. You must read at a fast speed but not at the cost of comprehension because in that case you'll have to read the passage again and, therefore, the time you saved by reading fast will be consumed in re-reading.

TIP 1

Your Reading speed is the number of words you can read and understand per minute. Remember if you don't understand because you're reading very fast, it is of no use.

TIP 2

Calculate your reading speed. In this manner you will be able to supervise your improvement.

V. RETAINING CAPACITY

This is the most important part of Reading. If a student is able to read well, read with concentration, read fast and if not able to retain useful information of the data then all is lost. A good reader need not come back to the passage again and again to look for answers. The first reading of this passage should, therefore, be done with much care and attention so that the reader retains most of the matter.

You can follow some simple steps to improve your retaining capability. Every time you read a passage, make a mental note of the following :

- (a) title of the passage
- (b) basic theme of the passage
- (c) the positions that the passage takes or the points that the passage makes
- (d) conclusion of the passage.

VI. READING APTITUDE

Reading Aptitude is different from reading skills. The points and factors discussed up till now, constitute reading skill and are regarding the manner you read. Reading Aptitude is what gives an upper edge to a student in the RC section or even otherwise if developed properly.

What is Reading Aptitude?

By reading aptitude, we mean the approach that you take while reading a passage or reading anything. The mindset with which you read it and what is your motive or expectation from the passage. Simply put, Reading aptitude is what you want from reading. If your approach is a reading piece only for the purpose of reading to collect facts to add to your existing store of knowledge or only as a practice to improve your reading speed or merely as an examination exercise you would not receive the same results as you will if you read the passage with a different attitude.

Consider every piece of written information as a prospective useful draft.

Begin with the rule of WIIFM - what's in it for me. Once you have used your wisdom to decide if the passage is worth reading. Approach the passage as a mystery novel. There are hidden clues you must look for. From the beginning stay a careful, clever reader. Remember the first reading itself should give you all you may need to have from a passage.

If there are facts in the passage, quickly decide, as you read, which of these are important enough to be memorized and memorize them.

If there is an argument in the passage, keep trail of how the argument proceeds and what are the different evidences offered.

In such a passage, as you read, involve your mind with the passage and form an opinion about the argument.

If a passage is about philosophy offering a philosophical perspective as you read, form a short summary of the philosophical theory in simple words.

If the essay describes a process or an event, then as you read on, form a chain of events in your mind.

Keeping these points in mind, will improve your reading and retaining efficiency greatly. What we have to target and achieve is not GOOD READING rather what we must try and attain is EFFECTIVE READING. A good reader may or may not be just as good at comprehension and analysis but an Effective Reader would definitely perform in comprehension and Analysis of data just as well. So, try and be an EFFECTIVE READER.

STEP 2 : Comprehension follows reading and simply put means understanding the passage. But there are different categories of compositions and the time of comprehension for each would principally vary. Nevertheless, there are some basic principles one must keep in mind while attempting to comprehend a passage.

meant nothing to the Aztecs—and vice versa. If, to some extent, a few intellectuals can appreciate them both today it is because their culture is an historical one: its inspirations is history and therefore it can include within itself, in principle if not in every particular, all known developments to date.

As you can read yourself an expository essay in itself gives you a serial line of thought. What you have to do, in this case, is understand critically the exposition being made. Pay attention to the following when attempting an exposition essay.

- * main subject of the exposition
- * illustrations made about its different aspects
- * analysis done by the writer on the various definitions & statements
- * Agreements or disagreements made by the writer with some views.

Let's take the following questions as an example-

Which of the following is not necessarily among the attributes needed for a painter to succeed?

- (1) The painter and his public agree on what is significant
- (2) The painter is able to communicate and justify the significance of its subject selection.
- (3) The subject has a personal meaning for the painter
- (4) The painting of subject is inspired by historical developments.

The first option is clearly stated as a reason for the success of a painter and, thus, can be eliminated. The second option, if one thinks intelligently, is linked to the first. If only the painter is able to communicate or justify the significance of its subject selection, can there be any agreement between the painter and the public? This too, thus, gets eliminated. The third and the fourth options offer an ambiguity because both appear in the passage. A close study of the language of the statement and the question is required here. The question asks for a reason which is not necessarily required for the success of a painting, which means it may cause the success of a painting but not necessarily. The third option appears with a 'may' in the passage and can, therefore, be a possible answer. The fourth option is not the answer because the passage states that a painting can earn the appreciation of intellectuals if its inspiration is history and there is no 'may' or chance involved here. Thus, the fourth option can also be eliminated and we have our correct answer as option (3).

- (b) **Argumentative Passage :** An argumentative passage includes an argument and an argument is possible only about a subject that invites argument, conflicting opinions. Such an essay admits difference of opinions and, therefore, the purpose of an argumentative essay is to persuade the readers to adopt a certain idea, attitude or course of action and if possible to resolve the conflict implicit in the subject. The following is an example of a argumentative passage : The detective story, the adult analogue of juvenile adventure tale has at times been described as a glorification of intellectualized conflict. However, a great deal of the interest in the plots of these stories is sustained by withholding the unravelling of a solution to a problem.

The effort of solving the problem is in itself not a conflict if the adversary (the unknown criminal) remains passive, like Nature whose secrets the scientist supposedly unravels by deduction. If the adversary actively puts obstacles in the detectives' path towards the solution, there is genuine conflict. But the conflict is psychologically interesting only to the extent that it contains irrational components such as a tactical error on the criminal's part or the detectives' insight into some psychological quirk of the criminal or something of the Art. Conflict conducted in a perfectly rational manner is psychologically no more interesting than western standard e.g. Tie-tac-toe, played perfectly by both players, is completely devoid of psychological interest. Chess may be psychologically interesting but only to the extent that it is played not quite rationally. Played completely rationally, chess would be no different from tic-tac-toe.

Internal conflicts are always psychologically interesting. What we vaguely call "interesting" psychology is in very great measure the psychology of inner conflict. Inner conflict is also held to be an important component of serious literature as distinguished from less serious genres. The classical tragedy, as well as the serious novel, reveals the inner conflict of central figures. The superficial adventure story, on the other hand, depicts only external conflict; that is, the threats to the person with whom the reader (or viewer) identifies stem in these stories exclusively from external obstacles and from the adversaries who create them. On the most primitive level this sort of external conflict is psychologically empty. In the fisticuffs between the protagonists of good and evil, no psychological problems are involved or, at any rate, none are depicted in juvenile representations of conflict. While dealing with an argumentative passage the reader should follow the following method to deal any question-

Narrow down the argument to its basis

Track the history of the question/conflict in the passage

Take a stand yourself or be clear as to what is author's stand

Analyse the necessary idea expressed in the passage

Keep track of the evidence or examples offered by the author in support of his/her argument

Make note of the counter argument

Following this method the students should find out the right answer to the above mentioned question from the following option:

- (a) Internal conflicts, rather than external conflicts, form an important component of serious literature as distinguished from less serious genres.
- (b) Only juveniles or very few adults actually experience external conflict while internal conflict is more widely prevalent in society
- (c) In situations of internal conflict, individuals experience a dilemma in solving their own preferences for different outcomes
- (d) There are no threats to the reader in case of external conflicts

Examples of **Analytical** and **Philosophical passages** are given below. A student should follow the same method as for the expository passage and keep similar factors in mind. Spare a moment to take stock of what's been happening in the past *few* months. Let's start with the oil price, which has rocketed to more than \$65 a barrel, more than double its level 18 months ago. The accepted wisdom is that we shouldn't worry our little heads about that, because the incentives are there *for* business to build new production and refining capacity, which will effortlessly bring demand and supply back into balance and bring crude prices back to \$25 a barrel. As Tommy Cooper used to say, 'just like that'.

Then there is the result of the French referendum on the European Constitution, seen as thick-headed luddites railing vainly against the modern world. What the French needed to realise, the argument went, was that there was no alternative to the reforms that would make the country more flexible, more competitive, more dynamic. Just the sort of reforms that allowed Gate Gourmet to sack hundreds of its staff at Heathrow after the sort of ultimatum that used to be handed out by Victorian mill owners. An alternative way of looking at the French "non" is that our neighbours translate "flexibility" as "you're fired."

Finally, take a squint at the United States. Just like Britain a century ago, a period of unquestioned superiority is drawing to a close. China is still a long way from matching America's wealth, but it is growing at a stupendous rate and economic strength brings geo-political clout. Already, there is evidence of a new scramble *for* Africa as Washington and Beijing compete *for* oil stocks.

- (c) **Philosophical passage** : In response *to* logocentrism, deconstruction posits the idea that the mechanism by which this process of marginalization and the ordering of truth occurs is through establishing systems of binary opposition. Oppositional linguistic dualisms, such as rational/irrational, culture/nature and good/bad are not, however, construed as equal partners as they are in, say, the semiological structuralism of Saussure. Rather, they exist, *for* Derrida, in a series of hierarchical relationships with the first term normally occupying a superior position. Derrida defines the relationship between such oppositional terms using the neologism *différance*. This refers to the realization that in any statement, oppositional terms differ from each other (for instance, the difference between rationality and irrationality is constructed through oppositional usage), and at the same time, a hierarchical relationship is maintained by the deference of one term *to* the other (in the positing of rationality over irrationality, for instance). It is this latter point which is perhaps the key to understanding Derrida's approach to deconstruction.

STEP 3 : Data Analysis is the most important step of Reading Comprehension. It is the stage where you analyse the read and comprehended data to find the answers for questions asked in the exercise to Reading Comprehension.

STEP 4 : By Data Selection we mean choosing the important sections of a given passage. As you read a draft, you realise that not every word of it is just as useful. You have to, therefore, choose and retain only those part of the passage that are useful to you. The fillers (information added to fill the gaps in the themes

– examples, illustrations etc.) can be ignored. A similar process is done while attempting comprehension when the students were advised to mark the important sections of the passage while reading so that the student can revisit the passage without wasting any time.

Also, in future, or while reading anything, you should always select the useful information and store it in your memory so that you can use it later on whenever the need arises.

I. THE MAIN IDEA OR THEME BASED QUESTIONS

In this type of questions the passage will be followed by a question with certain statements which may or may not be the central idea of the given passage, you have to choose the statement that will best qualify as the central idea discussed in the passage.

The question can also ask for the most suitable title for the passage which will also correspond to the central theme in the passage. Another form in which this type of question can be asked is 'which of the following statements is best supported by the passage'. In this question, you may be given statements more than one of which can be inferred from the passage but only one statement will be best supported by the passage, which will be the central theme of the passage.

Following are some example of Theme based questions:

PASSAGE - I

But the realists have something to say too. They say that in the battle called life, what we need is not sportsmanship, but strength, not humility but self confidence, not altruism but resolute intelligence; that not justice or sportsmanship but power is that arbiter of all differences and destinies. This was expressed bluntly by Bismarck, who said, "There was no altruism among nations," and that modern issues are not decided by votes and rhetoric but by blood and iron. If life is a struggle for existence in which the fittest survive then strength is the ultimate virtue and weakness, the only fault. 'Good' is that which survives, which wins and 'bad' is that which gives way and fails. There is no room to the sporting spirit in this world.

1. The passage is mainly concerned with –
 - (a) Bismarck's opinions about nations
 - (b) Definition of 'Good' and 'bad'
 - (c) Musings on how life should be lived
 - (d) What the realists have to say.

PASSAGE - II

There is this ambiguity about force. We are never sure that it can be used for purpose of justice. Voltair said quite rightly "War is the greatest of all crimes; yet there is no aggressor who does not perform his crime with the pretext of justice". It is true that on occasions force may be employed by the oppressed against the aggressors who exploit them. Thus, history records the success of the grid against the Persian invaders or the Italians against the Austrians or the Afghans against the British. But the record of the triumph of Right over Might is meagre. We must not forget that might has won many more victories over right during untold centuries.

1. Which is the most appropriate title for the passage based on its content?
- The Right or the Might
 - War – the greatest of Crime
 - Force and Justice – An ambiguous relations
 - The battle of British and Afghans.

PASSAGE - III

Too much power given to any organized body is harmful to the government. This is true in the case of press also. It is always desirable that the press of a country should be controlled by its government. It may happen that the press may be captured by any one party and the country plunged into Civil War. A powerful press can create a revolution against the government at any time it likes. The press sometimes embattles international relations. An example of this can be seen in the Italian press. It was published in the Italian press some years ago that the Great Britain was supplying arms and ammunitions to Abyssinia. This rumour spread a great deal of hatred in Italians against Englishmen and a special guard had to be placed upon the British Ambassador at Rome.

1. Which of the following statements is best supported by the given passage?
- Italians hate Englishmen
 - If the press has too much power, it can become harmful
 - Press is a powerful medium and has a capacity to influence masses to a large extent.
 - Press can cause Civil War in a country

PASSAGE - IV

It is very interesting to study the mind of the advertiser and the motives of the human mind upon which he wants to play. The most advertised goods are women's toilet accessories or things that women use for preserving their youthful looks. Fat women are anxious to grow slim, so, advertisers play upon women's fear of growing fat. "Her joints squeak like new shoes, Swollen with Rheumatism at thirty." So, begins the advertisement of 'Aldiflue' "Obesity, it's said, is the beginning of the end, an oversize embarrasses and endangers. For it puts blood, heart, liver and muscles out of battle. Starve oneself thin? No use, dissolve adipose tissue? Yes, but the consequence?" The semi-medical form of this advertisement gives it great advantage over others. When we look underneath we find that Aldefluid is a French Preparation. Trust a Frenchman to know a woman's mind. If we take up any newspaper we find scores of advertisements. "I detest a shiny nose that is why I use perfect nose Powder". "Girl be sure of Beauty" soap Jean Harlow, "And use Vame Toilet, the beauty soap of film stars". "Gone and forever, ugly and unwanted hair". "Fascinating curves, that are height of fashion – the essence of feminine appear can be quickly yours through the safe, painters, tasted, Bustophese".

1. Which is the main objective of the passage?
- To study the mind of an Advertiser
 - To list examples of advertisements common in newspapers

- To understand the consequence of dissolving adipose tissue
- To state that women worry too much about their Beauty.

Key :

- I. (c) II. (c) III. (c) IV. (a)

HOW TO DEAL THE THEME BASED QUESTIONS :

As would be clear from the example the theme based questions test your understanding of the most important idea or conception of the passage. You can call it the essence of the passage.

To facilitate answering theme based questions follow the following steps :

- When reading a passage always keep in mind the questions – what is the passage trying to do? It is only making a statement? Is it making a criticism? Is it doing an analysis? Is it supporting a particular belief? In this manner you will be able to find the **MOTIVE** of the passage. This step will help you answer questions like 'what is the primary purpose of the passage 'OR' what is the main objective of the passage. Consider Passage IV as an example. The passage makes a statement in the beginning "It is interesting to study the mind of an advertiser" and throughout the passage tries to study the mind of advertiser by citing several examples of advertisements – what fears of human minds are they targeted at, what do advertisers do to make advantage of these fears. Thus, the objective of the passage remains to study the mind of an advertiser.
- As you read the passage, select the most important paragraph which generally contains the theme of the passage. You can then keep in mind the central idea of the passage. This will help you attempt questions of the form, 'what is the main concern of the passage? In questions such as these, the options given in the question are sometimes true statements but not the central idea. You can compare the theme with the options and eliminate the wrong options. For example in Passage I.

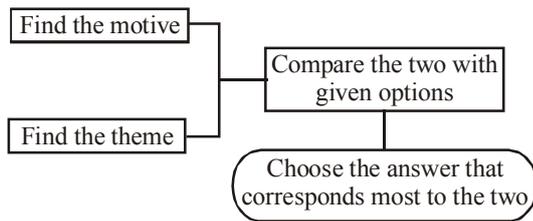
On reading the passage, we can easily make out that the central idea is "Life and different way it can be lived in"

Now consider the different options :

- Bismarck's opinion about nations — This is an idea in the passage but not our theme.
- Definition of 'good' and 'bad' — This is also an idea in the passage but not the theme.
- Musings on how life should be lived — This corresponds to the theme idea and is therefore the answer.
- What the realists have to say — This is an idea in the passage but not the central idea.

Even for choosing a title as in Passage, one must compare all the given options with the theme and the option that corresponds best with the theme can be chosen as the title.

This way we reach the **MT - method** i.e. the motive, theme method.



II. The second type of questions are the **View Of The Author type of questions regarding the main point discussed in the passage.**

In this type of questions, the questions will test your understanding of the author's view and opinion stated in passage about the central and even subordinate issue. The question may be about a specific point that author makes or a general stand that author takes. It can question you about writer's attitude towards the central idea whether or not he agrees with it, the question can also be about more than one opinion of the author. The following are the examples of this type of questions.

PASSAGE - I

The best utopia to me is Plato's Republic', a fascinating mixture of poetry, philosophy and myth.

Plato understands that before we study the states that men make, we must study men first. The human being is made of appetite, emotions and intellect, among which a constant conflict is going on. The best man is he in whom appetite, warmed by emotions, is guided by knowledge. Ruin comes when the trader becomes ruler, or the general establishes a military dictatorship. Only philosopher king is fit to guide a nation. "Until philosophers are kings and kings and princes of this world have the power of philosophy and wisdom and political leadership meet in the same man, cities will never cease from ill nor the human race."

1. According to the Author
 - (a) Human being is made of appetite, emotion and intellect
 - (b) Republic is a mixture of poetry, philosophy and myth
 - (c) Plato was the greatest poet of all times
 - (d) Philosophy is the best virtue.

PASSAGE - II

Very few men have analytical spirit. They cannot reach the bottom of things. They run away with views supplied to them by newspapers not caring to enquire if they are right or wrong. For instance, a man living in Europe or America derives his information about a country like India only through newspapers. It is not possible for him to come here and see things for himself. Not only do people lack analytical spirit they have no time to probe deeply into the real state of affairs. We live in an age of hurry. We have no time to waste : people always have more important thing to do.

1. Which of the following statements is the author least likely to agree with ?
 - (a) Very few men have analytical spirit
 - (b) We live in a busy world
 - (c) The views supplied to men by newspaper are always wrong
 - (d) People hardly ever try to get to the bottom of any news.

PASSAGE - III

There is no true sportsmanship without a new world order. We must reconstruct the world so as to eliminate competition from it. The individual cries out. I must be happy at all costs for there is no time to be lost. The nation cries out. I must be prosperous at all costs or I shall go under. So, civilization has entered into an era of callous competition. No peace treaty can end this. The world must be reorganised as a federal and essentially as one. Until that is done the noble shall always be at the merry of the ignoble and there will be neither peace nor sportsmanship in the world.

1. The author makes at least two of the following claims in the given passage which are these
 1. True sportsmanship cannot happen in the present world.
 2. There can be peace in the world only if it becomes one federal.
 3. Individuals and nations are happy and prosperous.
 - (a) 1 and 2
 - (b) 1 and 3
 - (c) 2 and 3
 - (d) none of these

PASSAGE - IV

The law of the land needs a very important factor to be effective land. That's why various wings of the Indian government have cut a sorry figure when they have tried to regulate the intangible world of the internet. The latest in the battle between the old world and the new world of the web unfolded when the Aurangabad bench of Bombay High Court asked the Maharashtra government to issue notice to Google in response to a PIL filed against the company's popular social networking site – Orkut.com.

1. According to the author, the government has not been able to regulate the internet world because:
 - (a) It is very popular among the people
 - (b) Google owns Orkut.com
 - (c) There is no land in internet
 - (d) Internet is an abstract, intangible world with no explicit figureheads

Key :

- I. (b) II. (c) III. (a) IV. (d)

HOW TO ANSWER QUESTIONS ABOUT AUTHOR'S VIEWS

To answer questions about Author's opinions, one should follow the inference technique.

By inference one means understanding the passage and deriving a logical conclusion from it. The questions can be about opinions of author mentioned directly in the passage or views that are indirectly expressed in the passage.

For the views directly mentioned in the passage the reader should locate the relevant part of the passage and choose the right answer.

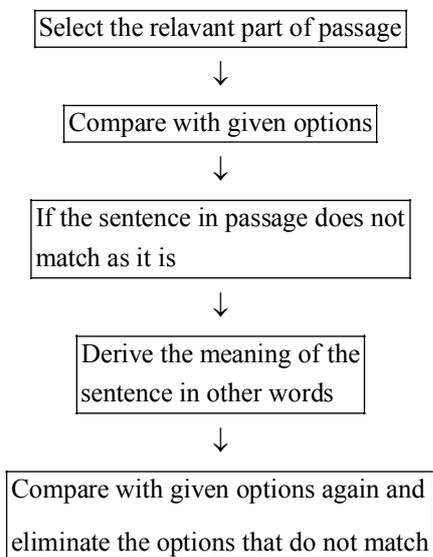
For example in the passage

- (a) a quote said by Plato and not by the author
 - (b) what is said by the author in the very first sentence
 - (c) what is not meant by in the passage at all
 - (d) what is not suggested by the passage directly or clearly.
- Therefore, one can locate the sentence directly mentioned by the author and choose the right answer.

On the other hand in some questions the opinion of the author may not be directly displayed in the passage and will have to be inferred from some sentences in the passage. Consider **passage III**

The author says "There is no true sportsmanship without a new world order" which means in the present world order true sportsmanship cannot exist. Further he says "the world must be reorganised as a federal and essentially as one. Unless that is done, there can be no peace or sportsmanship in the world." By this we can understand that there can be peace only if the world is one federal. Thus the right answer is (a) because 1 and 2 can be inferred as the opinion or claim of the author.

Inference Method



III. CHOOSING THE CORRECT OR WRONG STATEMENT ON THE BASIS OF THE GIVEN PASSAGE

This type of question requires the students to derive conclusions and inferences from the given passage. This type of question will have four statements and of the four options you are asked to choose the correct or the incorrect statement in the context of the passage.

Following is the example of this type of questions.

PASSAGE

The Highest point on the earth's surface is Mt. Everest, 5 miles in height and the lowest near Philippine Island, seven miles in depth. The stress difference between these two points is equal to the weight of ten miles of normal rock. In other words, between these points the earth's surface is burdened with such a great weight that the outer crust of the earth is unable to support all this terrible weight and adjustments occur which we call earthquakes. As a result of the above theory, the earthquakes should have occurred only once in a recorded time and then everything should have been normal but we know this is not so and there must be a reason.

The reason is not far to seek. It is rainfall. A rainfall of thirty inches a year amounts to one mile in 2,000 yrs. During the whole of the age of the earth 1,000,000 miles of rain must have fallen. Rain falls and makes tips way again to the ocean. But it does not go alone. It carries vast quantity of earth along with it with the result some parts of earth are overloaded and some made light. The change in strain during geological time must have been enormous and every change of strain must produce an attempt at an equilibrium and an adjustment. The adjustments are earthquakes.

1. Which of the following is correct in context of the passage?
 - (a) The difference between the highest and the lowest point on earth is equal to 10 miles.
 - (b) Earthquakes occur only once in a recorded time and then every time becomes normal.
 - (c) Rainfall is the reason why earthquakes keep occurring time and again.
 - (d) There is strain on earth's surface which has to be adjusted by rainfall.

DISCUSSION :

- (a) is incorrect because the difference b/w the highest and lowest point on earth is not 10 miles but it is equal to weight of 10 miles of normal rock.
- (b) The passage says that this is how it should have been but it is not so, thus, this is not the answer.
- (c) This is the right answer and can be inferred from the given passage. Earthquakes occur because there is strain b/w the highest and lowest points on earth, the adjustments made to support this are earthquakes, but according to this theory, once the adjustment is made there need not be any more earthquakes but it is not so because rainfall keeps changing the geological realities and, hence, the strain is maintained; which is why earthquakes keep occurring because of rainfall.

IV. SUPPORTING IDEA QUESTION

These types of questions are aimed at measuring a student's capacity to distinguish the main idea from the supporting idea. Also, this type of a question will test your ability to differentiate ideas. That is implicitly stated in a passage from the ideas that are implied by the author.

These types of questions usually focus on a specific paragraph and their meaning as a contribution to the whole passage.

The question may ask you about facts mentioned in the passage or ideas stated or implied in the passage. It may even demand you to draw conclusion from a specific passage.

Key :

- I. (c) II. (c)

Following are the examples of Supportive Idea questions:

PASSAGE - I

The New Mercantilism (as the Multinational corporate system of special alliances and privileges aid and tariff concessions is sometimes called) faces similar problems of external and internal

division. The centre is troubled; excluded groups revolt and even some of the affluent are dissatisfied with the roles. Nationalistic rivalry between major capitalist countries remains an important divisive factor. Finally, there is the threat presented by the middle classes and the excluded groups of the underdeveloped countries. The national middle classes in the underdeveloped country came to power when the centre weakened but could not through their policy of import substitution manufacturing, establish a viable basis for sustained growth. They, now, face a foreign exchange crisis and an unemployment (or population) crises. The first indicating their inability to work in an international economy and second indicates their alienation from the people they are supposed to lead. In the immediate future, these national middle classes will gain a new lease of life as they take advantage of spaces created by rivalry between American and non-American oligopolist striving to establish global market positions.

Now Answer the following questions :

1. The underdeveloped countries are facing a foreign exchange crisis because :
 - (a) They rely on alliances with an inefficient class of landlords.
 - (b) Of the Nationalistic rivalry between major capitalist countries.
 - (c) Of their inability to function in an international economy.
 - (d) Problem of internal and external division.
2. Which section benefits most from the rivalry between American and non-American Oligopolists.
 - (a) National middle classes
 - (b) Group excluded by the centre
 - (c) Underdeveloped countries
 - (d) Major capitalist countries

Key :

1. (c) 2. (a)

HOW TO DEAL WITH SUPPORTING IDEA QUESTIONS

Since supporting idea questions mostly focus on a particular paragraph or a specific section of the passage, the first step of the answering should be locating the relevant section in the passage. Following this, the answer could either be supplied by the passage directly or will have to be picked up through inference.

Now consider passage I as example, Question I can be answered by pinning down the relevant sentence in the passage which is "Now they face a foreign exchange crisis and an Unemployment crisis the first indicating their inability to function in an international economy". From this line, it can be inferred that a foreign exchange crisis is being faced by underdeveloped countries because they failed to function in an international economy.

So for Question II, the relevant line of the passage is the last line which states clearly that the national middle classes take advantage of the rivalry between American and non-American Olegopolists.

Lets take another example.

PASSAGE - II

Many National surveys reveal that malnutrition is common in developed countries. This is not the calorie and/or micronutrient deficiency associated with developing nations (Type A Malnutrition); but the multiple micronutrient depletion, usually combined with calorific balance or excess (Type B Malnutrition). The incident and severity of type B malnutrition will be shown to be worst if newer micronutrient groups such as the essential fatty acids, xanthophylls and flavonoids are included in the surveys. Commonly invested levels of these micronutrients seem to be far too low in many developed country.

There is now considerable evidence that type B malnutrition is a major cause of chronic degeneration diseases. If this is the case, then it is logical to treat such diseases not with drugs but with multiple micronutrients repletion, or "pharmace-nutrition" This can take the form of pills and capsules-nutraceuticals, or food formats known as 'functional foods'. This approach has been neglected hitherto because it is relatively unprofitable for drug companies; the products are hard to patent and it is a strategy which does not fit easily with modern medical interventionism. Over the last 100 years, the drug industry has invested huge sums in developing a range of subtle and powerful drugs to treat many diseases we are subjected to. Medical training is couched in pharmaceutical terms and this approach has provided us with an exceptional range of therapeutic tools in the treatment of disease and in acute medical emergencies. However, the pharmaceutical model has also created an unhealthy dependency culture in which relatively few of us accept responsibility to health professionals who know very little about health maintenance or disease prevention.

Now answer the following questions :

1. Type-B malnutrition is a serious concern in developed countries because
 - (a) Developing countries mainly suffer from Type-A malnutrition.
 - (b) It is a major contributor to illness and death.
 - (c) Pharmaceutical companies are not producing drugs to treat this condition.
 - (d) National surveys on malnutrition do not include newer micronutrient groups.
2. The author recommends micronutrients–repletion for large-scale treatment of chronic deteriorative disease because
 - (a) It is relatively easy to manage
 - (b) Micronutrient deficiency is the cause of diseases
 - (c) It can overcome genetic risk factor
 - (d) It can compensate for other life-style factors.

Discussion :

1. Refer to line "The incidents and severity of ... included in the surveys." One can infer from these lines that the surveys do not include the micronutrients but if they did, the results will show that the problem increases two fold because of lack of knowledge about this type of malnutrition in the developed countries.
2. Refer to the first line of the second paragraph. The paragraph clearly states that because Type B malnutrition is the cause of degeneration diseases; that is why it is logical to treat these diseases with micronutrient repletion rather than drugs.

Key :

1. (d) 2. (b)

V. INFERENCE BASED QUESTION

By inference, it is meant reaching a logical conclusion after analysis. In questions such as these, the answer would not be available directly in the passage.

VI. STYLE AND TONE QUESTIONS

These questions are about the language of the passage and mostly aimed at testing your language skills. The different types of style and tone questions are-

A. Synonym and Antonym questions

In these you may be given a word from the passage and asked for a synonym or antonym of the given word.

B. Meanings of words and phrases

In this type of question, you can be given a word or phrase from the passage and asked to replace them with most suitable word.

C. Tone of the passage

This type of question asks about the tone of the passage, i.e. what is the style of writing of the passage. The following can be some examples of different tones and style of writing a passage.

STYLE:

1. Descriptive – When the passage is only describing a situation or process.
2. Illustrative – When the passage gives several examples to explain a particular idea it is describing.
3. Argumentative – When the passage is in form of an argument giving more than one point of view which may differ.
4. Analytical – When the passage, besides giving information or idea, also studies the effects and causes of the idea it is explaining.

TONE:

1. Pleading – When the language of the passage is that of request.
2. Prescribing – If the passage is trying to give an advice to the reader.
3. Dogmatic – When the passage takes a strong stand and preaches to the reader that, it is the right stand.
4. Consoling – When the passage tries to give explanations for, and pacify the result if an event or proceed or idea that has caused some harm or grief.

Consider the following example :

PASSAGE - I

Independence itself came to us as what Gandhi famously called a 'wooden leaf' – a national freedom tainted by the blood of the

thousands who died during partition. For more than half a century now, the hatred and mutual distrust have been exacerbated, tried with and never allowed to heal by politician, led from the front by Mrs Indira Gandhi. Every political party has tilled the marrow of one secular parliamentary democracy mining it for electoral advantage. Like termites excavating a mound, they've made tunnels and underground passages, undermining the meaning of 'secular', until it has just become an empty shell that's about to implode. These telling have weakened the foundations of the structure that connects the constitution, parliament and the courts of law the configuration of checks and balances that forms the backbone of a parliamentary democracy. Under the circumstances, it's futile to go on blaming the politicians and demanding from them a morality they are incapable of. There's something pitiable about a people that constantly bemoans its leaders. If they've let us down, it's only because we've allowed them to. It could be argued that civil society has failed its leaders as much as leaders have failed the civil society. We have to accept that there is a systematic flow in our parliamentary democracy and politicians well exploit it. We have to address this issue and come up with a systematic solution.

Now answer the following :

1. Which of the following words can be used to replace the word excavating in the passage?

(a) Exploding	(b) Extracting
(c) Hollowing	(d) Preparing
2. What is the tone of the author in this passage?

(a) dogmatic	(b) prescribing
(c) critical	(d) analytical

Key :

1. (c) 2. (b)

In question 1, excavating means to dig a hole, of the given options the nearest to the meaning of the word will be hollowing.

In question 2, the passage is critical about the current political state of affairs of the country and makes unmask about political scenario and systemic failure.

TIP 2

To make finding answers easy and quick you can first read the question before reading the passage, Retain true false, short, straight and date based questions in mind.

As you read the passage mark the answers for these questions

For the longer questions you can use inference.

EXERCISE

Directions (Qs. 1-238): Read the following passages carefully and answer the questions that follow:

Passage 1

The University Grants Commission's directive to college and university lecturers to spend a minimum of **10** hours a week in direct teaching is the product of budgetary cutbacks rather than pedagogic wisdom. It may seem odd, at first blush, that teachers should protest about teaching a mere **22** hours. However, if one considers the amount of time academics require to prepare lectures of good quality as well as the time they need to spend doing research, it is clear that most conscientious teachers work more than **40** hours a week. In university systems around the world lecturers rarely spend more than **12 to 15** hours in direct teaching activities a week. The average college lecturer in India does not have any office space. If computers are available, internet connectivity is unlikely. Libraries are poorly stocked. Now, the UGC says universities must implement a complete **freeze** on all permanent recruitment, abolish all posts which have been vacant for more than a year, and cut staff strength by **10** per cent. And it is in order to ensure that these cutbacks do not affect the quantum of teaching that existing lecturers are being asked to work longer. Obviously, the quality of teaching and academic work in general will decline. While it is true that some college teachers do not take their classes regularly, the UGC and the institutions concerned must find a proper way to hold them accountable. An absentee teacher will continue to play truant even if the number of hours he is required to teach goes up.

All of us are well aware of the unsound state that the Indian higher education system is in today. Thanks to years of **sustained** financial neglect, most Indian universities and colleges do not carry out only research worth the name. Even as the number of students entering colleges has increased dramatically, public investment in higher education has actually declined in relative terms. Between **1985** and **1997**, when public expenditure on higher education as a percentage of outlays on all levels of education grew by more than **60** per cent in Malaysia and **20** per cent in Thailand, India showed a decline of more than **10** per cent. Throughout the world, the number of teachers in higher education per million population grew by more than **10** per cent in the same period; in India it fell by one per cent. Instead of transferring the burden of government apathy on to the backs of teachers, the UGC should insist that the needs of the country's university system be adequately catered to.

1. Why does the UGC want to increase the direct teaching hours of university teachers?
 - (a) UGC feels that the duration of contact between the teacher and the taught should be more.
 - (b) UGC wants teachers to spend more time in their departments.
 - (c) UGC wants teachers to devote some time to improve university administration.
 - (d) UGC does not have money to appoint additional teachers.
 - (e) None of these
2. Which of the following is the reason for the sorry state of affairs of the Indian Universities as mentioned in the passage?
 - (a) The poor quality of teachers
 - (b) Involvement of teachers in extra-curricular activities
 - (c) Politics within and outside the departments
 - (d) Heavy burden of teaching hours on the teachers
 - (e) Not getting enough financial assistance
3. Which of the following statements is/are **TRUE** in the context of the passage?
 - (A) Most colleges do not carry out research worth the name.
 - (B) UGC wants lecturers to spend minimum 22 hours a week in direct teaching.
 - (C) Indian higher education system is in unsound state.
 - (a) Only A and C
 - (b) All A, B and C
 - (c) Only C
 - (d) Only B
 - (e) Only B and C
4. Besides direct teaching, university teachers spend considerable time in/on
 - (a) administrative activities such as admissions
 - (b) supervising examinations and corrections of answer papers
 - (c) carrying out research in the area of their interest
 - (d) maintaining research equipment and libraries
 - (e) developing liaison with the user organizations.
5. Which of the following statements is **NOT TRUE** in the context of the passage ?
 - (a) UGC wants teachers to spend minimum **40** hours in a week in teaching
 - (b) Some college teachers do not engage their classes regularly.
 - (c) The average college teacher in India does not have any office space.
 - (d) UGC wants universities to abolish all posts which have been vacant for more than a year.
 - (e) All are true
6. Between 1985 and 1997, the number of teachers in higher education per million population, in India
 - (a) increased by 60%
 - (b) increased by 20%
 - (c) decreased by 22%
 - (d) decreased by 10%
 - (e) decreased by 1%
7. Which of the following statements is **NOT TRUE** in the context of the passage?
 - (a) Indian universities are financially neglected.
 - (b) All over the world, the university lecturers hardly spend more than 12 to 15 hours a week in direct teaching
 - (c) Indian universities are being asked to reduce staff strength by 10%.
 - (d) Public investment in higher education has increased in India.
 - (e) Malaysia spends more money on education than Thailand.

8. Choose the word which is **SIMILAR** in meaning to the word 'freeze' as used in the passage.
- (a) cold (b) halt
(c) decay (d) control
(e) power
9. What is the UGC directive to universities?
- (a) Improve the quality of teaching
(b) Spend time on research activities
(c) Do not appoint any permanent teacher
(d) Provide computer and internet facilities
(e) Do not spend money on counselling services to the students.
10. Choose the word which is **SIMILAR** in meaning to the word 'sustained' as used in the passage.
- (a) continuous (b) frequent
(c) careless (d) deliberate
(e) sporadic

Passage 2

If man began with speech and civilisation with agriculture, industry began with fire. Man did not invent it; probably nature produced a marvel for him by the friction of leaves or twigs, a stroke of lightning or a chance union of chemicals; man merely had a **saving wit to imitate Nature** and to improve upon her. He put fire to a thousand uses. First, perhaps he made it serve as a torch to conquer his fearsome enemy, darkness; then he used it for warmth and moved about freely from his native tropics to less enervating zones, slowly making the planet human. Then, he applied, it to metals, softening them, **tempering** them and combining them into forms stronger and more **supple** than those in which they had come to his hand. It was fire that created the old and honourable art of cooking, extending the diet of man to a thousand foods that could not be eaten before. So beneficent and strange was it that fire always remained a miracle to primitive man, fit to be worshipped as God. He offered it countless ceremonies of devotion and made it a centre or focus of his life. He carried it carefully with him as he moved from place to place in his wanderings and would not willingly let it die. The Romans even punished with death the careless virgins of the Temple of Vesta who allowed the sacred fire to be extinguished.

11. Why is fire called a wonder?
- (a) Civilisation has given man this fascinating thing.
(b) Industry could utilise it very effectively.
(c) Man did not invent it nor could understand it.
(d) It could be put to several uses.
(e) It has played the role of shaping the destiny of human beings.
12. Which other single word or pair of words in the passage conveys/convey the idea that fire is a wonder?
- (a) imitate (b) marvel
(c) civilisation (d) twig
(e) saving wit
13. Mention the thing which the primitive man feared the most.
- (a) the fury of nature (b) wild animals
(c) dangerous chemicals (d) darkness
(e) insecurity
14. What was the result of the application of fire to metals?
- (a) The metals became soft and tempered.
(b) They became weak and more supple.
(c) They disintegrated into separate elements.
(d) They could be preserved for a longer period.
(e) None of these

15. What is the meaning of "saving wit to imitate Nature"?
- (a) blindly following the dictates of nature
(b) abject surrender to the forces of nature
(c) rational and objective analysis of nature's laws
(d) intelligent use of God's gift
(e) wisdom that carried out of difficult situation
16. What was the duty of the virgins in the Temple of Vesta?
- (a) to light the fire everyday exactly at a designated time
(b) to light several other fires from the fire of the Temple of Vesta
(c) to see to it that the sacred fire in the temple did not go out
(d) to carry the fire from place to place wherever the Roman's went
(e) None of these
17. Choose the word which is **SIMILAR** in meaning to the word 'supple' as used in the passage.
- (a) flexible (b) hard
(c) powerful (d) weak
(e) useful
18. Choose the word which is **MOST OPPOSITE** in meaning to the word 'tempering' as used in the passage.
- (a) bending (b) hardening
(c) elongating (d) shortening
(e) softening
19. Which of the following statements is **TRUE** in the context of the passage?
- (a) Man invented fire
(b) Civilization began with fire
(c) Man applied fire first to metals
(d) Man's native place was very cold
(e) Nature produced fire
20. Which of the following statements is **NOT TRUE** in the context of the passage?
- (a) Industry began with fire.
(b) Fire taught man the art of cooking.
(c) Fire always remained a miracle to primitive man.
(d) Man invented fire.
(e) Man worshipped fire as God.

Passage 3

We are tempted to assume that technological progress is the real progress and that material success is the criterion of civilisation. If the eastern people become fascinated by machines and techniques and use them as Western nations do, to build industrial organisations and large military establishments, they will get involved in power politics and drift into the danger of death. Scientific and technological civilisation brings opportunities and great rewards but also great risks and temptations. If machines get into the saddle all our progress will have been in vain. The problem facing us is a universal one. Both east and west are threatened with the same danger and face the same destiny. Science and technology are neither good nor bad. They are not to be tabooed but tamed and assigned their proper place. They become dangers only if they become idols.

21. What is man tempted to assume?
- (a) Western nations are superior to eastern nations.
(b) Science and technology pose no danger to humanity.
(c) Technological progress is the real progress.
(d) As such there is nothing wrong with machines.
(e) None of these

22. When do science and technology become dangerous?
 (a) When they become idols
 (b) When they are used with temptation
 (c) When their advantages are not used judiciously
 (d) When it is assumed that material success is the criterion of civilisation
 (e) None of these
23. What will happen if eastern people use machines?
 (a) It will bring great opportunities and rewards to them.
 (b) It will show the victory of mind over matter.
 (c) They will realise that it is not an end in itself.
 (d) They will get involved in power politics and drift into the danger of death.
 (e) None of these
24. Which of the following statements is/are **true** in the context of the passage?
 (A) Science and technology are neither good nor bad.
 (B) Through machines man can achieve all progress.
 (C) Science and technology bring great risks and temptations.
 (a) A and B (b) A and C
 (c) B and C (d) A, B and C
 (e) None of these
25. Choose the word which is **SIMILAR** in meaning to the word 'tabooed' as used in the passage.
 (a) Confined (b) Accepted
 (c) Damaged (d) Criticised
 (e) Forbidden

Passage 4

Radically changing monsoon patterns, reduction in the winter rice harvest and a quantum increase in respiratory diseases—all part of the environmental doomsday scenario which is reportedly playing out in South Asia. According to a United Nations Environment Programme report, a deadly three-km-deep blanket of pollution comprising a fearsome cocktail of ash, acids, aerosols and other particles has enveloped this region. For India, already struggling to cope with a drought, the implications of this are devastating and further crop failure will amount to a life-and-death question for many Indians. The increase in premature deaths will have adverse social and economic consequences and a rise in **morbidity**s will place an unbearable burden on our crumbling health system. And there is no one to blame but ourselves. Both official and corporate India have always been **allergic** to any mention of clean technology. Most mechanical two-wheelers roll off the assembly line without a proper pollution control system. Little effort is made for R&D on simple technologies, which could make a vital difference to people's lives and the environment.

However, while there is no denying that South Asia must clean up its act, sceptics might question the timing of the haze report. The Johannesburg meet on Rio+10 is just two weeks away and the stage is set for the usual battle between the developing world and the West, particularly the US President. Mr Bush has adamantly refused to sign any protocol which would mean a change in American consumption level. UN environment report is likely to find a place in the US arsenal as it points an accusing finger towards countries like India and China. Yet the US can hardly deny its own **dubious** role in the matter of erasing trading

- quotas. Richer countries can simply buy up excess credits from poorer countries and continue to pollute. Rather than trying to get the better of developing countries, who undoubtedly have taken up environmental shortcuts in their bid to catch up with the West, the US should take a look at the environmental **profligacy** which is going on within. From opening up virgin territories for oil exploration to relaxing the standards for drinking water, Mr Bush's policies are not exactly beneficial — not even to American interests. We realise that we are all in this together and that pollution anywhere should be a global concern. Otherwise there will only be more tunnels at the end of the tunnel.
26. Both official and corporate India are allergic to
 (a) failure of monsoon
 (b) poverty and inequality
 (c) slowdown in industrial production
 (d) mention of clean technology
 (e) crop failure
27. Which, according to the passage, is a life-and-death question for many Indians?
 (a) Increase in respiratory diseases
 (b) Use of clean technology
 (c) Thick blanket of pollution over the region
 (d) Failure in crops
 (e) Dwindling agricultural yield
28. If the rate of premature deaths increases it will
 (a) exert an added burden on our crumbling economy.
 (b) have adverse social and economic consequences.
 (c) make a positive effect on our efforts to control population.
 (d) have less job aspirants in the society.
 (e) have a healthy effect on our economy.
29. Choose the word which is **similar** in meaning to the word '**profligacy**' as used in the passage.
 (a) wastefulness (b) conservation
 (c) upliftment (d) criticalness
 (e) denouncement
30. According to the passage, India cannot tolerate any further
 (a) crop failure
 (b) deterioration of health care system
 (c) increase in respiratory diseases
 (d) proliferation of nuclear devices
 (e) social and economic consequences
31. According to the passage, the two-wheeler industry is not adequately concerned about
 (a) passenger safety on the roads
 (b) life cover insurance of the vehicle owners
 (c) pollution control system in the vehicles
 (d) rising cost of the two-wheeler
 (e) rising cost of petrol in the country
32. What could be the reason behind the timing of the haze report just before the Johannesburg meet as indicated in the passage?
 (a) The United Nations is working hand in glove with the US.
 (b) Organisers of the forthcoming meet want to teach a lesson to the US.
 (c) Drawing attention of the world towards devastating effects of environmental degradation
 (d) The US wants to use it as a handle against the developing countries in the forthcoming meet
 (e) The meet is a part of political agenda of the UN.

33. Choose the word which is **similar** in meaning to the word 'allergic' as used in the passage.
- (a) Liking (b) Passionate
(c) Possessive (d) Crumbling
(e) Repugnant
34. Which of the following is the indication of environmental degradation in South Asia?
- (a) Social and economic inequality
(b) Crumbling health care system
(c) Inadequate pollution control system
(d) Overemphasis on technology
(e) Radically changing monsoon pattern
35. What must we realise, according to the passage?
- (a) No country should show superiority over other countries.
(b) The UN is putting in hard efforts in the direction of pollution control.
(c) All countries must join hands in fighting pollution.
(d) Nobody should travel through a tunnel to avoid health hazards.
(e) We all must strive hard to increase agricultural production.
36. Which of the following finds place in the United Nations Environment Programme Report?
- (a) Changing monsoon patterns
(b) Substantial increase in respiratory diseases
(c) A serious cover of pollution over the region
(d) Reduction in winter rice harvest
(e) None of these
37. Which of the following statements is **not true** in the context of the passage?
- (a) UN environment report blames countries like India and China.
(b) Developing countries have taken environment short-cuts in their bid to catch up with the west.
(c) US is also to be blamed for environmental degradation and pollution.
(d) Indians cannot afford to have any further crop failure.
(e) US has tightened safety standards for drinking water.
38. According to the passage, Johannesburg meet is going to witness
- (a) calm and dispassionate thinking on the issue of pollution control.
(b) a blame game between developed and developing countries.
(c) refusal of UN to work as the arbitrator.
(d) the US agreeing to look at the issue of lowering its consumption.
(e) countries agreeing for higher monetary allocation to R & D.
39. Choose the word which is **most opposite** in meaning of the word 'dubious' as used in the passage?
- (a) Unquestionable (b) Dissimilar
(c) Illegal (d) Anti-social
(e) Innovative
40. Choose the word which is the **most opposite** in meaning to the word 'morbidity' as used in the passage?
- (a) Powerfulness (b) Healthiness
(c) Softness (d) Acuteness
(e) Purposeful

Passage 5

Child psychology is certainly not a strong point with most Indian schools. Why else would it inflict a double trauma on a student faring badly in the pre-boards by banning her from taking the exams? Often with fatal results as evidenced by reports of student suicides in the run-up to the board. Now, the Central Board of Secondary Education (CBSE) has stepped in and put the brakes on. This is good news for parents and students, many of whom have had to live with the threat of the performance-linked department. While the schools' logic is that in order to attract talented students they need to maintain their performance records at high levels, the assumption that a student faring poorly in the pre-boards will **replicate** this at the boards is faulty. Chances are that the student will be **spurred** to work doubly hard. On the other hand, the threat of the department will almost certainly impact her performance adversely. Of course, linking pre-boards to the boards is only one of the problems with our school system.

41. Choose the word which is **MOST OPPOSITE** in meaning of the word 'spur' as used in the passage.
- (a) depress (b) enlarge
(c) explicate (d) sustain
(e) activate
42. Which is the good news for parents, according to the passage?
- (a) Schools will take the responsibility of preparing students for the board.
(b) Schools will provide study facilities to the poor students.
(c) Schools will enforce discipline to ensure higher attendances of students.
(d) No student can be barred from the boards without prior clearance from the CBSE.
(e) Teachers will be able to handle students well if they know child psychology.
43. What is the ruling of the CBSE?
- (a) Students must pass the pre-board exam before appearing for the board exam.
(b) Schools should follow the practice of performance linked department.
(c) Schools should maintain the performance record of students at high level.
(d) Schools must motivate students to work hard.
(e) Before barring any student for the board schools must take prior permission of the CBSE.
44. What is the faulty assumption of schools, according to the passage?
- (a) Students who do not do well at pre-boards will be motivated to work hard.
(b) Pre-boards are generally easy and therefore students take them lightly.
(c) Students who fare poorly at the pre-board will fail at the boards.
(d) Learning by rote is a better method of learning.
(e) Students perform well in languages than in science subjects.

45. Which of the following, according to the passage, is the problem with our school system?
- Providing study facilities to the students
 - Linking pre-board performance of students to the boards
 - Teachers' lack of knowledge of child psychology
 - Attracting talented students
 - Low percentage of students passing the board exam
46. According to the passage, parents had to live with the threat of
- falling grades of their wards.
 - not getting their wards admitted in quality schools.
 - schools not treating their wards with the attitude of counsellor.
 - linking performance of their wards in pre-boards to the boards.
 - schools creating traumatic situations for their wards.
47. Schools wanted to enforce performance-linked department in order to
- get regular grant-in-aid from the education department.
 - improve their public image as a social institution.
 - attract better quality students.
 - make students aware that they would aspire for their all-round development.
 - provide better study material to the students.
48. Choose the word which is **SIMILAR** in meaning to the word '**replicate**' as used in the passage.
- enhance
 - repeat
 - perform
 - achieve
 - plunder

Passage 6

We find that today the unity and integrity of the nation is threatened by the divisive forces of regionalism, linguism and communal loyalties which are gaining ascendancy in national life and seeking to tear apart and destroy national integrity. We tend to forget that India is one nation and we are all Indians first and Indians last. It is time we remind ourselves what the great visionary and builder of modern India Jawaharlal Nehru said, "Who dies if India lives, who lives if India dies?" We must realise, and this is unfortunately what many in public life tend to overlook, sometimes out of ignorance of the forces of history and sometimes **deliberately** with a view to promoting their self-interest, that national interest must inevitably and forever prevail over any other considerations **proceeding** from regional, linguistic or communal **attachments**. The history of India over the past centuries bears witness to the fact that India was at no time a single political unit. Even during the reign of the Maurya dynasty, though a large part of the country was under the sovereignty of the Mauryan kings, there were **considerable** portions of the territory which were under the rule of independent kingdoms. So also during the Mughal rule which extended over large parts of the territory of India, there were independent rulers who enjoyed political sovereignty over the territories of their respective kingdoms. It is an interesting fact of history that India was forged into a nation, neither on account of a common language nor on account of the continued existence of a single political regime over its territories but on account of a common culture evolved over the centuries. It is cultural unity—something more

fundamental and enduring than any other bond which may unite the people of a country together which has **welded** this country into a nation. But until the advent of the British rule, it was not constituted into a single political unit. There were, throughout the period of history for which we have fairly **authenticated** accounts, various kingdoms and principalities which were occasionally engaged in conflict with one another. During the British rule, India became a compact political unit having one single political regime over its entire territories and this led to the evolution of the concept of a nation. This concept of one nation took firm roots in the minds and hearts of the people during the struggle for independence under the leadership of Mahatma Gandhi. He has rightly been called the Father of the Nation because it was he who **awakened** in the people of this country a sense of national consciousness and instilled in them a high sense of patriotism without which it is not possible to build a country into nationhood. By the time the Constitution of India came to be enacted, insurgent India, breaking a new path of non-violent revolution and fighting to free itself from the shackles of foreign domination, had emerged into nationhood and "the people of India" were inspired by a new enthusiasm, a high and noble spirit of sacrifice and above all, a strong sense of nationalism and in the Constitution which they framed. They set about the task of a strong nation based on certain **cherished** values for which they had fought.

49. The author has quoted Jawaharlal Nehru to emphasise the point that
- national interest must enjoy supreme importance
 - India is going to survive even if the world is under the spell of destruction
 - the world will be destroyed if India is on the threshold of destruction
 - the survival of the world depends only upon the well being of India
 - None of these
50. What, according to the author, is the impact of the divisive forces on our nation?
- They promote a sense of regional pride.
 - They help people to form linguistic groups.
 - They separate groups of people and create enmity among them.
 - They encourage among people the sense of loyalty to their community.
 - They remind us of our national pride.
51. "Communal loyalties" have been considered by the author as
- a good quality to be cherished
 - of no consequence to the nation
 - a very important aspect for nation-building
 - a threat to the solidarity of the nation
 - None of these
52. Which of the following was instrumental in holding the different people of India together?
- A common national language
 - A common cultural heritage
 - The endurance level of the people
 - Fundamentalist bent of mind of the people
 - None of these

53. The passage appears to have been written with the purpose of
 (a) giving a piece of advice to politicians of free India
 (b) assessing the patriotic values and sacrifices made by people for India's freedom
 (c) justifying the teaching of Mahatma Gandhi and its impact on the people
 (d) giving a historical account of how India evolved as a nation
 (e) None of these
54. History shows that India, which was not a political unit earlier, became so
 (a) during the reign of Maurya dynasty
 (b) during the Mughal rule
 (c) after one-national-language policy was adopted
 (d) during the regime of independent rulers
 (e) during the British rule
55. Which of the following statements is/are **definitely true** in the context of the passage?
 (A) The people of India had fought for certain values.
 (B) The fight of the Indian people was for one common culture.
 (C) The Indian people lacked sense of nationalism until they gained freedom.
 (a) Only A (b) Only B
 (c) Only C (d) A and B only
 (e) A and C only
56. Which of the following, according to the passage, was commonly applicable to both: the Maurya dynasty rule and Mughal rule?
 (A) A vast territory under governance
 (B) Various independent sovereign rulers under one major ruler
 (C) Lack of political unity under the common governance
 (a) A and B only (b) B and C only
 (c) A and C Only (d) All the three
 (e) None of these
57. Why do people tend to overlook the paramount importance of national interest?
 A) Because they are unaware of the imperative need of the day
 B) Because they give undue importance to their selfish motives
 C) Because historical events force them to do so
 (a) Only A (b) Only B
 (c) Only C (d) A and B only
 (e) B and C only
58. The "people of India", as highlighted by the author in the last sentence of the passage, refers to
 (a) the people of one unified nation
 (b) the subjects of several independent rulers
 (c) the patriots who sacrificed themselves in the freedom struggle
 (d) the people who were instrumental in writing the Constitution
 (e) None of these
59. India's insurgence was for
 (a) breaking the path of non-violence
 (b) having one common national language
 (c) insisting on a unique cultural identity
 (d) several independent sovereign rulers
 (e) None of these
60. Transformation of our country into nationhood was possible because of
 (A) People spontaneously referring to Mahatma Gandhi as the Father of the Nation
 (B) People's sense of national consciousness
 (C) Generation of a high sense of dedication to the nation among the people
 (a) A and B only (b) A and C only
 (c) B and C only (d) All the three
 (e) None of these
- Directions (Qs. 61-64):** Choose the word/group of words which is most nearly the SAME in meaning as the word given in bold as used in the passage.
61. **awakened**
 (a) moved (b) segregated
 (c) extracted (d) kindled
 (e) supported
62. **cherished**
 (a) maintained carefully
 (b) available abundantly
 (c) managed tactfully
 (d) accepted happily
 (e) protected lovingly
63. **authenticated**
 (a) established (b) documented
 (c) hearsay (d) audited
 (e) maintained
64. **proceeding**
 (a) escaping (b) ranging
 (c) emanating (d) deviating
 (e) freeing
- Directions (Qs. 65-68):** Choose the word which is most **OPPOSITE** in meaning of the word given in bold as used in the passage.
65. **considerable**
 (a) inconsiderate (b) uncountable
 (c) unfathomable (d) irresolute
 (e) negligible
66. **welded**
 (a) disjointed (b) installed
 (c) disembarked (d) dislocated
 (e) thwarted
67. **attachments**
 (a) predicaments (b) hatred
 (c) harmony (d) mistrust
 (e) loyalty
68. **deliberately**
 (a) reluctantly (b) unintentionally
 (c) unauthorisedly (d) wrongly
 (e) notoriously

Passage 7

The **stubborn** persistence of child malnutrition in India is one of the tragedies of our time. Many of us have long agonised over this preventable problem, and we continue to ask: why do half of our children not get enough or the right food or adequate care? Even in sub-Saharan Africa, only 30 per cent of the children are

malnourished, versus 50 per cent in South Asia. And this gap exists despite our much higher levels of per capita income, education and even safer water access. One-third of the babies in India are born with low birth weight compared to one-sixth in sub-Saharan Africa. This is heartbreaking given the **dramatic** improvements in our agriculture, advances in literacy, and great strides in economic growth. For more than 20 years India has even sustained the greatest effort in history to improve nutritional standards, according to UNICEF, through its Integrated Child Development Services (ICDS) Programme. So it is not for lack of effort. Nor is it due to poverty, which has been steadily declining by one per cent a year for two decades. What accounts for this puzzle? In 1996, India's famous physician nutritionist wrote a ground-breaking article on this called 'The Asian Enigma'. After considering different factors, including access to food and income and our vegetarianism, he concluded that the lower status of women might be the reason. The link between women's status and child nutrition seems **plausible**. In many Indian homes, men eat first; women have to make do with leftovers. This is perhaps why 83 per cent of women in India suffer from iron deficiency-anaemia versus 40 per cent in sub-Saharan Africa. A malnourished mother will give birth to a baby with low birth weight. Moreover, domestic work often forces a mother to delegate the chore of feeding solid food to her baby to older siblings. If women had more control over family income and decisions, they would devote them to better pre and post-natal care and to their children.

So far this was the theory. But now a study by the International Food Policy Research Institute and Emory University seems to confirm this hypothesis. It brought together data from 36 developing countries, **spanning** over one hundred thousand children under the age of three and an equal number of women. It measured a woman's position in the home—whether she works for cash, her age at marriage, and the difference in age and education between spouses. The study concludes that the lowly position of women in the family is the single most important reason for the gap in children's nutrition between South Asia and sub-Saharan Africa, followed by sanitation (lack of latrines) and urbanisation (slum living).

I wonder why the position of women in India is worse than that of women in other societies. The report seemed to suggest that South Asian women were not so far behind African women as their inferior status too limited their ability to nurture children. I also wonder whether children's well being is only a woman's issue or a family concern where men play a crucial role. I suspect there are no easy answers. Women everywhere suffer from lower status, but in India it appears to have devastating consequences. The policy implications are clear: if we want to reduce child malnutrition, we must combine our child programmes with efforts to improve the situation of women. To succeed, we need healthy children who'll become tomorrow's innovative adults. If we ignore gender inequality, we will continue to produce stunted children, wasted lives, and untold misery.

69. A hypothesis related to low birth weight has now been confirmed. According to this, the major reason for this state is
- | | |
|-------------------------|---------------------|
| (a) Vegetarianism | (b) Illiteracy |
| (c) Illiteracy of women | (d) Status of women |
| (e) Slum living | |

70. Which type of scheme indicates that there was no lack of efforts in India for the last two decades to improve the situation?
- | | |
|-----------------------|-------------------------|
| (a) Literacy | (b) Rural Development |
| (c) Child Development | |
| (d) Family Planning | (e) Poverty Alleviation |
71. According to the author,
- | |
|---|
| (a) child malnutrition can be reduced with the help of child nutrition schemes. |
| (b) increased family income would result in better pre and post-natal care. |
| (c) men should play more involved role in children's well being. |
| (d) India has not put sustained efforts to improve nutritional standards. |
| (e) 30% of our children still do not get enough food. |
72. Which of the following is the major reason for a large number of women in India suffering from iron deficiency?
- | |
|--|
| (a) Women are not getting sufficient food |
| (b) More women eating only vegetarian food |
| (c) Women not eating balanced food |
| (d) Lack of proper medical check-up |
| (e) None of these |
73. According to the passage, the problem of child malnutrition
- | |
|---|
| (a) cannot be prevented |
| (b) is not so severe now |
| (c) is the same in all the developing nations |
| (d) is linked with poverty |
| (e) None of these |
74. Choose the word that is **SIMILAR** in meaning to the word '**plausible**' as used in the passage.
- | | |
|---------------|-------------|
| (a) deceptive | (b) certain |
| (c) feeble | (d) likely |
| (e) uncertain | |
75. Choose the word that is **SIMILAR** in meaning to the word '**stubborn**' as used in the passage.
- | | |
|---------------|----------------|
| (a) incurable | (b) determined |
| (c) unduly | (d) regular |
| (e) different | |
76. Choose the word that is **SIMILAR** in meaning to the word '**spanning**' as used in the passage.
- | | |
|--------------|---------------|
| (a) covering | (b) pointing |
| (c) bringing | (d) improving |
| (e) duration | |
77. In which of the following areas is South Asia's performance better than that of sub-Saharan Africa?
- | |
|-------------------------------------|
| (a) Safer drinking water |
| (b) Lower infant mortality rate |
| (c) Higher status of women |
| (d) Higher birth weight of children |
| (e) None of these |
78. According to the author, the crux is
- | |
|--|
| (a) women have lower status everywhere as compared to men. |
| (b) improvement of sanitation and slum conditions. |
| (c) that in India, the per capita income and education level of women is very low. |
| (d) low status of women has a horrifying result on child malnutrition. |
| (e) None of these |

79. Which of the following was one of the measures of women's position in the home?
- Number of children
 - Difference in husband's and wife's income.
 - Weights of child at birth
 - Age of marriage
 - None of these
80. What according to the passage is heartbreaking?
- India's performance lower than Africa
 - Failure of ICDS programme
 - Sub-Saharan Africa's every one-sixth child being born with low weight
 - The puzzle of poverty declining only by one per cent a year
 - Higher status of women in Asia
81. Choose the word that is **SIMILAR** in meaning to the word '**dramatic**' as used in the passage.
- Literary
 - Striking
 - Insignificant
 - Exaggerated
 - Doctored

Passage 8

Job performance is affected by a number of factors. Motivation alone does not lead to increase in performance. Ability and technology **moderates** the relationship between motivation and performance. The higher the levels of ability and motivation, the higher the level of performance will be. However, increasing motivation beyond an optimal level tends to produce a dysfunctional result because it is accompanied by an increasing level of anxiety. A high level of anxiety often disrupts performances.

The relationship between satisfaction and performance is not clear. Satisfaction may or may not lead to high performance depending on the perceived availability of valued outcomes and the perceived expectancy that a person's effort and performance will lead to receiving the valued rewards. If the person expects that his performance will lead to increased rewards which he values, the level of his motivational effort will increase, if he anticipates less, his motivational effort will be lower.

The relationship between job dissatisfaction and poor performance seems to be clearer than that between satisfaction and performance. Dissatisfaction leads to poor performance by means of **apathy**, absenteeism, turnover, sabotage, and strike. In addition, high performers are more vulnerable to job dissatisfaction because they tend to expect more from their jobs than low performers.

Job satisfaction is more closely related to the decision to join and remain in an organisation than to the motivation to produce. The motivation to produce largely depends on the availability of valued outcomes (valence), the perceived instrumentality of performance for receiving incentive rewards, and the perceived expectancy that effort leads to performance. The task of satisfying employees is much easier than the task of motivating them because the former can be achieved by rewarding them while the latter requires such additional constraints as establishing performance-reward contingencies and designing motivating work systems.

82. Choose the word that is **SIMILAR** in meaning to the word '**moderate**' as used in the passage.
- produce
 - increase
 - affect
 - reduce
 - explain
83. The individual's decision to remain in the organisation depends on
- relationship between satisfaction and performance
 - the level of anxiety induced by the job
 - his level of motivation
 - the level of job satisfaction
 - None of these
84. Which of the following tasks is easier according to the passage?
- Satisfying employees
 - Motivating the employees
 - Increasing the ability level of employees
 - Reducing the anxiety level of employees
 - None of these
85. Which of the following statement/s is/are **true** in the context of the passage?
- Ability leads to performance.
 - Job satisfaction certainly leads to higher performance.
 - High anxiety adversely affects performance.
- (A) and (B) only
 - (B) and (C) only
 - (A) and (C) only
 - (A) only
 - (B) only
86. Which of the following combination of factors affects job performance?
- Job satisfaction and Motivation
 - Motivation and Ability
 - Job Satisfaction and Ability
 - Job Satisfaction, Motivation and Ability
 - None of these
87. High level of anxiety
- produces higher motivation
 - increases the level of ability
 - strengthens the relationship between motivation and performance
 - decreases job satisfaction
 - None of these
88. The task of motivating employees is difficult due to
- apathy and lack of enthusiasm of employees
 - difficulty in establishing relationship between satisfaction and performance
 - difficulty in monitoring ability level of employees
 - unavailability of attractive rewards in organisations
 - difficulty in designing a motivating work system
89. Choose the word that is **MOST OPPOSITE** in meaning of the word '**apathy**' as used in the passage.
- Satisfaction
 - Health
 - Enthusiasm
 - Discipline
 - Reward

Passage 9

Now, the question arises: what is the secret of the longevity and imperishability of Indian culture? Why is it that such great empires and nations as **Babylon, Assyria, Greece, Rome and Persia** could not **last** more than the footprints of a camel on the shifting sands

of the deserts, while India, which faces the same ups and downs, the same mighty and cruel hand of time, is still alive and with the same halo of glory and splendour? The answer is given by Prof JB Pratt of America. According to him, Hindu religion is “**self-perpetuating and self-renewing.**” Unlike other religions, “not death, but development” has been the fate of Hinduism. Not only Hindu religion but the whole culture of the Hindus has been growing, changing, and developing in accordance with the needs of the times and circumstances without losing its essentially imperishable spirit. The culture of the Vedic ages, of the ages of the Upanishads, the various philosophical systems, the Mahabharata, the Smritis, the Puranas, various scholarly commentators, the medieval saints, and the age of modern reformers is the same in spirit and yet very different in form. Its basic principles are so broad-based that they can be adapted to almost any environment of development.

90. In what respect is India implied to be superior to all other nations and empires?
- Democratic traditions
 - Territorial expansion
 - Cultural development
 - Archaeological reserves
 - Diverse wild life
91. Which of the following combinations of periods of Indian culture is **incorrect** as mentioned in the passage?
- The Puranas, the Mahabharata, the medieval saints
 - The Smritis, the modern reformers, the Vedas
 - The Upanishads, the philosophical system, the Smritis
 - The Puranas, the Ramayana, the Mahabharata
 - The modern reformers, the Vedas, the medieval saints
92. What changes has the spirit of Indian culture undergone during the long period of history right from the Vedic age down to the present time?
- The prevalence of moral values was eclipsed at certain periods of time.
 - The spirit of Indian culture has remained unchanged from the ancient times down to the present.
 - Materialism was the hallmark of Indian culture during certain periods of time
 - There is no such thing as any spirit of Indian culture
 - During certain periods authoritarian values dominated over democratic values.
93. Choose the word which is **SIMILAR** in meaning as the word **perpetuating** as used in the passage.
- Continuing
 - Appreciating
 - Enjoying
 - Languishing
 - Confirming
94. Which of the following statements is **NOT TRUE** in the context of the passage?
- Mighty and cruel hand of time spares none.
 - Assyria was a great empire and nation.
 - The culture of the Vedic ages and the ages of the Upanishads is different in form.
 - Hindu religion is growing and changing.
 - Indian culture is transient and ephemeral.
95. “... could not last more than the footprints of a camel on the shifting sands of the deserts”. What does this expression mean as used in the passage?

- It lost itself in desert.
 - It was transient.
 - It lacked solidity.
 - It was limited only to desert area.
 - It lacked cohesion.
96. What is the characteristic quality of the basic principles of Indian culture?
- They are static.
 - They derive their strength from the genius of people.
 - They believe in the purity of Indian culture.
 - They can be adapted to almost any environment.
 - They project the glimpses of ancient civilization.
97. What, according to the author, has always characterized the Hindu religion?
- Spirituality and reactivity
 - Proactivity and individual dignity
 - Dynamism and growth
 - Morality and stagnation
 - Collective wisdom and democracy
98. Choose the word which is **MOST OPPOSITE** in meaning of the word ‘**last**’ as used in the passage.
- Grow
 - Diminish
 - Force
 - Respond
 - End
99. What, according to JB Pratt, is the secret of the longevity and imperishability of Indian culture?
- It has its origin in the remote past.
 - It stems from the minds and hearts of its sages.
 - It is founded on religion.
 - It is founded on universal moral values.
 - It is self-perpetuating and self-renewing.

Passage 10

Comfort is now one of the causes of its own spread. It has now become a physical habit, a fashion, an ideal to be pursued for its own sake. The more comfort is brought into the world, the more it is likely to be valued. To those who have known comfort, discomfort is a real torture. The fashion which now **decrees** the worship of comfort is quite as imperious as any other fashion. Moreover, enormous material interests are bound up with the supply of the means of comfort. The manufacturers of furniture, of heating apparatus, of plumbing fixtures cannot afford to let the love of comfort die. In modern advertisements they have found a means for compelling it to live and grow. A man of means today, who builds a house, is in general concerned primarily with the comfort of his future residence. He will spend a great deal of money on bathrooms, heating apparatus, padded furnishings, and having spent he will regard his house as perfect. His counterpart in an earlier age would have been primarily concerned with the impressiveness and magnificence of his dwelling with beauty, in a word, rather than comfort. The money our contemporary would spend on baths and central heating would have been spent on marble staircases, frescoes, pictures and statues. I am inclined to think that our present passion for comfort is a little exaggerated. Though I personally enjoy comfort, I have lived most happily in houses **devoid of** everything that Anglo-Saxons deem **indispensable**. Orientals and even South Europeans who know not comfort and live very much as our ancestors did centuries ago seem to go on very well without our elaborate apparatus and padded luxuries. However, comfort for me has a

justification; it facilitates mental life. Discomfort handicaps thought; it is difficult to use the mind when the body is cold and aching.

100. Choose the word that is **SIMILAR** in meaning to the phrase **devoid of** as used in the passage.
- (a) available (b) lacking
(c) empty (d) false
(e) deficient
101. How do people manage to keep the love of comfort alive?
- (a) By pumping in more comfort goods in the market
(b) By sacrificing high profit on comfort goods
(c) By targeting youths in the sales campaign
(d) By appealing to the emotionality of people
(e) None of these
102. What is the author's prediction about comfort?
- (a) The value of comfort will increase.
(b) People will value more spirituality thus reducing the value of comfort.
(c) People will desire simple lifestyle.
(d) The advertisements will play down the comfort aspect of goods.
(e) None of these
103. What was the characteristic of affluent men of an earlier age?
- (a) He used to put higher premium on comfort.
(b) He was relying much on advertisements.
(c) He believed more in simple and cheaper things.
(d) He was more qualitative in his emphasis rather than being quantitative.
(e) His emphasis was on beauty.
104. What change according to the author has taken place in the attitude towards comfort?
- (a) It is taken for granted in the modern way of living.
(b) It has become now an ideal to be pursued for its own sake.
(c) It is now believed that discomfort handicaps thought.
(d) It is thought that comfort helps body and mind to function effectively.
(e) None of these
105. Choose the word which is **SIMILAR** in meaning to the word 'decree' as used in the passage.
- (a) order (b) spread
(c) project (d) attract
(e) exhibit
106. Why does the author value comfort?
- (a) It helps to project one's image.
(b) It helps to protect your values.
(c) It facilitates mental life.
(d) It encourages a blend of materialistic and spiritual thinking.
(e) None of these
107. Why would manufacturers of various devices not permit comfort to die?
- (a) They want to manufacture more and more comfort goods.
(b) Manufacturers are mainly interested in creating new things.
(c) Manufacturers' emphasis is on producing beautiful things.

- (d) Their prosperity is closely linked with the people's desire for comfort.
(e) None of these
108. Choose the word which is **MOST OPPOSITE** in meaning of the word '**indispensable**' as used in the passage.
- (a) unattractive (b) avoidable
(c) favourable (d) inelegant
(e) comfortable
109. Which of the following statements is **NOT TRUE** in the context of the passage?
- (a) Discomfort is not liked by those who live in comfort.
(b) The affluent man of an earlier age was interested more in beauty than in comfort.
(c) Discomfort handicaps thought.
(d) Orientals and South Europeans love comfort immensely.
(e) The author of the passage enjoys comfort.

Passage 11

We tend to be harsh on our bureaucracy, but nowhere do citizens enjoy dealing with their government. They do it because they have to. But that doesn't mean that the experience has to be **dismal**. Now there is a new wind blowing through government departments around the world, which could take some of this pain away. In the next five years it may well transform not only the way public services are delivered but also the fundamental relationship between governments and citizens. Not surprisingly, it is the Internet that is behind it. After e-commerce and e-business, the next revolution may be e-governance.

Examples **abound**. The municipality of Phoenix, Arizona, allows its citizens to renew their car registrations, pay traffic fines, replace lost identity cards, etc, online without having to stand in endless queues in a grubby municipal office. The municipality is happy because it saves \$5 a transaction. It costs only \$1.60 to process an online transaction versus \$ 6.60 to do it across the counter. In Chile, people routinely submit their income tax returns over the Internet, which has increased transparency, and drastically reduced the time taken and the number of errors and litigation with the tax department. Both tax payers and the revenue department are happier.

The furthest ahead, not surprisingly, is the small, rich and entrepreneurial civil service of Singapore, which allows citizens to do more functions online than any other. As in many private companies, the purchasing and buying of Singapore's government departments is now on the Web, and cost benefits come through more competitive bidding, easy access to global suppliers and time saved by online processing of orders. They can **post** their catalogues on their site, bid for contracts, submit invoices and check their payment status over the Net.

The most useful idea for Indian municipalities is GovWorks, a private sector-run site that collects local taxes, fines and utility bills for 3600 municipalities across the United States. It is a citizen's site, which also provides information on government jobs, tenders, etc. The most ambitious is the British government, which has targeted to convert 100 per cent of its transactions with its citizens to the Internet by 2005.

Cynics in India will say, 'Oh e-governance will never work in India. We are so poor and we don't have computers.' But they are wrong! There are many experiments afoot in India as well. Citizens in Andhra Pradesh can download government forms and

submit applications on the Net without having to bribe clerks. In many districts, land records are online and this has created transparency. Similarly, in Dhar district of Madhya Pradesh, villagers have begun to file applications for land transfers and follow their progress on the Net. In seventy villages in the Kolhapur and Sangli districts in Maharashtra, Internet booths have come up where farmers can daily check the market rates of agricultural commodities in Marathi, along with data on agricultural schemes, information on crop technology, when to spray and plant their crops and bus and railway time tables. They also find vocational guidance on jobs, applications for ration cards, kerosene/gas burners and land record extracts with details of land ownership.

Sam Pitroda's WorldTel, Reliance Industries and the Tamil Nadu government are jointly laying 3000 km of optic fibre cables to create a Tamil Network which will offer ration cards, school, college and hospital admission forms, land records, and pension records. If successful, WorldTel will expand the network to Gujarat, Karnataka and West Bengal. In Kerala, all the villages are getting linked online to the district headquarters, allowing citizens to compare the development priorities of their villages with other villages in the State.

Many are still sceptical of the real impact because so few Indians have computers. The answer lies in interactive cable TV and in Internet kiosks. Although India has only five million computers and thirty-eight million telephones, it has thirty-four million homes with cable TV and these are growing eight per cent a year. By 2005 most cable homes will have access to the Internet from many of the 700000 local STD/PCO booths. Internet usage may be low today, but it is bound to grow rapidly in the future, and e-governance in India may not be a dream.

110. According to the passage, which country has the most ambitious plan for e-governance?
 (a) USA (b) Chile
 (c) Singapore (d) India
 (e) UK
111. GovWorks is working in which of the following countries?
 (a) India (b) UK
 (c) Chile (d) Singapore
 (e) None of these
112. Choose the word that is opposite in meaning of the word "dismal" as used in the passage.
 (a) grim (b) approve
 (c) pleasing (d) better
 (e) enrich
113. How can India overcome low penetration of computers for e-governance?
 (a) By manufacturing more computers
 (b) Through cable TV and Internet Kiosks
 (c) By opening more STD/PCO booths
 (d) By making the Internet free
 (e) By putting more services on the Internet
114. Which of the following has not been one of the effects of submitting income tax returns over the Internet in Chile?
 (a) Reduction of legal cases
 (b) Reduction in errors
 (c) Increase in transparency
 (d) Increase in number of returns
 (e) Reduction in time taken

115. Choose the word that is the **same** in meaning as the word "abound" as used in the passage.
 (a) around (b) proliferate
 (c) flourish (d) plentiful
 (e) few
116. Choose the word that is the **same** in meaning as the word "post" as used in the passage.
 (a) deliver (b) send
 (c) put up (d) drop out
 (e) later
117. According to the passage, which country is at present the most advanced in e-governance?
 (a) Singapore (b) Chile
 (c) India (d) USA
 (e) UK
118. In which direction is the new wind blowing?
 (a) More and more interaction of citizens with government through Internet
 (b) Outsourcing the work of infrastructure creation for Internet
 (c) Increasing the penetration of computers in rural areas
 (d) Integrating e-commerce, e-business and e-governance
 (e) Introducing e-governance programmes in schools and colleges
119. According to the passage, what is the annual growth rate of computers in India?
 (a) 8% (b) 5%
 (c) 0.5% (d) Not mentioned
 (e) None of these
120. Compared to across-the-counter, the cost of online transaction is
 (a) little less
 (b) substantially less
 (c) more or less the same
 (d) little more
 (e) ' 4/- less per transaction
121. According to the author, e-governance in India
 (a) is a dream and may not succeed
 (b) will not succeed unless more computers are owned by citizens
 (c) has witnessed successful attempts and plans
 (d) will not work because the model is suited for developed countries
 (e) though will bring transparency, will increase corruption

Passage 12

Employment exchanges — one of the surviving bastions of babudom — face the prospect of becoming irrelevant in an era of reform. Even in the heart of the nation's capital, the premises are often dilapidated structures with dirty passages and manned by surly staff. Not surprisingly, job-seekers hardly throng these exchanges. Paradoxically, when jobs are getting scarce due to pressure of liberalisation, job-seekers are **spurning** an institution intended to help them **secure** placements. The reasons are simple enough. Employment exchanges still concentrate on government and public sector placements, which are fast losing ground in the labour market. For most government jobs, the eligibility criterion is still registration with the employment exchanges. But what is the use of going through the formalities of registration when

government jobs themselves are dwindling? The placement effected by all the 939-odd exchanges in the country in 2001 was of the order of 1.69 lakh against annual registration levels of 60 lakh. As there are too few jobs when compared to the number of job-seekers, the accumulated backlog of registrations is close to 4.16 crore. The latter of course doesn't indicate unemployment levels as those registered with the employment exchanges are not necessarily unemployed.

How can the employment exchanges be revamped? The thinking in the Union labour ministry is to transform them into employment promotion and guidance centres. The plan includes modernisation, changing the mindset of the staff and making them into an effective instrument for monitoring and coordinating various employment generation schemes. This objective calls for developing a better database on the fast changing employment situation with a comprehensive coverage of new economic establishments. For instance, the various economic censuses are an important source of information on the changing employment profile of, say, the nation's capital. Far from being a bureaucrat-dominated city, Delhi over the years has become more of an industrial metropolis. According to the fourth economic census, manufacturing accounted for 40 per cent of jobs in the capital. The employment exchanges in the capital thus have their work cut out notably, to shift the focus away from government and public sector jobs more towards placements in the private sector, especially in manufacturing and services, including the **burgeoning** retail trade sector. By doing so, they will better reflect the **imperatives** of economic reform and remain relevant in today's times.

122. Choose the word that is **opposite** in meaning of the word "**spurning**" as used in the passage.
- (a) thronging (b) evaluating
(c) criticising (d) following
(e) rejecting
123. Which of the following revamped role can be entrusted to employment exchanges?
- (a) Conducting economic surveys
(b) To conduct vocational training programme for the unemployed
(c) To modernise registration process through the Internet
(d) To reduce the number of exchanges
(e) None of these
124. What can be inferred about the employment exchanges outside Delhi?
- (a) The registration in them would be much less.
(b) Their condition will be worse.
(c) Their condition will be better.
(d) They focus more on manufacturing sector.
(e) None of these
125. Choose the word that is **same** in meaning as "**imperatives**" as used in the passage.
- (a) importance (b) implication
(c) urgency (d) indication
(e) authority
126. Choose the word that is **same** in meaning as the word "**secure**" as used in the passage.
- (a) fasten (b) safe
(c) obtain (d) reassure
(e) lock
127. Choose the word that is **opposite** in meaning of the word "**burgeoning**" as used in the passage.
- (a) flourishing (b) loss-making
(c) expanding (d) distressing
(e) declining
128. In order to remain relevant, which of the following should be the focus of employment exchanges?
- (a) To make efforts to increase their registration
(b) To shift attention to jobs in private sector
(c) To shift focus on jobs in manufacturing in public sector organisations
(d) To reform exchanges by recruiting trained staff
(e) To obtain more grants from government
129. Which of the following is not true in the context of the passage?
- (a) Those who register with the employment exchanges inform them if they are able to get the job on their own.
(b) The annual placement arranged by employment exchanges is less than 3% of the registration.
(c) For government jobs, registration with employment exchanges is required.
(d) In Delhi, over the years more industries have started.
(e) All the above are true

Passage 13

We have inherited the tradition of secrecy about the budget from Britain where also the system has been strongly attacked by eminent economists and political scientists including Peter Jay. Sir Richard Clarke, who was the originating genius of nearly every **important** development in the British budgeting techniques during the last two decades, has spoken out about the abuse of budget secrecy: "The problems of long-term tax policy should surely be **debated** openly with the facts on the table. In my opinion, all governments should have just the same **duty** to publish their expenditure policy. Indeed, this obligation to publish taxation policy is really essential for the control of public expenditure in order to get realistic taxation implications." Realising that democracy **flourishes** best on the principles of open government, more and more democracies are having an open public debate on budget proposals before introducing the appropriate Bill in the legislature. In the United States the budget is conveyed in a message by the President to the Congress, which comes well in advance of the — date when the Bill is introduced in the Congress. In Finland the Parliament and the people are already discussing in June the tentative budget proposals which are to be introduced in the Finnish Parliament in September. Every budget contains a cartload of figures in black and white - but the dark figures represent the **myriad** lights and shades of India's life, the contrasting tones of poverty and wealth, and of bread so dear and flesh and blood so cheap, the deep tints of adventure and enterprise and man's ageless struggle for a brighter morning. The Union budget should not be an annual **scourge** but a part of presentation of annual accounts of a partnership between the Government and the people. That partnership would work much better when the nonsensical secrecy is replaced by openness and public consultations, resulting in fair laws and the people's acceptance of their moral duty to pay.

130. How do the British economists and political scientists react to budget secrecy? They are
- in favour of having a mix of secrecy and openness.
 - indifferent to the budgeting techniques and taxation policies.
 - very critical about maintenance of budget secrecy.
 - advocating not disclosing in advance the budget contents.
 - None of these
131. The author thinks that openness in budget is essential as it leads to
- prevention of tax implications
 - people's reluctance to accept their moral duties
 - exaggerated revelation of the strengths and weaknesses of economy
 - making our country on par with Finland
 - None of these
132. The author seems to be in favour of
- maintaining secrecy of budget
 - judicious blend of secrecy and openness
 - transparency in budget proposals
 - replacement of public constitution by secrecy
 - None of these
133. The secrecy of the budget is maintained by all of the following countries **except**
- Finland
 - India
 - United States
- Only A
 - Only B
 - Only C
 - A and C
 - B and C
134. Which of the following statements is definitely TRUE in the context of the passage?
- The British Government has been religiously maintaining budget secrecy.
 - Budget secrecy is likely to lead to corrupt practices.
 - Consulting unjustifiable taxes with public helps make them accept those taxes.
 - There should be no control on public expenditure in democratic condition.
 - None of these
135. Sir Richard Clarke seems to deserve the credit for
- transformation in the British budgetary techniques.
 - maintenance of secrecy of the British budget.
 - detection of abuse of transparency in budget.
 - bringing down the tax load on British people.
 - None of these
136. From the contents of the passage, it can be inferred that the author is
- authoritarian in his approach.
 - a democratic person.
 - unaware of India's recent economic developments.
 - a conservative person.
 - None of these
137. Which of the following statement(s) is/are definitely False in the context of the passage?
- Transparency helps unscrupulous elements to resort to corrupt practices.
 - Open approach of Government is a sign of healthy democracy.
 - People's acceptance of their moral duties can best be achieved through openness and public consultations.
- Only A
 - Only B
 - Only C
 - A and B
 - B and C
138. For making the budget realistic, the Government should
- refrain from making public the proposed provisions before finalisation.
 - discuss it secretly within themselves.
 - encourage the public to send in their suggestions.
 - consult the public, defend their own plans and accept public suggestions.
 - None of these
- Directions (Qs. 139-144) :** Choose the word which is most nearly the SAME in meaning to the word printed in bold as used in the passage.
139. **SCOURGE**
- ritual
 - presentation
 - whip
 - compromise
 - remedy
140. **MYRIAD**
- adequate
 - functional
 - incompatible
 - abundant
 - excellent
141. **DUTY**
- obligation
 - imposition
 - tax-liability
 - function
 - job
- Directions (Qs. 142-144) :** Choose the word/phrase which is most OPPOSITE in meaning to the word printed in bold as used in the passage.
142. **FLOURISHES**
- disappears
 - degenerates
 - vanishes
 - blooms
 - opens
143. **DEBATED**
- questioned severely
 - opposed strongly
 - accepted unconditionally
 - discussed frankly
 - implemented forcibly
144. **IMPORTANT**
- major
 - uncountable
 - significant
 - unscheduled
 - trivial

Passage 14

The happy man is the man who lives objectively, who has free affections and wide interests, who secures his happiness through these interests and affections and through the fact that they in turn make him an object of interest and affection to many others. To be the recipient of affection is a potent cause of happiness, but the man who demands affection is not the man upon whom it is **bestowed**. The man who receives affection is, speaking broadly, the man who gives it. But it is useless to attempt to give it as a calculation, in the way in which one might lend money at interest, for a calculated affection is not genuine and is not felt to be so by the recipient.

What then can a man do who is unhappy because he is encased in self? So long as he continues to think about the causes of his unhappiness, he continues to be self-centered and therefore does not get outside it. It must be by genuine interest, not by simulated interests adopted merely as a medicine. Although this difficulty is real, there is nevertheless much that he can do if he has rightly diagnosed his trouble. If for example, his trouble is due to a sense of sin, conscious or unconscious, he can first persuade his conscious mind that he has no reason to feel sinful, and then proceed, to plant this rational conviction in his unconscious mind, concerning himself meanwhile with some more or less neutral activity. If he succeeds in **dispelling** the sense of sin, it is possible that genuine objective interests will arise spontaneously. If his trouble is self-pity, he can deal with it in the same manner after first persuading himself that there is nothing extraordinarily unfortunate in his circumstances.

If fear is his trouble, let him practise exercises designed to give courage. Courage has been recognized from time immemorial as an important virtue, and a great part of the training of boys and young men has been devoted to producing a type of character capable of fearlessness in battle. But moral courage and intellectual courage have been much less studied. They also, however, have their technique. Admit to yourself every day at least one painful truth, you will find it quite useful. Teach yourself to feel that life would still be worth living even if you were not, as of course you are, immeasurably superior to all your friends in virtue and in intelligence. Exercises of this sort prolonged through several years will at last enable you to admit facts without **flinching** and will, in so doing, free you from the empire of fear over a very large field.

145. According to the passage, calculated affection
- appears to be false and fabricated
 - makes other person to love you
 - turns into permanent affection over a period of time
 - leads to self-pity
 - gives a feeling of courage
146. Who according to the passage is the happy man?
- Who is encased in self
 - Who has free affection and wide interests
 - Who is free from worldly passions
 - Who has externally centred passions
 - None of these
147. Which of the following statements is **NOT TRUE** in the context of the passage?
- The happy man has wide interests.
 - Courage has been recognised as an important virtue.
 - Unhappy man is encased in self.
 - A man who suffers from the sense of sin must tell himself that he has no reason to be sinful.
 - Issue of intellectual courage has been extensively studied.
148. Which of the following virtues, according to the passage, has been recognised for long as an important virtue?
- Patriotism
 - Sacrifice
 - Courage
 - Self-consciousness
 - None of these
149. Which of the following words is **SIMILAR** in meaning of the word '**bestowed**' as used in the passage?
- Conferred
 - Accommodated
 - Trusted
 - Withdrawn
 - Directed
150. Which of the following, according to the passage, has not been studied much?
- Feeling of guilt and self-pity
 - The state of mind of an unhappy man
 - How to get absorbed in other interests
 - Moral and intellectual courage
 - None of these
151. What should a man do who is suffering from the feeling of self-pity?
- He should control his passions and emotions.
 - He should persuade himself that everything is alright in his circumstances.
 - He should seek affection from others.
 - He should develop a feeling of fearlessness.
 - He should consult an expert to diagnose his trouble.
152. What happens to a man who demands affection?
- His feelings are reciprocated by others.
 - He tends to take a calculated risk.
 - He becomes a victim of a vicious circle.
 - He takes affection for granted from others.
 - None of these
153. If a man is suffering from a sense of sin
- he should invite opinion of others
 - he should admit his sin at once
 - he should consciously realize that he has no reason to feel sinful
 - he should develop a fearless character
 - he should develop an internal focus of control
154. Which of the following statements is **TRUE** in the context of the passage?
- All passions stem from unhappiness.
 - The happy man lives subjectively.
 - Any virtue has a dark side also.
 - One feels happy if one receives affection.
 - Any affection is always genuine.
155. Which of the following statements is **SIMILAR** in meaning to the word '**flinching**' as used in the passage?
- Wincing
 - Convincing
 - Explaining
 - Providing
 - Debating
156. How can one get out of the vicious circle mentioned in the passage?
- By practising skills of concentration
 - By inculcating the habit of self-absorption
 - Being true to others and one's internal circumstances
 - Admitting to oneself that others could be right
 - None of these
157. Which of the following words is **OPPOSITE** in meaning of the word '**dispelling**' as used in the passage?
- Giving
 - Accumulating
 - Projecting
 - Scattering
 - Receiving

158. What according to the passage is the real cause of happiness?
- Material rewards and incentives received
 - Critical analysis of the happy state of mind
 - Affection received from others
 - Calculated risk taken
 - None of these
159. What happens when you think about the cause of your unhappiness?
- You try to introspect and look critically at yourself.
 - You realize that life can be lived in different ways.
 - You try to practice exercise designed to give coverage.
 - You remain a self-centred person.
 - None of these

Passage 15

Management is a set of processes that can keep a complicated system of people and technology running smoothly. The most important aspects of management include planning, budgeting, organising, staffing, controlling, and problem solving. Leadership is a set of processes that creates organizations in the first place or adapts them to significantly changing circumstances. Leadership defines what the future should look like, aligns people with that vision, and inspires them to make it happen despite the obstacles. This distinction is absolutely crucial for our purposes here: Successful transformation is 70 to 90 per cent leadership and only 10 to 30 per cent management. Yet for historical reasons, many organizations today don't have much leadership. And almost everyone thinks about the problems here as one of managing change.

For most of this century, as we created thousands and thousands of large organizations for the first time in human history, we didn't have enough good managers to keep all those bureaucracies functioning. So many companies and universities developed management programmes, and hundreds and thousands of people were encouraged to learn management on the job. And they did. But, people were taught little about leadership. To some degree, management was emphasized because it's easier to teach than leadership. But even more so, management was the main item on the twentieth-century agenda because that's what was needed. For every entrepreneur or business builder who was a leader, we needed hundreds of managers to run their ever growing enterprises.

Unfortunately for us today, this emphasis on management has often been institutionalized in corporate cultures that discourage employees from learning how to lead. Ironically, past success is usually the key ingredient in producing this outcome. The syndrome, as I have observed it on many occasions, goes like this: success creates some degree of market dominance, which in turn produces much growth. After a while keeping the ever larger organization under control becomes the primary challenge. So attention turns inward, and managerial competencies are **nurtured**. With a strong emphasis on management but not on leadership, bureaucracy and an inward focus take over. But with continued success, the result mostly of market dominance, the problem often goes unaddressed and an unhealthy arrogance begins to evolve. All of these characteristics then make any transformation effort much more difficult.

- Arrogant managers can over-evaluate their current performance and competitive position, listen poorly, and learn slowly. Inwardly focused employees can have difficulty seeing the very forces that present threats and opportunities. Bureaucratic cultures can **smother** those who want to respond to shifting conditions. And the lack of leadership leaves no force inside these organisations to break out of the morals.
160. Why, according to the author, is a distinction between management and leadership crucial?
- Leaders are reactive whereas managers are proactive.
 - Organisations are facing problems of not getting good managers.
 - Organisations are pursuing the strategy of *status quo*.
 - In today's context, organisations need leaders much more than managers in transforming them.
 - None of these
161. Why did companies and universities develop programmes to prepare managers in such a large number?
- Companies and universities wanted to generate funds through these programmes.
 - A large number of organisations were created and they needed managers in good number.
 - Organisations did not want spend their scarce resources in training managers.
 - Organisations wanted to create communication network through trained managers.
 - None of these
162. Which of the following statements is NOT TRUE in the context of the passage?
- Bureaucratic culture can smother those who want to respond to changing conditions.
 - Leadership produces change and has the potential to establish direction.
 - Pressure on managers comes mostly from within.
 - Leadership centres on carrying out important functions such as planning and problem-solving.
 - Managers believe that they are the best and that their idiosyncratic traditions are superior.
163. Which of the following is not the characteristic of bureaucratic culture?
- Managers listen poorly and learn slowly.
 - Managerial competencies are nurtured.
 - Employees clearly see the forces that present threats and opportunities.
 - Prevalence of unhealthy arrogance.
 - Managers tend to stifle initiative and innovation.
164. Which of the following is SIMILAR in meaning to the word SMOTHER as used in the passage?
- Suppress
 - Encourage
 - Instigate
 - Criticise
 - Attack
165. How has the author defined management?
- It is the process of adapting organisations to changing circumstances.
 - It is the system of aligning people with the direction it has taken.
 - It refers to creating a vision to help direct the change effort.
 - Creating better performance through customer orientation.
 - None of these

166. Management education was emphasized in the management programmes because
- establishing direction was the main focus of organisations
 - motivating employees was thought to be done by managers
 - strategies for producing change was the main focus of organisations
 - organisations wanted to create powerful guiding coalition
 - management was the main item of agenda in organisations
167. What is the historical reason for many organisations not having leadership?
- A view that leaders are born, they are not made
 - Leaders lack managerial skills and organisations need managers
 - Leaders are weak in carrying out traditional functions of management
 - Leaders allow too much complacency in organisations
 - None of these
168. In the passage, management is equated with
- organisation
 - leadership
 - organisational vision
 - bureaucracy
 - managerial training
169. Why does the attention of large organisations turn inward?
- Their managers become arrogant
 - They have to keep themselves under control
 - Their success creates market dominance
 - They want to project their predictability
 - None of these
170. Which of the following is SIMILAR in meaning of the word NURTURED as used in the passage?
- Created
 - Developed
 - Thwarted
 - Surfaced
 - Halted
171. What, according to the author, is leadership?
- Process which keeps the system of people and technology running smoothly
 - Planning the future and budgeting resources of the organisation
 - Inspiring people to realise the vision
 - Carrying out the crucial functions of management
 - None of these
172. Which of the following characteristics helps organisations in their transformation efforts?
- Emphasis on leadership but not on management
 - A strong and dogmatic culture
 - Bureaucratic and inward-looking approach
 - Failing to acknowledge the value of customers and shareholders
 - None of these
173. Why were people taught little about leadership in management programmes?
- Teachers were busy in understanding the phenomenon of leadership
 - Enough study material was not available to facilitate teaching of leadership
 - Focus of these programmes was on developing managers
 - Leadership was considered only a political phenomenon
 - None of these
174. Which of the following statements is/are **definitely** true in the context of the passage?
- Bureaucracy fosters strong and arrogant culture.
 - Leadership competencies are nurtured in large-size organisations.
 - Successful transformation in organisations is 70 to 90 per cent leadership.
- Only A and B
 - Only A and C
 - Only B and C
 - Only B
 - Only C

Passage 16

In the second week of August 1998, just a few days after the incidents of bombing the US embassies in Nairobi and Dar-es-Salaam, a high-powered, brain-storming session was held near Washington D.C. to discuss various aspects of terrorism. The meeting was attended by ten of America's leading experts in various fields such as germ and chemical warfare, public health, disease control and also by the doctors and the law-enforcing officers. Being asked to describe the horror of possible bio-attack, one of the experts narrated the following **gloomy** scenario.

A culprit in a crowded business centre or in a busy shopping mall of a town empties a test tube containing some fluid, which in turn creates an unseen cloud of germ of a dreaded disease like anthrax capable of inflicting a horrible death within 5 days on any one who inhales it. At first 500 or so victims feel that they have mild influenza which may recede after a day or two. Then the symptoms return again and their lungs start filling with fluid. They rush to local hospitals for treatment, but the panic-stricken people may find that the medicare services run quickly out of drugs due to excessive demand. But no one would be able to realise that a terrorist attack has occurred. One cannot deny the possibility that the germ involved would be of contagious variety capable of causing an epidemic. The meeting concluded that **such attacks**, apart from causing immediate human tragedy, would have dire long-term effects on the political and social fabric of a country by way of ending people's trust on the competence of the government.

The experts also said that the bombs used in Kenya and Tanzania were of the old-fashioned variety and involved quantities of high explosives, but new terrorism will prove to be more deadly and probably more **elusive** than hijacking an aeroplane or a gelignite of previous decades. According to Bruce Hoffman, an American specialist on political violence, old terrorism generally had a specific manifesto - to overthrow a colonial power or the capitalist system and so on. These terrorists were not shy about planting a bomb or hijacking an aircraft and they set some limit to their brutality. Killing so many innocent people might turn their natural supporters off. Political terrorists want a lot of people watching but not a lot of people dead. "Old terrorism sought to change the world while the new sort is often practised by those who believe that the world has gone beyond redemption", he added.

Hoffman says, "New terrorism has no long-term agenda but is ruthless in its short-term intentions. It is often just a **cacophonous** cry of protest or an outburst of religious **intolerance** or a protest against the West in general and the US in particular. Its **perpetrators** may be religious fanatics or diehard opponents of a government and see no reason to show restraint. They are simply intent on **inflicting** the maximum amount of pain on the victim."

175. In the context of the passage, the culprit's act of emptying a test tube containing some fluid can be classified as
- a terrorist attack
 - an epidemic of a dreaded disease
 - a natural calamity
 - panic created by an imaginary event
 - None of these
176. In what way would the new terrorism be different from that of the earlier years?
- More dangerous and less baffling
 - More hazardous for victims
 - Less complicated for terrorists
- A and C only
 - B and C only
 - A and B only
 - All the three
 - None of these
177. What was the immediate provocation for the meeting held in August 1998?
- The insistence of America's leaders
 - The horrors of possible bio-attacks
 - A culprit's heinous act of spreading germs
 - People's lack of trust in the government
 - None of these
178. What could be the probable consequences of bio-attacks, as mentioned in the passage?
- Several deaths
 - Political turmoil
 - Social unrest
- A only
 - B only
 - C only
 - A and B only
 - All the three
179. The author's purpose of writing the above passage seems to explain
- the methods of containing terrorism
 - the socio-political turmoil in African countries
 - the deadly strategies adopted by modern terrorists
 - reasons for killing innocent people
 - the salient features of terrorism of yester years
180. According to the author of the passage, the root cause of terrorism is
- Religious fanaticism
 - Socio-political changes in countries
 - The enormous population growth
- A only
 - B only
 - C only
 - A and B only
 - All the three
181. The phrase "**such attacks**", as mentioned in the last sentence of the second paragraph, refers to
- the onslaught of an epidemic as a natural calamity
 - bio-attack on political people in the government

- attack aimed at damaging the reputation of the government
 - bio-attack manoeuvred by unscrupulous elements
 - None of these
182. The sole objective of the old terrorism, according to Hoffman, was to
- plant bombs to kill innocent people
 - remove colonial power or capitalist system
 - make people realise the incompetence of the government
 - give a setback to socio-political order
 - None of these
183. Which of the following statements is **true** about new terrorism?
- Its immediate objectives are quite tragic.
 - It has farsighted goals to achieve.
 - It can differentiate between the innocent people and the guilty.
 - It is free from any political ideology.
 - It advocates people in changing the socio-political order.

Directions (Qs. 184-186): Choose the word which is most **OPPOSITE** in meaning of the word printed in bold as used in the passage

184. **gloomy**
- discouraging
 - disgusting
 - bright
 - tragic
 - versatile
185. **cacophonous**
- loud
 - melodious
 - sonorous
 - harsh
 - distant
186. **intolerance**
- forbearance
 - permissiveness
 - adaptability
 - acceptance
 - faithfulness

Directions (Qs. 187-189): Choose the word which is most nearly the **SAME** in meaning of the word printed in bold as used in the passage.

187. **perpetrators**
- opponents
 - followers
 - sympathisers
 - leaders
 - manoeuvres
188. **elusive**
- harmful
 - fatal
 - destructive
 - baffling
 - obstructing
189. **inflicting**
- elevating
 - imposing
 - alleviating
 - reflecting
 - soothing

Passage 17

After "Liberalization", "Globalization" and the consequent change in the new international economic order as well as new information technology order, a new catchphrase is being coined: 'A New Health Order'. Talking about setting it up is the theme of the WHO-sponsored international conference on primary health and medical care, currently being held at Milan in Italy. While

much has been said and written on establishing the “new order”, little has actually been done. Will the conference at Milan too swear by the “new health order”, go home and then forget about it, while the present medical and healthcare set-up in poor countries further **entrenches** itself? This does not have to be the fate of the radical resolutions that will undoubtedly be passed at Milan. Unlike creating a new world economic or information order, establishing a new health set-up is essentially a matter for individual countries to accomplish. No conflict of international interests is involved. But this advantage is, at least until it begins to take concrete shape, only theoretical. The million-dollar question is whether individual third-world governments are able and willing to **muster** the will, the resources, the administrative and other infrastructure to carry out what it is entirely within their power to attain and implement.

The dimensions of the problem are known and the solutions broadly agreed on. The present medical and healthcare system is urban-based, closely geared to drugs, hospitals and expensively trained apathetic doctors. The bulk of the population in poor countries, who live in rural areas, are left untouched by all this and must rely on traditional healers. The answer is to turn out medical health personnel sufficiently, but not expensively, trained to handle routine complaints and to get villagers to pay adequate attention to cleanliness, hygienic sanitation, garbage disposal and other elementary but **crucial** matters. More complicated ailments can be referred to properly equipped centres in district towns, cities and metropolises. Traditional healers, whom villagers trust, can be among these intermediate personnel. Some third-world countries, including India, have **launched** or are preparing elaborate schemes of this nature. But the experience is not quite happy. There is **resistance** from the medical establishment which sees them as little more than licensed quackery but is not prepared either to offer **condensed** medical courses such as the former licentiate course available in this country and now unwisely scrapped. There is the question of how much importance to give to indigenous system of medicine. And there is the difficult matter of striking the right balance between preventive healthcare and curative medical attention. These are complex issues and the Milan conference would perhaps be more fruitful if it were to discuss such specific subjects.

190. The author is doubtful whether.....
- an individual country can set up a new health order.
 - the Milan conference would pass radical resolutions.
 - under-developed countries have the capacity to organize their resources.
 - traditional healers could be trained as intermediate health personnel.
 - the problem has been understood at all.
191. The author has reservations about the utility of the Milan Conference because
- it is expected only to discuss but not decide upon anything.
 - earlier conferences had failed to reach any decisions.
 - the medical profession is opposed to a new health order.
 - while “new orders” are talked and written about, not much is actually done.
 - None of these

192. The contents of the passage indicate that the author is opposed to
- traditional healers.
 - licentiate practitioners.
 - allopathic system of medicines.
 - hospitals.
 - None of these
193. It can be inferred from the contents of the passage that the author’s approach is
- sarcastic
 - constructive
 - indifferent
 - fault-finding
 - hostile
194. The author thinks that the solution to the problem of medical/health care lies in
- opening hospitals in rural areas.
 - conducting inexpensive medical courses.
 - improving the economic condition of the masses.
 - expediting the setting up of a new health order.
 - making cheap drugs available.
195. To make the conference really useful, the author suggests
- resolving the international conflicts involved.
 - that it should address itself to specific issues.
 - it should give importance to indigenous system of medicine.
 - that it should not pass radical resolutions.
 - None of these
196. What does the author suggest for the cure of the cases involving complications?
- Treating such cases at well-equipped hospitals in district places
 - Training such victims in preliminary hygiene
 - Training semi-skilled doctors to treat such cases
 - Issuing licenses to semi-skilled doctors to treat such cases
 - None of these
197. The medical establishment seems to be reluctant to trust the
- allopathic medical practitioners.
 - traditional healers.
 - urban-based medical practitioners.
 - expensively trained allopathic doctors.
 - None of these
198. For a new health order, the author recommends all of the following EXCEPT
- motivating villagers to pay attention to cleanliness
 - setting up well equipped centres in district towns
 - discontinuing the present expensive medical courses
 - training traditional healers to function as medical health personnel
 - striking a balance between preventive healthcare and curative medical attention

Directions (Qs. 199-201): Choose the word which is most nearly the SAME in meaning as the word printed in bold as used in the passage.

199. LAUNCHED
- participated
 - accomplished
 - elevated
 - planned
 - started

200. MUSTER
 (a) enlist (b) summon
 (c) manifest (d) extend
 (e) enrich
201. ENTRENCH
 (a) being deteriorating
 (b) surround completely
 (c) establish firmly
 (d) enclose carefully
 (e) finish radically
- Directions (Qs. 202-204):** Choose the word which is most nearly OPPOSITE in meaning of the word printed in bold as used in the passage.
202. CONDENSED
 (a) concentrated (b) invigorated
 (c) expanded (d) lengthened
 (e) inexplicable
203. CRUCIAL
 (a) trivial (b) critical
 (c) significant (d) marvellous
 (e) conspicuous
204. RESISTANCE
 (a) opposition (b) agreement
 (c) repulsion (d) acceptance
 (e) compliance

Passage 18

It is an old saying that knowledge is power. Education is an instrument which imparts knowledge and, therefore, indirectly controls power. Therefore, ever since the dawn of civilization persons in power have always tried to supervise or control education. It has been the **hand-maid of the ruling class**. During the Christian era, the ecclesiastics controlled the institution of education and diffused among the people the gospel of the Bible and religious teachings. These gospels and teachings were no other than a philosophy for the maintenance of the existing society. It taught the poor man to be meek and to earn his bread with the **sweat of his brow**, while the priests and the landlords lived in luxury and fought duels for the slightest offence. During the Renaissance, education passed more from the clutches of the priest into the hand of the prince. In other words it became more secular. It was also due to the growth of the nation-state and powerful monarchs who united the country under their rule. Thus, under the control of the monarch, education began to devise and preach the **infallibility** of its masters, the monarch or king. It also invented and supported fantastic theories like the Divine Right Theory and that the king can do no wrong etc. With the advent of the industrial revolution education took a different turn and had to please the new masters. It now no longer remained the privilege of the baron class but was thrown open to the new rich merchant class of society. Yet education was still confined to the few elite. The philosophy which was in vogue during this period was that of '**Laissez Faire**' restricting the function of the State to a mere keeping of law and order while, on the other hand, in practice the law of the jungle prevailed in the form of free competition and the survival of the fittest.

205. Who controlled education during the era after the industrial revolution?
 (a) The baron class (b) The priests
 (c) The prince (d) The monarch
 (e) None of these

206. What does the theory of Divine Right of king stipulate?
 (a) That kings are gods.
 (b) They have the right to be worshipped like gods by their subjects.
 (c) That the right of governing is conferred upon kings by god.
 (d) That the rights of kings are divine and therefore sacred.
 (e) None of these
207. What does the expression 'hand-maid of the ruling class' mean?
 (a) Private mistress of the prince
 (b) Something fully under the control of the ruling class
 (c) Private maid-servants of the prince
 (d) The symbol of authority of the prince
 (e) None of these
208. Who controlled education during the Renaissance?
 (a) The common people
 (b) The prince
 (c) The church and the priests
 (d) The secular leaders of the society
 (e) None of these
209. What does the word "infallibility" mean?
 (a) That every man is open to error
 (b) That some divine power is responsible for determining the fate of men
 (c) The virtue of not making any mistake
 (d) Sensitivity
 (e) None of these
210. What did the ruling class in the Christian era think of the poor man?
 (a) That he is the beloved of god
 (b) That he deserves all sympathy of the rich
 (c) That he should be strong
 (d) That he is meant for serving the rich
 (e) None of these
211. Who controlled the institution of education during the Christian era?
 (a) The church and the priests
 (b) The monarchs
 (c) The secular leaders of society
 (d) The common people
 (e) None of these
212. What do you mean by the 'sweat of his brow'?
 (a) Very hard work
 (b) The tiny droplets of sweat on the forehead
 (c) The wrinkles visible on the face
 (d) The sign of innocence
 (e) None of these
213. Why have persons in power always tried to supervise or control education?
 (a) Because they wanted to educate the whole public.
 (b) Because they wanted to deprive the common man of the benefits of education.
 (c) Because it involved a huge expenditure on the state exchequer.
 (d) Because it is an instrument of knowledge and therefore power.
 (e) None of these

214. What does the philosophy of Laissez-Faire stand for?
- Joint control of the means of production by the state and private enterprise
 - Individual freedom in the economic field
 - State control of the means of production
 - Full development of the individual's personality
 - None of these

Passage 19

An independent, able and upright judiciary is the hallmark of a free democratic country. Therefore, the process of judicial appointments is of vital importance. At present, on account of the Supreme Court's last advisory opinion, the role of the executive and its interference in the appointment of judges is minimal, which, **in the light of our previous experience**, is most welcome. However, there is a strong demand for a National Judicial Commission on the ground of wider participation in the appointment process and for greater transparency. The composition, the role and the procedures of the proposed National Judicial Commission, must be clearly spelt out, **lest** it be a case of jumping **from the frying pan into the fire**.

Recently, there has been a lively debate in England on the subject. A judicial commission has been proposed but there are not many takers for that proposal. In the paper issued this month by the Lord Chancellor's Department on judicial appointments, the Lord Chancellor has said, "I want every vacancy on the Bench to be filled by the best person available. Appointments must and will be made on merit, irrespective of ethnic origin, gender, marital status, political affiliation, sexual orientation, religion or disability. These are not mere words. They are firm principles. I will not tolerate any form of discrimination."

At present, there are hardly any persons from the ethnic minorities manning the higher judiciary and so far not a single woman has made it to the House of Lords. The most significant part of the Lord Chancellor's paper is the requirement that "allegations of professional misconduct made in the course of consultations about a candidate for judicial office must be specific and subject to disclosure to the candidate". This should go a long way in ensuring that principles of natural justice and fair play are not **jettisoned** in the appointment process, which is not an uncommon phenomenon.

215. What, according to the passage, should go a long way in judicial appointments?
- Decision that all sections of the society are represented.
 - Candidate's qualifications and seniority are considered.
 - Candidate must know the charge of professional misconduct levelled against him.
 - There should be strong reason for discrimination.
 - None of these
216. According to the passage, there has been a demand for a National Judicial Commission to
- clear the backlog of court cases.
 - make judiciary see eye to eye with executive.
 - wipe out corruption at the highest places.
 - make the appointment process of judges more broad based and clear.
 - safeguard the interest of natural justice and fair play in judicial pronouncement.
217. Which of the following could be in the author's mind when he says 'in the light of our previous experience'?
- Not having enough judges from backward communities.
 - Interference of the executive in the appointment of judges.
 - Professional misconduct of judges.
 - Delay that occurred in the judicial appointments.
 - None of these
218. The role and procedure of the National Commission must be spelt out clearly
- because executive wing will depend on it heavily.
 - because judges will take judicial decisions on the basis of it.
 - it will be represented by a cross-section of the society.
 - it will bring a qualitative change in the interpretation of law.
 - None of these
219. What has been the subject of lively debate in England?
- Role of judiciary in free and democratic nations
 - Appointment of judicial commission
 - Seniority as the basis of appointment of judges
 - Appointment of judicial posts
 - None of these
220. What, according to the author, is the typical characteristic of an independent democratic country?
- Objective process of judicial appointments.
 - Supreme Court's advisory opinion on legal matters.
 - Responsible, free and fair judiciary.
 - Lively and frank debate in the society on the role of judiciary.
 - None of these
221. Which, according to the passage, is not an uncommon phenomenon?
- An independent and upright judiciary
 - Delays taking place in legal pronouncements
 - Justice being denied to poor people
 - Partiality and subjectivity in judicial appointments
 - None of these
222. Which of the following words is SIMILAR in meaning as the word '**jettison**' as used in the passage?
- Sacrifice
 - Accept
 - Modify
 - Destroy
 - Advocate
223. Which of the following forms part of what the Lord Chancellor has said?
- Appointments to judicial posts must take into consideration the aspirations of the weaker sections of the society.
 - Vacancies in the judiciary must not remain unfilled.
 - Merit should be the sole criterion for judicial appointments.
 - Selective discrimination may be preached and also practised.
 - None of these

224. Which of the following according to the author is the most welcome thing?
- The negligible role to be played by the executive in the appointment of judges.
 - Coordinating role played by the executive in the appointment of judges.
 - The appointment of judges from the ethnic minority classes.
 - Appointment of judges purely on the basis of merit.
 - None of these
225. Which of the following groups of words is SIMILAR in meaning as the word 'lest' as used in the passage?
- In spite of
 - For fear that
 - For want of
 - In order to
 - With regard to
226. What does the expression "from the frying pan into the fire" mean?
- Seeing one dream after the other
 - Making plan after plan
 - Crossing one hurdle after the other
 - Jumping from one bad situation to another which is worse
 - None of these

Passage 20

As airlines **battle** for the skies, it is the traveller who can take wing. It is market compulsion that has driven the three major players in Indian civil aviation to slash their fares by almost half under the newly-introduced apex or advance purchase fare scheme, but for arguably the first time since the privatisation of the industry it is the travelling public that stands to gain the most. The potential spin-offs of this are tremendous and go beyond bringing some much needed buoyancy back to a sector that has been performing sluggishly since the effects of 9/11 and the travel advisories issued by various western embassies and high commissions kicked in. The move will certainly change the **traditional** profile of the air passenger, expand business and travel opportunities for those who could not afford to fly earlier and increase, in some measure, connectivity throughout the country.

Such attempts at restructuring fares are, of course, not new. In the West, fierce competition and the unremitting drive to push up passenger volumes have led to remarkable ticketing innovations. The apex fare scheme, for instance, works for both the consumer and the airline. While it makes travel affordable for one, it helps the other rationalise its operations and ensure that its seats go full. There have been other interesting variations on this theme too, as for instance the idea of the budget airline. It was reported recently that no-frills airlines like Easy Jet and Go-Fly are transforming the aviation industry in the UK by increasing passenger volumes drastically. Well, we have not quite got to that stage as yet, but India—given its size and requirements—would certainly benefit from the expansion of this vital link industry because flying is no longer a luxury, it has become a necessity.

There are questions, of course, of the impact this price war will have on the industry and whether predatory pricing practices could end up clipping the wings of one player or the other. In many ways these are early days yet and it will take some time

- before a clearer picture of the efficacy of such measures emerges. For the moment, however, it is celebration time for the consumer. Of course, **as we tighten our seatbelts and take off**, we also hope that such cost-cutting is not at the expense of factors like adequate facilities and, most important, safety.
227. Which of the following will not be the effect of the recent scheme?
- New types of travellers will start flying.
 - It will increase the connectivity in the country.
 - It will have ripple effect on the international airlines to reduce fare.
 - Air travel among business people would increase.
 - Earlier, those who could not afford high fare would now consider flying.
228. Which of the following is one of the reasons for aviation sector performing sluggishly recently?
- Stiff competition among the players
 - Warning against travel issued by some embassies
 - High price of travel
 - Lack of adequate facilities
 - Non-introduction of flexible fare schemes
229. "... as we tighten our seat-belts and take off..." What does this signify in the context of the passage?
- When we start using aviation services.
 - As we stretch our pockets to avail air services.
 - There would be a decline in the facilities.
 - When we board the plane, we have to tighten seatbelt before take-off.
 - None of these
230. Which of the following is not true in the context of the passage?
- The reduction in price has been triggered by sluggish performance and competition.
 - In the west, competition had led to evolving new and effective schemes of fare.
 - The customer had so far not enjoyed the major benefits of privatisation ever since, it was done in this sector.
 - More modern type of passengers will avail these travel opportunities.
 - It is too early to assess the complete impact of fare reduction scheme.
231. Which of the following can be the major picture of the apex fare as inferred from the passage?
- Air tickets on some sectors where the seats go vacant will be lower.
 - The fare on tickets purchased in advance should have benefits.
 - Those who have not travelled by air prefer travelling at cheaper rates.
 - During the sluggish period travelling by aeroplane is cheaper.
 - None of these
232. Which of the following is most **nearly similar** in meaning as the word 'traditional' in the context of the passage?
- old-fashioned
 - practically
 - existing
 - ritualistic
 - None of these

233. Which of the following may be the result of price-cutting?
- Some players would start operating in this scheme.
 - Airlines will provide better facilities to the customer.
 - Some existing players may have to stop operations.
 - Even if the volumes pick, the profit declines.
 - None of these

Directions (Qs. 234-238): Each of the following questions contains a small paragraph followed by a question on it. Read each paragraph carefully and answer the question given below it.

234. The function of business is to increase the wealth of the country and the value and happiness of life. It does this by supplying the material needs of men and women. When the nation's business is successfully carried on, it renders public service of the highest value.

The paragraph best supports the statement that

- all businesses which render public service are successful.
- human happiness is enhanced only by the increase of material wants.
- the value of life is increased only by the increase of wealth.
- the material needs of men and women are supplied by well-conducted business.
- business is the only field of activity which increases happiness.

235. Education should not stop when the individual has been prepared to make a livelihood and to live in modern society. Living would be mere existence were there not appreciation and enjoyment of the riches of art, literature and science. The paragraph best supports the statement that true education

- is focused on the routine problems of life.
- prepares one for a full enjoyment of life.
- deals chiefly with art, literature and science.
- is not possible for one who does not enjoy scientific literature.
- disregards practical ends.

236. Through advertising manufacturers exercise a high degree of control over consumers' desires. However, the manufacturer assumes enormous risks in attempting to predict what consumers will want and in producing goods in quantity and distributing them in advance of final selection by the consumers.

The paragraph best supports the statement that manufacturers

- can eliminate the risk of over-production by advertising.
 - completely control buyers' needs and desires.
 - must depend upon the final consumers for the success of their undertakings.
 - distribute goods directly to the consumers.
 - can predict with great accuracy the success of any product they put on the market.
237. It is often the case that our friends share beliefs and attitudes similar to ours. Indeed, this may have been one reason for becoming friends in the first place. For example, non-smokers tend, by and large, to have non-smoking friends and supporters of the same football team may have this common feature as one basis for their liking of each other. The paragraph best supports the statement that

- most of the people live in similar conditions.
- adversity brings the people of differing views together.
- liking others is the inherent characteristic of people.
- people always try to rest on their laurels.
- birds of a feather flock together.

238. Honest people in one nation find it difficult to understand the viewpoints of honest people in another. Foreign ministries and their ministers exist for the purpose of explaining the viewpoints of one nation in terms understood by the ministries of another. Some of their most important work lies in this direction.

The paragraph best supports the statement that

- people of different nations may not consider matters in the same light.
- it is unusual for many people to share similar ideas.
- suspicion prevents understanding between nations.
- the chief work of foreign ministries is to guide relations between nations united by a common cause.
- the people of one nation must sympathise with the viewpoints of the people of other nations.

Directions (Qs. 239-265): Read each paragraph carefully and answer the question(s) given below them. Certain words are given in bold to help you to locate them while answering some questions.

Paragraph-1

Rationalism has been defined as the mental attitude which **unreservedly** accepts the supremacy of reason and aims at establishing a system of philosophy and ethics verifiable by experience and independent of all arbitrary assumptions or authority. This definition of rationalism was framed at the inauguration of the Rationalist Press Association (RPA) in London in the year 1899.

239. This paragraph best supports the statement that
- Ethics do not constitute a part of philosophy.
 - One has to accept certain beliefs to find the final truth.
 - Rationalism is not a set of beliefs which is devoid of verification.
 - Mental attitude is independent of all assumptions.
 - Only RPA can establish philosophy of Rationalism.
240. Which of the following words is most nearly the **SAME** in meaning as the word **unreservedly** as used in the paragraph?
- Conditionally
 - Fully
 - Partially
 - Collectively
 - Unilaterally

Paragraph-2

In today's world where teachers have a busy schedule, it is noticed that only a few teachers have time for the student's learning experiences. One thing which is lacking in almost all classrooms is teachers motivating students to do better. What happens is that teachers would like to give attention to the students who have high intelligence and who are academically good. A larger portion of the student population is neglected. Teachers blame them for not trying to do their best.

241. The author would like the teachers to
- motivate bright students to enhance their academic achievements.
 - improve their own academic standards to motivate students.
 - keep their schedule busy by carrying out various duties.

- (d) encourage and give planned learning experiences to all students.
- (e) encourage good students to help poor students.
242. According to the author, why are teachers not in a position to perform their expected role?
- (a) Majority of the students neglect classroom teaching.
- (b) The students are very busy and have less time to learn.
- (c) Intelligent students are after the teacher, seeking their help in studies.
- (d) They are forced to spend more time in motivating good students.
- (e) None of these

Paragraph-3

Due to the development of individualism and permissiveness, social norms have become slack and parents and teachers are unable to play their traditional role of shaping the character of their children and people. The growing complexity of society due to technological development and the **slackness** of social norms as a result of the growth of individualism and permissiveness are the two causes of the moral crisis of our time.

243. According to the author, which of the following is one of the outcomes of the present crisis of our time?
- (a) Inability of parents and teachers to develop value base of children
- (b) More than expected growth of science and technology
- (c) Increasing social cohesiveness IN SPITE OF violence and disturbances
- (d) Emergence of new social norms which obstruct growth of individualism
- (e) None of these
244. Which of the following words is most **OPPOSITE** in meaning of the word **slackness** as used in the paragraph?
- (a) Rigidity (b) Vigorous
- (c) Sluggishness (d) Business
- (e) Tightness

Paragraph-4

Marx, the founder of communism, had predicted the failure and eventual overthrow of capitalism because of what he **regarded** as its inherent contradiction. He visualised that capitalism would maintain the wages of labour at a low subsistence level, while progressively increasing its productivity by the employment of technologically advanced means of production. During the last many decades the real wages of workers in advanced capitalist countries have gradually and progressively increased. The prediction of Marx has not been borne out by history.

245. Which of the following supports the statement “the prediction ... borne out by history”?
- (a) Capitalism has just survived but not taken firm roots.
- (b) The salaries of the employees have gone up in advanced countries.
- (c) Technological development has not taken place in capitalist countries.
- (d) The salaries of all the employees have gone down in all the countries.
- (e) There is no increase in the productivity of workers.
246. Which of the following words is most nearly the **SAME** in meaning to the word **regarded** as used in the paragraph?
- (a) Respected (b) Valued
- (c) Related (d) Thought
- (e) Estimated

Paragraph-5

Literature is a medium through which a person can convey his ideas towards or protest against different norms of society. Those works that deal with a moral issue are of particular importance in literature. They are written with a particular purpose in mind. A literary work with a moral issue will live on to be reinterpreted by different generations. These works involve the reader for he forms his own moral judgement towards the issue.

247. Why does the author consider write-ups ‘that deal with a moral issue’ more important in literature?
- (A) They are open for rethinking by coming generations.
- (B) They are written with a specific approach.
- (C) They help the reader in forming or consolidating his values and approaches.
- (a) Only A (b) Both A and B
- (c) Both A and C (d) Only C
- (e) None of these
248. The first sentence of the paragraph implies...
- (a) literature is not one of the best media of expression for a society.
- (b) society does not observe the same standard for all its members.
- (c) only literature allows individuals to express their different views.
- (d) society can change its value system after it reinterprets literature.
- (e) None of these

Paragraph-6

The phenomena of child labour is quite complex. Children work because they belong to poor families who cannot survive without the benefit of the income which accrues to the family on account of child labour. Any attempt to abolish it through legal recourse would, under the circumstances, not be practical. The only alternative is to ban child labour in hazardous areas and to regulate and **ameliorate** the conditions of work in other areas. Many developing countries including India have accepted this approach.

249. According to the paragraph, abolishing child labour through legal means is most likely to result into...
- (a) dragging/pushing the family of the child in acute economic stress.
- (b) shortage of labour in other areas of work.
- (c) regulation of services of adult workers.
- (d) betterment of working conditions of adult labourers.
- (e) better understanding of reality.
250. What can be inferred about the policy being followed about child labour in India?
- (A) Giving economic benefits to the families of child labourers.
- (B) Reducing/controlling child labour in unhealthy areas of work.
- (C) Monitoring and improving working conditions for children.
- (a) Only A and B (b) Only B and C
- (c) Only A and B (d) Only B
- (e) None of these
251. Which of the following words is most nearly the **SAME** in meaning to the word **ameliorate** as used in the paragraph?
- (a) Cover (b) Adjust
- (c) Remove (d) Mitigate
- (e) Fix

Paragraph-7

In recent years our society has shown readiness to **address** the educational and developmental needs of adolescents. Be it the Government or people in the community, there is a realisation that something needs to be done to build on the energy and enthusiasm of this crucial section of the population. Growing social unrest, violence, crime and increasing visibility of the young has contributed to this readiness.

252. Which of the following words is most **OPPOSITE** in meaning of the word **address** as used in the paragraph?

- (a) Discourage (b) Diffuse
(c) Locate (d) Disorganise
(e) Ignore

253. Which of the following is not a likely cause of readiness shown by people towards adolescents?

- (a) Increase in crime
(b) Growing violence
(c) Equality of opportunity
(d) Physical presence of youth
(e) Increased social unrest

Paragraph-8

Recently a study was made on the popularity of TV programmes and viewers' perception about their quality. The study of attitudes towards prime-time television programmes showed that programmes with identical ratings in terms of numbers of people watching them received highly **divergent** marks for quality from their viewers. This additional piece of information could prove valuable for advertisers who might be well advised to spend their advertising money for programmes that viewers **feel** are of high quality.

254. Which of the following is most nearly the same in meaning as the word **feel** as used in the passage?

- (a) Pour (b) Sympathise
(c) Perceive (d) Evolve
(e) Sensitise

255. Which of the following is most nearly opposite in meaning of the word **divergent** as used in the passage?

- (a) Pointed (b) Similar
(c) Heterogeneous (d) Synonymous
(e) Focussed

256. Which of the following inferences can best be drawn from the above paragraph?

- (a) The number of viewers decided the quality of the programmes.
(b) The viewers' perception about the quality of programmes is significant for advertisers.
(c) The poor quality programmes have very few viewers.
(d) Advertisers can derive benefit from the information about viewers' perception of quality of programmes.
(e) None of these

257. Which of the following is/are the finding(s) of the study?

- A. The viewers decide the prime-time television programmes.
B. The attitudes of viewers cannot be reliably assessed.
C. The advertisers were benefitted from good quality programmes.
- (a) A only (b) B only
(c) C only (d) All the three
(e) None of these

258. Which of the following can be inferred from the contents of the paragraph?

- A. Advertisement can have some effect on the viewers' buying habits.
B. Money spent on advertising with high quality programmes yields more profits.
C. Different programmes with equal number of viewers can be rated differently as far as quality is concerned.
- (a) Only A (b) Only B
(c) Only A and B (d) Only B and C
(e) None of these

Paragraph-9

Econometric models like the computable general equilibrium model are mostly valuable in policy formulation as they give some insight into how trade policy changes will affect the sectoral composition of output and employment. They are not in themselves designed to provide direct inputs but really to serve as background as to the sectors that will be most favourably or most unfavourably affected by policy. Besides, they render valuable help in policy matters regarding free trade. Free trade has distinct benefits. These benefits are well accepted all over. However, there is a growing opposition to free trade. There is an increasing perception among certain groups of how international trading systems impact, especially how they affect low-wage workers and also have a degrading environmental impact. Yet it is difficult to accept that is the reason for any kind of protectionist move in the most advanced countries.

259. Most advanced countries are cautious about free trade because

- A. They prefer to have a protectionist approach.
B. They feel degraded in international trading community.
C. Their vested interests are thwarted.
- (a) A and B only (b) B and C only
(c) A and C only (d) All of them
(e) None of these

260. The author of the passage seems to be

- (a) in favour of use of econometric models but against free trade.
(b) in favour of free trade but neutral regarding econometric models.
(c) against both free trade as well as econometric models.
(d) indifferent about both free trade and econometric models.
(e) in favour of both econometric models and free trade.

261. Which of the following statements is definitely true in the context of the passage?

- A. Despite the advantages of free trade, it is not wholeheartedly acclaimed by most advanced countries.
B. Policy formulation should be solely dependent on econometric models.
C. Reasons for model protectionist approach by advanced countries are not given in the passage.
- (a) Only A (b) Only B
(c) Only C (d) A and B only
(e) B and C only

262. What is the contribution of econometric models?

- (a) They help develop insight into increasing output through less manpower.

- (b) They help in implementing new policies regarding free trade.
- (c) They help develop insight into how changes in policies influence certain sectors.
- (d) They ensure that policy changes have only positive impact on the economy.
- (e) None of these
263. Which of the following is the characteristic of econometric models?
- (a) They serve as a backdrop.
- (b) They are unfavourable to free trade.
- (c) Their design is not conducive to increase employment.
- (d) They do not serve direct inputs.
- (e) Both (a) and (d)
264. The changes in economic policy are most likely to have
- (a) only desirable effect on all the sectors involved.
- (b) a mixed influence on all the sectors involved.
- (c) negative impact unless all the sectors are involved.
- (d) unfavourable effect on employment opportunities.
- (e) None of these
265. Free trade has been receiving escalating disapproval because
- (a) it has a very distinct range of benefits.
- (b) it unduly favours low-wage workers.
- (c) it leads to protectionist approach among advanced countries.
- (d) it affects international trading systems adversely.
- (e) None of these

ANSWER KEY

1	(d)	27	(d)	53	(a)	79	(d)	105	(a)	131	(e)	157	(c)	183	(a)	209	(c)	235	(b)	261	(a)
2	(e)	28	(b)	54	(e)	80	(a)	106	(c)	132	(b)	158	(c)	184	(c)	210	(d)	236	(c)	262	(c)
3	(b)	29	(a)	55	(a)	81	(b)	107	(d)	133	(d)	159	(d)	185	(b)	211	(a)	237	(e)	263	(e)
4	(c)	30	(a)	56	(d)	82	(d)	108	(b)	134	(e)	160	(d)	186	(a)	212	(a)	238	(a)	264	(b)
5	(a)	31	(c)	57	(b)	83	(d)	109	(d)	135	(a)	161	(b)	187	(e)	213	(d)	239	(c)	265	(e)
6	(e)	32	(d)	58	(a)	84	(a)	110	(e)	136	(b)	162	(d)	188	(d)	214	(e)	240	(b)		
7	(d)	33	(e)	59	(e)	85	(c)	111	(e)	137	(a)	163	(c)	189	(b)	215	(c)	241	(d)		
8	(b)	34	(e)	60	(c)	86	(b)	112	(c)	138	(d)	164	(a)	190	(c)	216	(d)	242	(e)		
9	(c)	35	(c)	61	(d)	87	(e)	113	(b)	139	(c)	165	(c)	191	(d)	217	(b)	243	(a)		
10	(a)	36	(c)	62	(e)	88	(e)	114	(d)	140	(d)	166	(e)	192	(e)	218	(e)	244	(a)		
11	(e)	37	(e)	63	(a)	89	(c)	115	(b)	141	(a)	167	(e)	193	(b)	219	(b)	245	(b)		
12	(b)	38	(b)	64	(c)	90	(c)	116	(c)	142	(b)	168	(d)	194	(b)	220	(c)	246	(d)		
13	(d)	39	(a)	65	(e)	91	(d)	117	(a)	143	(c)	169	(b)	195	(b)	221	(d)	247	(c)		
14	(a)	40	(b)	66	(a)	92	(b)	118	(a)	144	(e)	170	(b)	196	(a)	222	(a)	248	(e)		
15	(d)	41	(a)	67	(b)	93	(a)	119	(d)	145	(a)	171	(c)	197	(b)	223	(c)	249	(a)		
16	(c)	42	(d)	68	(b)	94	(e)	120	(b)	146	(b)	172	(e)	198	(c)	224	(a)	250	(b)		
17	(d)	43	(e)	69	(d)	95	(b)	121	(c)	147	(e)	173	(c)	199	(e)	225	(b)	251	(d)		
18	(e)	44	(c)	70	(c)	96	(d)	122	(a)	148	(c)	174	(b)	200	(a)	226	(d)	252	(e)		
19	(e)	45	(b)	71	(c)	97	(c)	123	(b)	149	(a)	175	(a)	201	(c)	227	(c)	253	(c)		
20	(d)	46	(d)	72	(a)	98	(e)	124	(e)	150	(d)	176	(b)	202	(d)	228	(b)	254	(c)		
21	(c)	47	(c)	73	(e)	99	(e)	125	(c)	151	(b)	177	(e)	203	(a)	229	(a)	255	(b)		
22	(a)	48	(b)	74	(d)	100	(b)	126	(c)	152	(c)	178	(e)	204	(d)	230	(d)	256	(d)		
23	(d)	49	(a)	75	(b)	101	(a)	127	(e)	153	(c)	179	(c)	205	(e)	231	(a)	257	(e)		
24	(b)	50	(c)	76	(a)	102	(e)	128	(b)	154	(d)	180	(a)	206	(e)	232	(c)	258	(d)		
25	(e)	51	(d)	77	(a)	103	(e)	129	(a)	155	(a)	181	(d)	207	(b)	233	(e)	259	(e)		
26	(d)	52	(b)	78	(d)	104	(b)	130	(c)	156	(c)	182	(d)	208	(b)	234	(d)	260	(e)		

Hints & Explanations

13. (d) Darkness has been mentioned as the “fearsome enemy” of mankind.
14. (a) Metals were softened and tempered by application of fire to them.
15. (d)
16. (c) The virgins were careless in their duty as they allowed the sacred fire to be extinguished.
21. (c) Read the first line of the passage.
22. (a) Read the last sentence of the passage.
50. (c) They are responsible for national disintegration.
51. (d) They are harmful to national integrity.
52. (b) India was forged into a nation on account of a common culture evolved over the centuries.
53. (a) The author wants India to remain as an ideal nation and the passage has certainly a message behind it.
55. (a) Read the last sentence of the passage.
59. (e) India’s insurgence stood for gaining freedom by adopting the path of non-violent struggle.
74. (d) A **plausible** explanation, argument, or statement is one that seems likely to be true or valid.
111. (e) US
130. (c) Eminent British economists and political scientists have strongly attacked the tradition of budget secrecy.
131. (e) It leads to the control of public expenditure in order to set realistic taxation implications.
132. (b) He has presented the example of both, the open budget system and the secret budget system, practised by various countries and has looked into all their aspects.
135. (a) Sir Richard Clarke was the originating genius of nearly every important development in the British budgeting techniques during the last two decades.
137. (a) The statement goes against the idea of the passage.
138. (d) An open public debate on budget proposals should be held before introducing the appropriate bill.
162. (d) As given in the passage, planning and problem-solving are the most important aspects of the management, and not of the leadership.

163. (c) “Inwardly focussed employees can have difficulty seeing the very forces that present threat and opportunities.” This sentence of the last paragraph makes option (c) wrong.
164. (a) Bureaucratic culture is against any transformation; so it suppresses those who want to bring any change in organisations.
165. (c) Planning can be defined as ‘creating a vision’, which is an important aspect of management.
167. (e) For most of this century, as a large number of organisations were created for the first time in human history, emphasis was given on management and leadership was overlooked.
168. (d) Managers are also bureaucrats.
175. (a) Ascertain the hidden meaning of the sentence : “but no one would be able to realise that a *terrorist attack* has occurred”. So, undoubtedly the culprit’s act can be classified as a terrorist attack.
176. (b) “New terrorism has no long-term agenda but is ruthless in its short-term intentions”. This statement from the passage supports (B). While, in the light of passage, (C) also seems suitable.
177. (e) The immediate provocation for the meeting held in August 1998 has not been given among the options. It was the incidents of bombing the US embassies in Nairobi and Dar-es-Salaam.
178. (e) Bio-attack will result in several deaths which will lead to political turmoil creating social unrest.
180. (a) ‘Religious intolerance’ as cited in the last paragraph stands behind terrorism.
190. (c) Go through the last line of the first paragraph.
191. (d) While much had been said and written on establishing “new order”, little has actually been done.
195. (b) These are complex issues and the Milan conference would perhaps be more fruitful if it were to discuss such **specific** subjects.
196. (a) More complicated ailments can be referred to properly equipped centres in district towns, cities etc.
197. (b) There is resistance from the medical establishment which sees **them** as little more than licensed quackery. Here reference is made to traditional healers.
208. (b) During the Renaissance, education passed more from the clutches of the priest into the hand of the *prince*.
211. (a) During the Christian era, the ecclesiastics controlled the institution of education.
214. (e) Go through the last sentence of the passage.
215. (c) The author feels this to be the most significant part of Lord Chancellor’s paper.
216. (d) This is what is implied by “greater transparency”.
217. (b) Note the context carefully.
218. (e) The passage does not give any specific reason.
220. (c) See the first sentence of the passage.
221. (d) See the last sentence of the passage.
223. (c) “The best person available” implies the supremacy of merit.
226. (d) When you jump *from the frying-pan into the fire*, you move from a bad situation to one that is worse.
241. (d) The teacher should encourage all the students to perform better.
242. (e) Teachers have a busy schedule.
243. (a) Social norms have become slack.
245. (b) During the last many decades the real wages of workers in advanced capitalist countries have gradually increased.
253. (c) Others have been mentioned.
257. (e) Programmes with identical ratings in terms of numbers of people watching received highly different marks for quality from their viewers.



Para Jumbles

SENTENCE OR WORD REARRANGEMENT

In this type of questions, basically, you are given a paragraph or sentence - but the sentences (in case of paragraph) or words (in case of sentence) are not in the right order. It's up to you to untie this knot and rearrange the sentences or words so that they logically make sense.

Sentences or words rearrangement questions are included in BANK exams as they

- ❖ Help students relate events in a logical manner
- ❖ Sequence sentences based on English usage skills

HOW TO TACKLE THESE TYPES OF QUESTIONS?

To tackle these types of questions, you have to know three things-

- ❖ Theme of the paragraph that might be created on un-jumbling the sentences
- ❖ Initiating sentence, which starts the paragraph
- ❖ Links have to be found between two sentences. Once a link of this type is created, it becomes easy to eliminate irrelevant choices.

HOW TO SAVE TIME WHILE SOLVING THESE QUESTIONS?

It is very important to read selectively and search for transition words or other keywords.

The best way is to establish a link between any two (or more) statements. Once a link is found, you get to know which statements will come together. Then, look in the options. Select the option with those statements together.

EXAMPLE 1.

- A. 1971 war changed the political geography of the subcontinent
- B. Despite the significance of the event there has been no serious book about the conflict
- C. Surrender at Dacca aims to fill this gap
- D. It also profoundly altered the geo-strategic situation in South-East Asia
- (a) ACBD (b) CADB
(c) BADC (d) ADBC

Explanation : We can see that sentence A is most likely the starting sentence. Now that we know A is the starting sentence we can eliminate choice (b) and (c) as they start with C and B respectively.

This narrows down our possibilities to option (a) and option (d).

Now we can see in option (a), C follows sentence A but the gap spoken of in sentence C has no correlation with political geography of the subcontinent spoken of in sentence A, so we can rule out Option (a).

Therefore answer has to be option (d), as we can also see it elaborates on the change mentioned in sentence A.

EXAMPLE 2.

- A. Thus begins the search for relief: painkillers, ice, yoga, herbs, even surgery
- B. Most computer users develop disorders because they ignore warnings like tingling fingers, a numb hand or a sore shoulder
- C. They keep pointing and dragging until tendons chafe and scar tissue forms, along with bad habits that are almost impossible to change
- D. But cures are elusive because repetitive stress injuries present a bag of ills that often defy easy diagnosis.
- (a) BDAC (b) BADC
(c) BCAD (d) ABCD

Explanation : Here we can make out that sentence B will be the starting sentence as it introduces the subject matter which is 'computer users and related problems'.

Option (d) automatically gets eliminated as it starts with sentence A.

Option (a) can be rule out as there is no correlation between sentence B and sentence D. Sentence B talks of warnings whereas sentence D talks of cures for illness and hence no correlation exists. This narrows down possibilities to options (b) and (c). In option (b), sentence C follows sentence B which doesn't make much sense. So, option (b) can also be ruled out. We are left with option (c) which is the correct answer.

EXAMPLE 3.

- A. If you are used to having your stimulation come from outside, your mind never develops its own habits of thinking and reflecting
- B. Marx thought that religion was the opiate, because it soothed people's pain and suffering and prevented them from rising in rebellion
- C. If Karl Marx was alive today, he would say that television is the opiate of the people.
- D. Television and similar entertainments are even more of the opiate because of their addictive tendencies.
- (a) BACD (b) ADBC
(c) BDCA (d) CBDA

Explanation: Sentence B has Marx (short form) and sentence C has Karl Marx (Full form). So C will come before B. Now in given options (a), (b) and (c) we can clearly see, B is placed before C and hence we reject option (a), (b) and (c) which leaves us with only option (d) which is the correct option.

EXAMPLE 4.

- A. Then two astronomers-the German, Johannes Kepler, and the Italian, Galileo Galilei-started publicly to support the Copernican theory, despite the fact that the orbits it predicted did not quite match the ones observed.
- B. His idea was that the sun was stationary at the centre and that the earth and the planets move in circular orbits around the sun.

- C. A simple model was proposed in 1514 by a Polish priest, Nicholas Copernicus.
 - D. Nearly a century passed before this idea was taken seriously.
- (a) CDBA (b) CBDA
(c) BCAD (d) CADB

Explanation: Answer is option (b) as we can see that in sentence D it says ‘ nearly a century has passed ‘ so we have to keep the timeline in consideration here also while sequencing the sentences and only in option (b) the timeline fits correctly.

EXERCISE

Directions (Qs. 1-5): Rearrange the following six sentences A, B, C, D, E and F in the proper sequence to form a meaningful paragraph; then answer the questions given below them.

- (A) We were interested by contrast in understanding what lessons actual teams and non-teams had for others to choose to struggle with change and performance.
 (B) Still, we suspected that most of these focussed on persuading readers that “teams are important”.
 (C) After all we thought teams are a well known subject and there must be a thousand books on the subject already.
 (D) By going down this path we hoped to discover something to say that was different from most books on the subject.
 (E) We approached the idea of a book on teams cautiously.
 (F) Alternatively they focussed on providing you advice on building teams as an objective in itself.

- Which of the following will be the **SECOND** sentence?
 (a) A (b) B
 (c) F (d) C
 (e) D
- Which of the following will be the **FIRST** sentence?
 (a) E (b) A
 (c) B (d) C
 (e) D
- Which of the following will be the **THIRD** sentence?
 (a) E (b) C
 (c) B (d) F
 (e) D
- Which of the following will be the **FIFTH** sentence?
 (a) C (b) D
 (c) B (d) F
 (e) A
- Which of the following will be the **LAST** sentence?
 (a) C (b) D
 (c) E (d) F
 (e) B

Directions (Qs. 6-10): Rearrange the following six sentences A, B, C, D, E and F in the proper sequence to form a meaningful paragraph, then answer the questions given below them.

- (A) Some people believe that at present its importance is decreasing because of rapid economic and social changes.
 (B) The extent of its importance may be slightly less in cities as compared to rural communities.
 (C) Some even go to the extreme and say that it will soon become obsolete because of these changes.
 (D) The family is an important socialisation agency both in rural and city communities.
 (E) The difference in the degree of importance does not matter much and therefore has no significance.
 (F) There are others who believe that the family has survived such storms in the past and it will do so in the future also.

- Which of the following should be the **FIRST** sentence after rearrangement?
 (a) F (b) E
 (c) D (d) C
 (e) B
- Which of the following should be the **SIXTH (LAST)** sentence after rearrangement?
 (a) F (b) E
 (c) D (d) C
 (e) B
- Which of the following should be the **FIFTH** sentence after rearrangement?
 (a) F (b) E
 (c) D (d) C
 (e) B
- Which of the following should be the **THIRD** sentence after rearrangement?
 (a) F (b) E
 (c) D (d) C
 (e) B
- Which of the following should be the **SECOND** sentence after rearrangement?
 (a) F (b) E
 (c) D (d) C
 (e) B

Directions (Qs. 11-15): Rearrange the following five sentences A, B, C, D and E in the proper sequence to form a meaning paragraph; then answer the questions given below them.

- (A) The reasons for formal education getting nullified are that we teachers have limited vision, our judgements about students are hasty and we are more knowledge-centred than student-centred.
 (B) Life educates as nothing else does.
 (C) Churchill rose to dizzy heights despite his teachers’ prophecies to the contrary. And there are many more such examples.
 (D) Life’s teachings sometimes supplement the education received in the classroom and at other times nullify it.
 (E) Education received in the classroom is insignificant as compared to what life teaches us.
- Which of the following will be the **SECOND** sentence?
 (a) A (b) B
 (c) C (d) D
 (e) E
 - Which of the following will be the **THIRD** sentence?
 (a) A (b) B
 (c) C (d) D
 (e) E
 - Which of the following will be the **FIRST** sentence?
 (a) A (b) B
 (c) C (d) D
 (e) E

14. Which of the following will be the **FOURTH** sentence?
 (a) A (b) B
 (c) C (d) D
 (e) E
15. Which of the following will be the **LAST** sentence?
 (a) A (b) B
 (c) C (d) D
 (e) E

Directions (Qs. 16-20): Rearrange the following sentences to form a meaningful paragraph and answer the questions given below:

- (A) We must explore new methods of boosting agricultural development and grow more food.
 (B) The scientists should be encouraged to contribute.
 (C) Food can also be had by import.
 (D) The most important factor in any planning for India's development and economic uplift is that of turning a hungry, discontented people into a happy well-fed one.
 (E) Whatever be the way and means, India must feed its hungry millions.
 (F) They should be given due scope for carrying on experiments and researches.
 (G) The problem, therefore, reduces itself to one of agricultural development.
16. Which of the following is the **FOURTH** sentence in the paragraph?
 (a) A (b) D
 (c) E (d) G
 (e) F
17. Which of the following is **FIFTH** sentence in the paragraph?
 (a) G (b) A
 (c) D (d) C
 (e) E
18. Which of the following is the **THIRD** sentence in the paragraph?
 (a) F (b) A
 (c) G (d) D
 (e) E
19. Which of the following is the **LAST** sentence in the paragraph?
 (a) F (b) C
 (c) D (d) B
 (e) G
20. Which of the following is the **SECOND** sentence in the paragraph?
 (a) B (b) E
 (c) C (d) G
 (e) F

Directions (Qs. 21-25): Rearrange the following seven sentences (A), (B), (C), (D), (E), (F) and (G) in the proper sequence to form a meaningful paragraph; then answer the questions given below them.

- (A) Japanese toys, for instance, are in great demand despite the heavy import duty.
 (B) The toys that they produce are, almost without exception, of inferior quality.
 (C) Their manufacturers here need to be reminded of this.

- (D) The two toy libraries in Mumbai also rely largely on foreign-made toys.
 (E) But making them is no child's play.
 (F) Toys are meant for children.
 (G) Not surprisingly, many parents prefer to buy the imported variety even though these are usually much more expensive.
21. Which of the following will be the **THIRD** sentence?
 (a) C (b) B
 (c) D (d) E
 (e) G
22. Which of the following will be the **LAST** sentence?
 (a) C (b) D
 (c) B (d) E
 (e) G
23. Which of the following will be the **FIRST** sentence?
 (a) E (b) G
 (c) A (d) F
 (e) B
24. Which of the following will be the **FOURTH** sentence?
 (a) C (b) E
 (c) B (d) G
 (e) D
25. Which of the following will be the **SIXTH** sentence?
 (a) F (b) E
 (c) C (d) D
 (e) A

Directions (Qs. 26-30): Rearrange the following six sentences (A), (B), (C), (D), (E) and (F) in the proper sequence to form a meaningful paragraph; then answer the questions given below them.

- (A) They collected plants, counted birds and photographed the terrain and the fauna and made their recommendations.
 (B) In spring of 1963, an alarmed King Hussain invited a group of British scholars, scientists and naturalists.
 (C) He also wanted them to cover the deserts to the east of the mountains.
 (D) He wanted them to conduct an extensive survey of the mountains on the eastern side of the Dead Sea.
 (E) The problem of conservation of forests and forest birds and nature in general was thus set rolling.
 (F) Accordingly, an expedition of internationally known experts in conservation, botany, ornithology, etc. went to Jordan.
26. Which of the following should be the **FIFTH** in the paragraph?
 (a) A (b) B
 (c) C (d) D
 (e) E
27. Which of the following should be the **FIRST** in the paragraph?
 (a) A (b) B
 (c) C (d) D
 (e) E
28. Which of the following should be the **LAST** in the paragraph?
 (a) A (b) B
 (c) C (d) D
 (e) E

29. Which of the following should be the **SECOND** in the paragraph?
 (a) F (b) E
 (c) D (d) C
 (e) B
30. Which of the following should be the **FOURTH** in the paragraph?
 (a) F (b) E
 (c) D (d) C
 (e) B

Directions (Qs. 31-35): Rearrange the following seven sentences (A), (B), (C), (D), (E), (F) and (G) in the proper sequence to form a meaningful paragraph; then answer the questions given below them.

- (A) It takes its recourse to progressive march towards perfection.
 (B) But, one may conclude, while science is inclined towards reason, spiritualism is the essence of religion.
 (C) In religion deviation from the set course is permissible, though some more rationalistic religious leaders also allow questioning and their satisfactory answers.
 (D) Many people believe that science and religion are contrary to each other.
 (E) The tools of religion, on the other hand, are faith, intuition, and the spoken word of the enlightened.
 (F) The method of science is observation, experiment and experience.
 (G) There is no doubt that the methods of science and religion are different.
31. Which of the following will be the **SECOND** sentence?
 (a) F (b) E
 (c) D (d) B
 (e) G
32. Which of the following will be the **FOURTH** sentence?
 (a) B (b) A
 (c) D (d) F
 (e) C
33. Which of the following will be the **LAST** sentence?
 (a) C (b) A
 (c) D (d) B
 (e) E
34. Which of the following will be the **FIRST** sentence?
 (a) C (b) B
 (c) D (d) F
 (e) A
35. Which of the following will be the **SIXTH** sentence?
 (a) C (b) F
 (c) A (d) G
 (e) D

Directions (Qs. 36-40): Rearrange the following six sentences (A), (B), (C), (D), (E) and (F) in the proper sequence so as to make a meaningful paragraph, then answer the questions given below them.

- A. We feel these things are glorious because of the splendid triumphs.
 B. Because of these sacrifices we realise the victories of peace are even more glorious than victories of war.
 C. The word **victory** is associated in our minds with war.
 D. We are impressed by their sacrifices.

- E. It calls up visions of battles, bloodshed and conquests by force.
 F. But when we think of the philosophy of great men, scholars, social reformers, scientists and philanthropists we start thinking in a different way.
36. Which sentence should be the **FOURTH** in the paragraph?
 (a) B (b) C
 (c) D (d) E
 (e) F
37. Which sentence should be the **THIRD** in the paragraph?
 (a) A (b) B
 (c) C (d) D
 (e) E
38. Which sentence should be the **FIRST** in the paragraph?
 (a) A (b) B
 (c) C (d) D
 (e) E
39. Which sentence should be the **LAST (SIXTH)** in the paragraph?
 (a) A (b) B
 (c) C (d) D
 (e) E
40. Which sentence should be the **SECOND** in the paragraph?
 (a) B (b) C
 (c) D (d) E
 (e) F

Directions (Qs. 41-45): Rearrange the following seven sentences A, B, C, D, E, F and G in the proper sequence so as to make a meaningful paragraph; then answer the questions given below them.

- A The individual owes allegiance and obedience to the state.
 B It is its organ for the present action, the custodian of its tradition.
 C For, the nation is not only a fellowship of contemporaries.
 D The state exists for the citizens, not the citizens for the state.
 E But it is a partnership of present with past and future.
 F It is also the trustee for its future.
 G This is mainly because it is the representative and effective organ of the largest and most inclusive community to which he belongs.
41. Which sentence should be the **FOURTH** in the paragraph?
 (a) A (b) B
 (c) C (d) D
 (e) E
42. Which sentence should be the **SIXTH** in the paragraph?
 (a) A (b) B
 (c) C (d) D
 (e) E
43. Which sentence should be the **FIRST** in the paragraph?
 (a) A (b) B
 (c) C (d) D
 (e) E
44. Which sentence should be the **SEVENTH (LAST)** in the paragraph?
 (a) A (b) B
 (c) F (d) D
 (e) E

45. Which sentence should be the **SECOND** in the paragraph?
 (a) A (b) B
 (c) G (d) D
 (e) E

Directions (Qs. 46-50) : Rearrange the following seven sentences (A), (B), (C), (D), (E), (F) and (G) in the proper sequence to form a meaningful paragraph then answer the questions given below them.

- (A) It is obvious from the above that the Commission has accorded highest priority to securing speedy justice to women.
 (B) These members continue to pursue their mandated activities, namely review of legislation, intervention in specific individual complaints of atrocities and denial or rights.
 (C) The functions assigned to the Commission, as per the Act, are wide and varied covering almost all the facets of issues relating to safeguarding women's rights and promotion.
 (D) The National Commission for Women was set up on 31st January, 1992 in pursuance of the National Commission for Women Act, 1990.
 (E) Towards this end of speedy justice to women, the Commission is organising Parivarik Mahila Lok Adalats, offering counselling in family disputes and conducting training programmes for creating legal awareness among women.
 (F) They also suggest remedial action to safeguard the interest of women to the appropriate authorities.
 (G) To carry out these functions the Commission has a chairman, five members and a Member-Secretary, all nominated by the Central Government.

46. Which of the following will be the **FOURTH** sentence?

- (a) A (b) C
 (c) D (d) B
 (e) E

47. Which of the following will be the **FIRST** sentence?

- (a) C (b) D
 (c) E (d) F
 (e) A

48. Which of the following will be the **LAST** sentence?

- (a) G (b) F
 (c) D (d) C
 (e) E

49. Which of the following will be the **THIRD** sentence?

- (a) G (b) B
 (c) F (d) D
 (e) C

50. Which of the following will be the **FIFTH** sentence?

- (a) C (b) D
 (c) F (d) E
 (e) B

Directions (Qs. 51-55): Rearrange the following five sentences into a meaningful paragraph and answer the questions given below:

- (A) However, with innovation coming into play unit-linked/market-linked products have also found a place in insurance business after privatisation.
 (B) It is also worth mentioning here that world over unit-linked products constitute quite a substantial chunk of the total portfolio of insurance companies.
 (C) There was a time when only traditional insurance products used to dominate the arena.

- (D) The emergence of these products of various insurance companies combines the characteristics of both endowment insurance policies and mutual funds.

- (E) The insurance industry in India is evolving and assuming different proportion since it was privatised.

51. Which of the following will be the **Fourth** sentence in the paragraph?

- (a) A (b) B
 (c) C (d) D
 (e) E

52. Which of the following will be the **Second** sentence in the paragraph?

- (a) A (b) B
 (c) C (d) D
 (e) E

53. Which of the following will be the **Last** sentence in the paragraph?

- (a) A (b) B
 (c) C (d) D
 (e) E

54. Which of the following will be the **First** sentence in the paragraph?

- (a) A (b) B
 (c) C (d) D
 (e) E

55. Which of the following will be the **Third** sentence in the paragraph?

- (a) A (b) B
 (c) C (d) D
 (e) E

Directions (Qs. 56-60): Rearrange the following seven sentences A, B, C, D, E, F and G in the proper sequence to form a meaningful paragraph, then answer the questions given below them.

- A. The history of that system is, however, a warning than a stimulus to reorganise a similar scheme.

- B. However, we can't resign ourselves merely because there is no data.

- C. One of the commonest risks which agricultural life is exposed to in this country is famine or failure of crops.

- D. There is, however, no reliable data on which such a scheme of insurance can be based.

- E. A kind of Famine Insurance System was attempted by the British Government of India in the last century.

- F. Still, the need for such a scheme to cover the losses due to famine, cattle plague, crop pests, etc. can't be undermined.

- G. It is obviously because of failure of rain and the consequence is starvation.

56. Which of the following should be the **FOURTH** sentence after rearrangement?

- (a) A (b) B
 (c) C (d) D
 (e) E

57. Which of the following should be the **SIXTH** sentence in the paragraph?

- (a) E (b) D
 (c) B (d) C
 (e) A

58. Which of the following should be there in the **THIRD** position in the paragraph?
 (a) B (b) C
 (c) D (d) E
 (e) F
59. Which of the following should be the **FIRST** sentence after rearrangement?
 (a) A (b) B
 (c) D (d) C
 (e) E
60. Which of the following should be the **SECOND** sentence after rearrangement?
 (a) B (b) G
 (c) D (d) E
 (e) F

Directions (Qs. 61-65): Rearrange the following six sentences (A), (B), (C), (D), (E) and (F) in the proper sequence to form a meaningful paragraph. Then answer the questions given below them.

- A. While doing so, we may also correct any distortions that we may discern.
 B. With all our experience and insight, we should be able to visualize them well in advance.
 C. The celebration of the 50th anniversary of the country's independence is a historic moment.
 D. Also, it is a time to consolidate on the gains that we have made.
 E. But, most of all, it is a time to gear up for the opportunities and challenges that lie ahead.
 F. It is a time to introspect and evaluate what we have achieved in the last five decades.
61. Which of the following should be the **FOURTH** statement after re-arrangement?
 (a) E (b) D
 (c) C (d) B
 (e) A
62. Which of the following should be the **SIXTH (LAST)** statement after re-arrangement?
 (a) A (b) B
 (c) C (d) D
 (e) E
63. Which of the following should be the **SECOND** statement after re-arrangement?
 (a) F (b) E
 (c) D (d) C
 (e) B
64. Which of the following should be the **THIRD** statement after re-arrangement?
 (a) B (b) C
 (c) D (d) E
 (e) F
65. Which of the following should be the **FIRST** statement after re-arrangement?
 (a) F (b) E
 (c) D (d) C
 (e) B

Directions (Qs. 66-70): Rearrange the following seven sentences (A), (B), (C), (D), (E), (F) and (G) in the proper sequence to form a meaningful paragraph then answer the questions given below them.

- A. People thoroughly dedicated to social service but not fulfilling the eligibility requirements would not be able to contest elections.
 B. Those who fulfil the stipulated criteria of age and formal education may not be necessarily devoted to social service.
 C. This system has both advantages and disadvantages.
 D. Therefore, imposing such eligibility requirements is likely to be counter-productive.
 E. In certain democratic countries, elections can be contested by anybody.
 F. People would be deprived of the probable benefit accrued from services of such people.
 G. There are no eligibility requirements of formal education and upper age limit stipulated in their Constitution.
66. Which sentence should be the **FOURTH** in the paragraph?
 (a) A (b) B
 (c) C (d) D
 (e) E
67. Which sentence should be the **LAST** in the paragraph?
 (a) A (b) B
 (c) C (d) D
 (e) E
68. Which sentence should be the **FIRST** in the paragraph?
 (a) G (b) F
 (c) E (d) D
 (e) C
69. Which sentence should be the **SECOND** in the paragraph?
 (a) G (b) F
 (c) E (d) D
 (e) C
70. Which sentence should be the **THIRD** in the paragraph?
 (a) A (b) B
 (c) C (d) D
 (e) E

Directions (Qs. 71-74) : Rearrange the following six sentences (A), (B), (C), (D), (E) and (F) in the proper sequence to form a meaningful paragraph; then answer the questions given below them.

- A. But all three have one focus-individual performance improvement.
 B. The importance of each component will vary from organization to organization according to the complexity of the operations.
 C. They are individual development, career development and organizational development.
 D. Since individual performance improvement is the heart of the HRD programme, HRD can be described as the area of congruence among the three components.
 E. There are three fundamental component areas of human resource development.
 F. It will also vary according to the criticality of human resources to organizational efficiency and organization's commitment to improve human resources.
71. Which of the following will be the **SIXTH** sentence?
 (a) C (b) F
 (c) B (d) D
 (e) A

72. Which of the following will be the **FOURTH** sentence?
 (a) F (b) C
 (c) D (d) B
 (e) A
73. Which of the following will be the **SECOND** sentence?
 (a) D (b) E
 (c) B (d) F
 (e) C
74. Which of the following will be the **FIRST** sentence?
 (a) D (b) E
 (c) F (d) B
 (e) C

Directions (Qs. 75-80): Rearrange the following eight sentences A, B, C, D, E, F, G and H in the proper sequence to form a meaningful paragraph; then answer the questions given below them.

- A Therefore, the duty of the advocate is to do his best for his client.
 B That rests with the judge, and it is ultimately for the judge to decide which side is right, and how justice should prevail.
 C When he was asked what he thought of an advocate supporting a cause which he knew to be bad, Johnson's answer was that the advocate did not know it to be good or bad till the judge determined it for him and for others.
 D But, he must do so fairly, and without concealing from it anything that it is his duty to divulge.
 E There is a belief that an advocate's function consists, for the most part, of showing white as black and black as white.
 F He is, after all, the client's mouthpiece, and he must put before the court all aspects of the case which are favourable to his client.
 G The only answer that one can give to this popular misconception is the famous answer that Johnson gave to Boswell.
 H But he is not concerned with the final result.

75. Which of the following will be the **FIRST** sentence in the passage?
 (a) C (b) E
 (c) F (d) G
 (e) B
76. Which of the following will be the **FIFTH** sentence in the passage?
 (a) F (b) G
 (c) D (d) C
 (e) H
77. Which of the following will be the **SECOND** sentence in the passage?
 (a) C (b) A
 (c) F (d) G
 (e) E
78. Which of the following will be the **LAST** sentence in the passage?
 (a) A (b) D
 (c) F (d) B
 (e) H
79. Which of the following will be the **FOURTH** sentence in the passage?
 (a) F (b) C
 (c) E (d) D
 (e) A

80. Which of the following will be the **SEVENTH** sentence in the passage?
 (a) D (b) B
 (c) H (d) A
 (e) C

Directions (Qs. 81-85): In each of the questions below four sentences are given which are denoted by A, B, C, D. By using all the four sentences you have to frame a meaningful paragraph. The correct order of the sentences is your answer. Choose from the five alternatives the one having the correct order of the sentences.

81. A. It was with this invincible spirit that Netaji opposed Wavell's offer.
 B. "Japan's surrender is not India's surrender," he said.
 C. The revolutionary spirit of Netaji was never dampened even after the surrender of Japan.
 D. He knew that a war of liberation demanded great spirit, great sacrifice, courage and patience.
 (a) BCDA (b) BCAD
 (c) CBAD (d) DCBA
 (e) CBDA
82. A. But all work is not education.
 B. In India, a majority of our people do hard work, strenuous physical work, but all are not educated.
 C. It aims at concrete and objective realization of the ideas and is of great educative value.
 D. "Work" is that activity of man which has a definite objective.
 (a) DCAB (b) BCDA
 (c) BACD (d) DBCA
 (e) CBAD
83. A. Hari Prasad Nanda is one such person who worked his way to the top from the scratch.
 B. A few of them had a spark of proved adventure and their initiative, dedication and sincerity brought them spectacular success.
 C. The partition of India into India and Pakistan made a number of migrants to India penniless.
 D. He rose to become a first-generation entrepreneur with the second largest complex to his credit.
 (a) ADBC (b) ADCB
 (c) CBAD (d) CBDA
 (e) BCDA
84. A. They think that India will disintegrate like the Soviet Union or Yugoslavia.
 B. What will be the exact shape of India in 2000 A.D. can only be a matter of surmise.
 C. On the contrary, the blind patriots foresee a very bright future for India.
 D. The prophets of doom say that the future of India is doomed.
 (a) BCDA (b) BDAC
 (c) DABC (d) DBAC
 (e) BCAD
85. A. I wish I had more time, so that I could visit the odd nooks and corners of India.
 B. And yet I have not seen many parts of the country we love so much and seek to serve.

- C. Our own country is a little world by itself with an infinite variety and places for us to discover.
 D. I have travelled a great deal in this country and I have grown in years.
- (a) DCBA (b) DBCA
 (c) AD BC (d) CD BA
 (e) CBAD.

Directions (Qs. 86-90): In each of the following questions five phrases denoted by (A), (B), (C), (D) and (E) are given. By using all the five phrases, each only once, you have to frame a meaningful and grammatically correct sentence. The correct order of the phrases is your answer. Choose from the five alternatives the one having the correct order of the phrases and mark it as your answer.

86. (A) The case goes to highlight
 (B) Ruin the honour and prestige
 (C) How rogue bureaucrats can
 (D) Of a citizen
 (E) On the slightest of pretexts
 (a) ACBDE (b) CDABE
 (c) BEDCA (d) DCAEB
 (e) None of these
87. (A) On the pull-out deadline,
 (B) Any intruder spotted on its territory beyond Friday
 (C) Refusing to entertain the enemy request
 (D) India reiterated that
 (E) Would be forcibly evicted
 (a) ACDBE (b) BADCE
 (c) CADBE (d) ADCBE
 (e) None of these
88. (A) Nasty way and
 (B) Quite miserable
 (C) It is difficult to understand
 (D) Why people behave in such a
 (E) Make the life of everyone
 (a) AEBDC (b) DCAEB
 (c) EBADC (d) DACEB
 (e) None of these
89. (A) Everyone had left the office premises
 (B) The smoke formed a dense screen
 (C) Anything about the missing file as
 (D) As soon as the fire broke out and
 (E) Nobody could say
 (a) CEDBA (b) AEBCD
 (c) BECDA (d) DCAEB
 (e) None of these
90. (A) He found the ring
 (B) His statement that
 (C) Everyone knows he is a liar
 (D) Cannot be trusted because
 (E) Inside the wallet
 (a) CDAEB (b) BACDE
 (c) DCBAE (d) BAEDC
 (e) None of these

Directions (Qs. 91-98): In each question, one of the five parts of the sentence is shown with an asterisk (*). The other four parts of the same sentence are denoted by (A), (B), (C) & (D). Find out

the correct sequence of these letter parts which when read together with the asterisked part in its proper position, makes the sentence meaningfully complete. Please note that more than one sequence may also be correct. Therefore, indicate your answer only after judging all the answer choices provided.

91. * are not keeping
 A. good health lately
 B. you should know
 C. why you
 D. the reason
 (a) Only BDC*A (b) Only DBCA*
 (c) Only BADC* (d) Only C*DBA
 (e) Only BD*AC
92. * thieves
 A. to guard his house
 B. and keep away
 C. some fierce dogs
 D. he keeps
 (a) Only *CBAD (b) Only DCAB*
 (c) Only D*ABC (d) Only AD*BC
 (e) None of these
93. * his business
 A. was a heavy blow to
 B. his crime
 C. the discovery of
 D. his reputation and
 (a) Only C*ADB
 (b) Only BADC*
 (c) Only CBAD*
 (d) Either *ACDB or C*ABD
 (e) None of these
94. * the book
 A. in his own words
 B. he had read
 C. the entire story
 D. carefully and could tell
 (a) Only B*DCA (b) Only BACD*
 (c) Only ABD*C (d) Only AB*DC
 (e) None of these
95. * have been
 A. he is
 B. one of the greatest
 C. of novelists
 D. universally acknowledged to
 (a) Only A*BCD
 (b) Only BC*AD
 (c) Either A*BCD or AD*BC
 (d) Only AD*BC
 (e) None of these
96. * to visit me
 A. he never came
 B. in spite of
 C. inviting him
 D. my continually
 (a) Only AC*BD (b) Only BCD*A
 (c) Only A*BCD (d) Only C*BDA
 (e) None of these

97. * believed it
 A. with my own eyes
 B. I would
 C. had I not seen this
 D. not have
 (a) Only B*DAC (b) Only BD*CA
 (c) Only CABD*
 (d) Both BD*CA and CABD*
 (e) None of these
98. * it is
 A. understand why
 B. his own sons
 C. he distrusts
 D. difficult to
 (a) Only *DACB (b) Only A*BDC
 (c) Only BA*DC (d) Only CB*AD
 (e) None of these
- Directions (Qs. 99-103):** In each question, an incomplete statement followed by two fillers is given. From among the fillers, pick up the one which can meaningfully complete the sentence.
99. Last night some people had their dinner in a good hotel. (_____). But there were many people who suffered from food poisoning.
 A. The host paid lavish tips to the waiters.
 B. The hotel management, however, was careless about the hygienic conditions in the hotel.
 (a) Only A (b) Only B
 (c) Either A or B (d) Both A & B
 (e) None of these
100. Certain mammals live in the ocean.(_____). Their giant size is a matter of curiosity for all of us.
 A. Whale is an example of such mammals.
 B. They look like fish and some of them like whales are of enormous size.

- (a) Only A (b) Only B
 (c) Either A or B (d) Both A & B
 (e) None of these
101. She is very much fond of children.(_____). The fact that she enjoys teaching them can be attributed to this factor.
 A. Though she doesn't get opportunity to interact with them, she observes them carefully.
 B. She glows with happiness while teaching them and some emotional bond is generated between her and the children.
 (a) Only A (b) Only B
 (c) Either A or B (d) Both A & B
 (e) None of these
102. Eradication of illiteracy has been one of the primary objectives of planning in India.(_____). Unless we have strong will-power for taking such a vital step, the realization of the objective is not possible.
 A. Every student should come forward on his own for educating at least twelve illiterate persons in a year.
 B. Non-availability of funds and lack of manpower are the major problems.
 (a) Only A (b) Only B
 (c) Either A or B (d) Both A & B
 (e) None of these
103. India has made rapid strides in promoting cultivation of potato (_____). Development of 26 high-yielding varieties in the last one decade has changed the scenario of potato production considerably.
 A. During the last three decades, use of nine hybrid varieties has increased the yield.
 B. Besides, use of pesticides has reduced the loss in yield.
 (a) Only A (b) Only B
 (c) Either A or B (d) Both A & B
 (e) None of these

ANSWER KEY

1	(d)	11	(e)	21	(a)	31	(e)	41	(c)	51	(d)	61	(a)	71	(b)	81	(e)	91	(a)	101	(b)
2	(a)	12	(d)	22	(b)	32	(b)	42	(b)	52	(c)	62	(a)	72	(c)	82	(a)	92	(b)	102	(a)
3	(c)	13	(b)	23	(d)	33	(d)	43	(a)	53	(b)	63	(a)	73	(e)	83	(c)	93	(c)	103	(d)
4	(e)	14	(a)	24	(c)	34	(c)	44	(c)	54	(e)	64	(c)	74	(b)	84	(b)	94	(a)		
5	(b)	15	(c)	25	(e)	35	(a)	45	(c)	55	(a)	65	(d)	75	(b)	85	(d)	95	(d)		
6	(c)	16	(a)	26	(a)	36	(e)	46	(d)	56	(a)	66	(a)	76	(a)	86	(a)	96	(e)		
7	(a)	17	(d)	27	(b)	37	(a)	47	(b)	57	(b)	67	(d)	77	(d)	87	(c)	97	(d)		
8	(d)	18	(c)	28	(e)	38	(c)	48	(e)	58	(d)	68	(c)	78	(d)	88	(e)	98	(a)		
9	(b)	19	(a)	29	(c)	39	(b)	49	(a)	59	(d)	69	(a)	79	(e)	89	(e)	99	(a)		
10	(e)	20	(b)	30	(a)	40	(d)	50	(c)	60	(b)	70	(c)	80	(c)	90	(d)	100	(b)		

Hints & Explanations

(61-65):

C comes first because it is the only independent sentence. We then place the sentences having “it is a time”, the phrase that refers to C. Among three such sentences – D, E and F – F comes first because of its plain structure. The word ‘also’ in D makes it the second sentence. While ‘most of all’ in E makes it the last among these three. Thus, our sentences are CFDE. Now, look at the words “visualise them” in B. These words are a clear reference to the words in E: “opportunities ... challenges ... ahead.” Thus, E is followed by B. The remaining sentence, i.e. A, comes at the end. Thus, we have

C F D E B A

88. (e) CDAEB
 89. (e) ECADB
 96. (e) The right sequence will be A*BDC
 99. (b) Paying tips has got nothing to do with food-poisoning.
 100. (b) (A) is ruled out because the subsequent sentence has a plural pronoun whereas “whale” is singular.
 101. (b) (A) is ruled out because it says that there is no interaction between her and the children. Which, certainly, is not true about teaching.
 102. (a) The clue lies in the phrase “such a vital step” in the subsequent sentence.
 103. (d) Both the sentences are in tune with the general idea of the passage.



Cloze Test

CLOZE TEST

Cloze tests are common on all bank exams. They usually require you to choose the correct choice out of four possibilities.

A cloze test (also cloze deletion test) is an exercise, test, or assessment consisting of a portion of text with certain words removed (cloze text), where the participant is asked to replace the missing words. Cloze tests require the ability to understand context and vocabulary in order to identify the correct words or type of words that belong in the deleted passages of a text.

Example 1 : A language teacher may give the following passage to students:

Today, I went to the _____ and bought some milk and eggs. I knew it was going to rain, but I forgot to take my _____, and ended up getting wet on the way _____.

Explanation : Students would then be required to fill in the blanks with words that would best complete the passage. Context in language and content terms is essential in most, if not all, cloze tests. The first blank is preceded by “the”; therefore, a noun, an adjective or an adverb must follow. However, a conjunction follows the blank; the sentence would not be grammatically correct if anything other than a noun were in the blank. The words “milk and eggs” are important for deciding which noun to put in the blank; “market” is a possible answer; depending on the student, however, the first blank could either be store, supermarket, shop or market while umbrella or raincoat fit the second.

Example 2 : I saw a man lay his jacket on a puddle for a woman crossing the street. I thought that was very _____.

Explanation : Given the above passage, students’ answers may then vary depending on their vocabulary skills and their personal opinions. However, the placement of the blank at the end of the sentence restricts the possible words that may complete the sentence; following an adverb and finishing the sentence, the word is most likely an adjective. Romantic, chivalrous or gallant may, for example, occupy the blank, as well as foolish or cheesy.

HOW TO TACKLE A CLOZE TEST

- Read the text through trying to understanding the general meaning.
- Look at each missing word gap and try to imagine what the correct word should be.
- Decide which part of speech (adjective, noun, gerund, etc.) needs to be used to fill each gap.
- Read the text again, trying to fill a gap as you come to it by imagining what the correct answer should be.
- Read the text another time, this time choose the correct answer from the five answers given.
- If you are unsure of any given answer, try reading the sentence with each of the possibilities.
- Try to eliminate the obvious false choices.
- Always think about the overall meaning of the text (i.e., whether the text is negative, positive, etc.) to make sure that your answer choice fits the context.
- Trust your intuition. If you feel a word is right instinctively, it probably is correct.

EXERCISE

Directions (Qs. 1-13): In the following passage there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

Man in his **1** of nature and universe has made the world **2**, polluted. The air we breathe is polluted, the water we drink is **3**. There is **4** felling of trees, clearing of jungles, **5** natural barriers like the mountains and drying up the oceans by way of **6**. This **7** of nature by man is a grave mistake for which mankind has to pay the price. Rapid industrialisation means **8** the industrial effluents into the rivers and seas. The river water has turned murky. Marine life has been **9**. The toxic chemicals have made the air that we breathe polluted. Pesticides and insecticides sprayed on plants and the chemicals and fertilizers used for **10** plant yield have poisoned our food. Hence what we eat today has high toxic **11**. Nature's plentifulness is a heritage not to be **12** with impunity. It must be conserved for future generations or its **13** will extinguish all.

1. (a) pursuit (b) view
(c) conquest (d) victim
(e) want
2. (a) foul (b) diluted
(c) poor (d) precarious
(e) critical
3. (a) disturbed (b) pure
(c) counterproductive (d) suffocated
(e) contaminated
4. (a) dubious (b) wanton
(c) careful (d) planned
(e) useless
5. (a) attacking (b) projecting
(c) cutting (d) blasting
(e) sizing
6. (a) reclamation (b) inhabitation
(c) stabilisation (d) destruction
(e) damage
7. (a) provocation (b) adventure
(c) vandalism (d) abundance
(e) evasion
8. (a) relocating (b) divulging
(c) menacing (d) culminating
(e) diverting
9. (a) evaporated (b) endangered
(c) devalued (d) eliminated
(e) forfeiting
10. (a) managing (b) developing
(c) maintaining (d) doubling
(e) minimising
11. (a) damage (b) variable
(c) content (d) yield
(e) refuge

12. (a) squandered (b) preserved
(c) doubled (d) engulfed
(e) coerced
13. (a) equilibrium (b) existence
(c) failure (d) proportion
(e) bankruptcy

Directions (Qs. 14-23): In the following passage, there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

Studies **14** the impact of computer models to support policy-making processes in organisations have **15** that client involvement in the model-building process is often a **16** for effective model-building. One important reason is that the process of model-building is frequently more important than the resulting model. Model-building itself is largely a **17** process about the problem. Most **18** about the characteristics of an ill-structured problem are gained during the **19** process of designing a computer model, rather than after the model is finished. Another important reason is that most information in an organisation **20** in the mental models of organisation members. To support policy-making in an organisation, it is this knowledge which needs to be **21** and represented in the model. An important topic in client-oriented or **22** model building thus becomes the **23** of relevant knowledge contained in the mental models of participants.

14. (a) evaluating (b) focussing
(c) projecting (d) advocating
(e) directing
15. (a) devised (b) exhibited
(c) convinced (d) attributed
(e) indicated
16. (a) support (b) valuation
(c) prerequisite (d) material
(e) blueprint
17. (a) valuable (b) durable
(c) tedious (d) learning
(e) critical
18. (a) thinking (b) insights
(c) planning (d) appreciation
(e) opinion
19. (a) elongated (b) concentrated
(c) iterative (d) evolving
(e) consummate
20. (a) resides (b) follows
(c) settles (d) lies
(e) committed
21. (a) extended (b) bisected
(c) subjected (d) captured
(e) attributed
22. (a) revolving (b) interactive
(c) dogmatic (d) accentuated
(e) formative

23. (a) demarcation (b) formation
(c) proliferation (d) association
(e) elicitation

Directions (Qs. 24-38): In the following passage, there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

Once Gurudev Tagore asked Gandhiji: "Gandhiji, are you **24** unromantic? When in the early **25** the morning sun rises does it not **26** your heart with joy to see its reddish glow? When the birds **27**, does not your heart thrill with its **28** music? When the rose opens its petals and blooms in the garden, does its sight not bring **29** to your heart?" The Mahatma replied, "Gurudev, I am not so dumb or **30** as not to be moved by the beauty of the rose or the morning rays of the sun or the music of the birds. But what can I do? My one **31**, my one anxiety, my one ambition is: When shall I see the red tint of the rose on the cheeks of **32 33** millions of my people? When shall I hear the sweet and melodious song of the birds in place of their **34** sighs - when will such music **35** out of their soul? And when will that **36** come. when the light of the morning sun will **37** the heart of the common man in India? When will I see its lustre and **38** on his face?"

24. (a) not (b) genuinely
(c) seldom (d) so
(e) fairly
25. (a) season (b) dawn
(c) monsoon (d) climate
(e) days
26. (a) involve (b) impeach
(c) move (d) fill
(e) penetrate
27. (a) fly (b) nestle
(c) flock (d) cry
(e) sing
28. (a) alarming (b) fearful
(c) divine (d) irritating
(e) loud
29. (a) aroma (b) cheer
(c) fragrance (d) agony
(e) fear
30. (a) insensitive (b) lethargic
(c) ambitious (d) idle
(e) romantic
31. (a) slogan (b) request
(c) interpretation (d) desire
(e) demand
32. (a) old (b) rich
(c) happy (d) noble
(e) hungry
33. (a) naked (b) fashioned
(c) poor (d) fellow
(e) playful
34. (a) encouraging (b) flourishing
(c) prosperous (d) agonizing
(e) cheerful

35. (a) play (b) bring
(c) come (d) drop
(e) sing
36. (a) light (b) day
(c) authority (d) person
(e) sun
37. (a) scorch (b) shine
(c) bright (d) burn
(e) illumine
38. (a) brightness (b) shade
(c) dullness (d) strength
(e) stairs

Directions (Qs. 39-48): In the following passage there are blanks; each of which has been numbered. These numbers are printed below the passage and against each five words are suggested, one of which fits the blank appropriately in the context of the passage. Find out the appropriate word in each case.

The social **39** of the Web lifestyle and work style are enormous. A lot of people **40** that computers and the Internet will depersonalize experience, creating a world that is less warm. But these are unfounded as we know that some people were **41** afraid that the telephone would reduce face-to-face contact and will **42** society to fall apart. But the **43** actually came true. Just as the phone and e-mail have increased contact between people living in different communities and between people on the go, the PC and the Internet give us **44** way to communicate. They do not take any away. In reality, the ability to use the Internet to redefine **45** in our communities is strengthening personal and cultural **46**. The Web lifestyle is about broadening **47**, not narrowing them. Community building is going to be one of the biggest growth areas on the Web. It dramatically increases the number of communities you can bond to because of its ability to **48** groups of like-minded people independent of geography or time zones.

39. (a) groups (b) needs
(c) factor (d) teaching
(e) implications
40. (a) accept (b) dare
(c) fear (d) propose
(e) reject
41. (a) strongly (b) initially
(c) always (d) never
(e) possibly
42. (a) let (b) decay
(c) develop (d) cause
(e) destroy
43. (a) opposite (b) found
(c) finding (d) different
(e) negative
44. (a) cheaper (b) economical
(c) another (d) second
(e) many
45. (a) groups (b) ethics
(c) culture (d) bonds
(e) boundaries
46. (a) distances (b) connections
(c) differences (d) implications
(e) suggestion

47. (a) horizons (b) values
(c) nations (d) means
(e) status
48. (a) reduce (b) focus
(c) prepare (d) connect
(e) develop

Directions (Qs. 49-58): In the following passage there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

The study of accountancy is **49** in demand in the view of **50** of greater complexity in our business organisation. Formerly a **51** of day-to-day income and expenditure was more than **52**. A business organisation today has to **53** a clear account of the **54** it uses, the amounts that are owing to it, the amount that it owes to others, the profit or loss it has made and the **55** it employs. Without a scientific **56** of accounting no businessman can be fully **57** of his real **58** position and run his organisation.

49. (a) progressing (b) getting
(c) powering (d) moving
(e) growing
50. (a) demand (b) growth
(c) status (d) position
(e) slackness
51. (a) mixture (b) map
(c) measure (d) record
(e) transaction
52. (a) sufficient (b) anticipated
(c) expected (d) required
(e) necessary
53. (a) gather (b) observe
(c) maintain (d) organize
(e) assimilate
54. (a) manpower (b) infrastructure
(c) money (d) resources
(e) capabilities
55. (a) capital (b) strength
(c) authority (d) strategies
(e) principles
56. (a) way (b) plan
(c) system (d) goal
(e) purpose
57. (a) ignorant (b) alert
(c) prepared (d) vigilant
(e) aware
58. (a) administrative (b) financial
(c) capacity (d) business
(e) hierarchical

Directions (Qs. 59-68): In the following passage, there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

The weaker sections of the rural population are mostly from the socially and economically backward and **59** sections of the village community. Because of their **60** and financial

difficulty, they are not readily **61** to change their work habits and adopt modern technology. **62** sure about the traditional methods, they are **63** to take to **64** equipment and techniques which require some time to get accustomed for **65** work.

After holding a number of group meetings with rural people **66** to different vocations and spread over the entire country, we can safely say that persons in the villages are not **67** for training to improve upon their traditional and hereditary **68** of working.

59. (a) depressed (b) different
(c) rich (d) privileged
(e) forward
60. (a) ability (b) dependence
(c) illiteracy (d) number
(e) majority
61. (a) discarding (b) feeling
(c) bending (d) undertaking
(e) willing
62. (a) Making (b) Having
(c) Quite (d) Being
(e) Not
63. (a) forced (b) reluctant
(c) bound (d) prepared
(e) curious
64. (a) farming (b) traditional
(c) improved (d) powerful
(e) old
65. (a) routine (b) monotonous
(c) excessive (d) wasteful
(e) effective
66. (a) accruing (b) helping
(c) enabling (d) belonging
(e) referring
67. (a) eager (b) capable
(c) indifferent (d) antagonistic
(e) unwilling
68. (a) theories (b) techniques
(c) desires (d) hours
(e) policies

Directions (Qs. 69-78): In the following passage, there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

In the past, it was thought learning knowledge took place in school and for some also in further education. Then, it was a matter of **69** practical skills at work at the beginning of a career, and with a bit of luck, that **70** it. Now, things have changed. Global competition is **71** the shelf life of products and the knowledge and skills that **72** behind them. The pace of change can be **73**. Knowledge that was at the leading edge one minute can become **74** the next. Therefore, it is **75** rather than knowledge that is the key. Successful organizations have to learn, adapt and change continuously as do the **76** within them. This is **77** in the rapid growth of knowledge workers. It is **78** all levels of organizations.

69. (a) fostering (b) projecting
(c) acquiring (d) manipulating
(e) culminating

70. (a) for (b) was
(c) from (d) with
(e) may
71. (a) replacing (b) retailing
(c) rotating (d) re-regulating
(e) reducing
72. (a) lie (b) profess
(c) exhibit (d) manifest
(e) express
73. (a) analytical (b) absorbing
(c) interesting (d) frightening
(e) valuable
74. (a) critical (b) obsolete
(c) modern (d) devastating
(e) lamentable
75. (a) durability (b) reactivity
(c) activity (d) Proactivity
(e) capacity
76. (a) systems (b) managements
(c) processes (d) individuals
(e) units
77. (a) echoed (b) supported
(c) adjusted (d) provided
(e) developed
78. (a) directing (b) providing
(c) affecting (d) questioning
(e) projecting

Directions (Qs. 79-88): In the following passage there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words are suggested, one of which fits the blanks appropriately. Find out the appropriate words.

The tea plant, a native of Southern China, was known **79** very early times in Chinese botany and medicine. It is **80** in the classics **81** the various names of Tou, Tseh, Chung, Kha and Ming and was **82** praised for possessing the virtues of **83** fatigue, delighting the soul, strengthening the will and repairing the eyesight. It was not only administered as an internal dose, but often **84** externally in the form of paste to **85** rheumatic pains. The Taoists claimed it **86** an important **87** of the elixir of immortality. The Buddhists used it extensively to prevent drowsiness during **88** long hours of meditation.

79. (a) to (b) after
(c) from (d) beyond
(e) behind
80. (a) taken (b) resorted
(c) awarded (d) alluded
(e) introduced
81. (a) under (b) between
(c) among (d) besides
(e) like
82. (a) rarely (b) loosely
(c) under (d) severely
(e) highly
83. (a) absorbing (b) relieving
(c) avoiding (d) resolving
(e) recognising

84. (a) inserted (b) developed
(c) conceived (d) controlled
(e) applied
85. (a) recuperate (b) alleviate
(c) conceal (d) indicate
(e) slow
86. (a) to (b) also
(c) although (d) as
(e) hardly
87. (a) ingredient (b) aspect
(c) offshoot (d) outcome
(e) discovery
88. (a) that (b) these
(c) their (d) our
(e) remote

Directions (Qs. 89-98): In the following passage there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

Man has always considered himself to be the ruler of his planet. This **89** and the attendant superiority feeling has made him look down **90** other creatures who co-exist with human on this earth. The so-called civilized human race has **91** and ill-treated small and large animal species and birds in an attempt to prove his **92**. It is common knowledge that **93** number of animals have been **94** for centuries under the **95** of conducting scientific experiments or for sports. Till recently, in the **96** of scientific experiments, monkeys and frogs have been **97** to dissection and **98** in the laboratory.

89. (a) pleasure (b) fact
(c) achievement (d) force
(e) arrogance
90. (a) in (b) upon
(c) with (d) for
(e) into
91. (a) criticised (b) devalued
(c) protected (d) abused
(e) enlarged
92. (a) supremacy (b) wisdom
(c) cleverness (d) instinct
(e) possession
93. (a) tall (b) plenty
(c) countless (d) diverse
(e) numerous
94. (a) tortured (b) exposed
(c) treated (d) vanished
(e) extinct
95. (a) projection (b) criticism
(c) pretext (d) game
(e) study
96. (a) matter (b) set
(c) scheme (d) virtue
(e) name
97. (a) confined (b) subjected
(c) condemned (d) allied
(e) performed
98. (a) cruelty (b) deformation
(c) study (d) vivisection
(e) proliferation

Directions (Qs. 99-108) : In the following passage, there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

In 99 of constitutional guarantees relating to equality of opportunity and various other guarantees of equality before the law, the social and economic 100 of women, especially of poor women in India, is well-known. We are referring mainly to the poor rural women who have little or no assets and who 101 the bulk of the female population in rural areas. It is not as if only poor rural women get less wages or suffer from social 102 because they belong to a particular community. Even at higher levels of the socio-economic hierarchy among the well-to-do groups, women are not 103 to men. Among the economically 104 sections of society, women's proper place is 105 to be the home. In rural areas, women of 106 status families normally do not go out to work. In the 107 value system, there is a gradation of economic activities, which is 108 in the socio-economic status of the family.

Thus, if the women of the family do manual labour in the fields, it denotes low status. Women earning a living, or supplementing their family income through economic activities like stitching, garment-making, or some handicraft work, are also considered low because it clearly shows that their family is poor and they are forced to make ends meet. It is considered right and proper for a woman to cook, sew and take up activities like pickle-making for her own family. But, if she were to earn a wage through these same activities, it denotes poverty and also, often, low socio-economic status.

99. (a) support (b) spite
(c) contrast (d) wake
(e) view
100. (a) condition (b) prosperity
(c) progress (d) deprivation
(e) value
101. (a) constitute (b) deploy
(c) measure (d) define
(e) exploit
102. (a) status (b) service
(c) indifference (d) ignorance
(e) discrimination
103. (a) dedicated (b) accountable
(c) equal (d) responsible
(e) antagonistic
104. (a) marginal (b) significant
(c) well-off (d) affordable
(e) dependable
105. (a) entitled (b) decided
(c) indicated (d) debated
(e) considered
106. (a) economic (b) appropriate
(c) ample (d) higher
(e) social
107. (a) unequal (b) prevailing
(c) appropriate (d) commendable
(e) deplorable

108. (a) reflected (b) exempted
(c) barred (d) considered
(e) neglected

Directions (Qs. 109-118): In the following passage, there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

The urgent need of the hour is to 109 up the moral 110 of our society in general and of our student community in particular, if we want to save ourselves and our society from the present 111 of mass indiscipline and 112 of basic human values, which has become a 113 phenomenon. We must, therefore, 114 and practise the most 115 basic human values like cooperation, tolerance, patriotism, generosity, truth, justice and excellence — the ideals which are universal in nature and which are 116 in themselves and which are worthy of 117 for their own sake. These ideals are both personally as well as socially 118.

109. (a) give (b) stand
(c) jack (d) climb
(e) tone
110. (a) fibre (b) enactment
(c) reconstruction (d) situation
(e) appreciation
111. (a) polarisation (b) degradation
(c) chaos (d) provocation
(e) sentiments
112. (a) calamity (b) focus
(c) realisation (d) erosion
(e) criticism
113. (a) durable (b) universal
(c) perpetual (d) segmental
(e) prolific
114. (a) incorporate (b) induce
(c) implicate (d) inculcate
(e) involve
115. (a) absorbing (b) cherished
(c) introspective (d) famous
(e) productive
116. (a) distinctive (b) appreciated
(c) formative (d) helping
(e) end
117. (a) evolving (b) spreading
(c) esteem (d) wisdom
(e) popularity
118. (a) desirable (b) manageable
(c) redundant (d) vulnerable
(e) possible

Directions (Qs. 119-128): In the following passage there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words are suggested, one of which fills the blank appropriately in the context of the passage. Find out the appropriate word in each case.

In the decade since reforms were introduced, India has achieved substantial success in the sphere of macroeconomics. Overall growth rate has been 119 except for the last couple of years. It bears pointing out that we have now come to view a 6 per cent 120 rate as a slowdown! This is a

far cry from pre-reforms rate of growth of 3 per cent. The price level has by and large remained **121** both as measured by the WPI and CPI. India's **122** of payments position has been comfortable, Exports, while **123** some sluggishness this fiscal, have been growing. Imports, in spite of **124** liberalisation, have not gone out of hand. The is amply reflected in the comfortable current account deficits (CAD); the CAD-to-GDP ratio has remained way below the crisis **125** that it had achieved in 1991. The rupee has weathered external turbulence rather well even when East Asia was experiencing **126** difficulties.

However, the one unambiguous Achilles' heel of the reforms has been the **127** state of government finances. One of the two crises that India faced in 1990-91 was the unsustainable imbalance between government revenues and **128**.

119. (a) pulsating (b) shocked
(c) commendable (d) promotable
(e) dipped
120. (a) production (b) consumption
(c) index (d) growth
(e) progress
121. (a) moderate (b) lukewarm
(c) shaky (d) considerate
(e) obstinate
122. (a) ledger (b) balance
(c) equilibrium (d) intention
(e) idea
123. (a) demonstrated (b) exercising
(c) rejecting (d) display
(e) exhibiting
124. (a) substantial (b) exemplary
(c) indicative (d) conservative
(e) destructive
125. (a) rationalisation (b) handling
(c) management (d) proportions
(e) ration
126. (a) crisis (b) overcoming
(c) severe (d) enjoyable
(e) wailing
127. (a) critical (b) vulnerable
(c) prone (d) attackable
(e) easygoing
128. (a) surplus (b) measurement
(c) thinking (d) incomes
(e) expenditure

Directions (Qs. 129-138) : In the following passage there are blanks, each of which has been numbered. These numbers are printed below the passage and against each five words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

Economic backwardness of a region is **129** by the co-existence of unutilized or underutilized **130** on the one hand, and **131** natural resources on the other. Economic development essentially means a process of **132** change whereby the real per capita income of an economy **133** over a period of time. Then, a simple but meaningful question arises: what causes economic development? Or what makes a country developed? This question has absorbed the **134** of scholars of socio-economic change for decades. Going

through the **135** history of developed countries like America, Russia and Japan, man is essentially found as **136** in the process of economic development. Japan, whose economy was **137** damaged from the ravages of the Second World War, is the clearest example of our time to **138** its kingpin role in economic development.

129. (a) developed (b) cured
(c) improved (d) enhanced
(e) characterised
130. (a) sources (b) finances
(c) funds (d) manpower
(e) industries
131. (a) exhaustive (b) unexploited
(c) abundant (d) indefinite
(e) unreliable
132. (a) upward (b) drastic
(c) negligible (d) incredible
(e) sudden
133. (a) diminishes (b) degenerates
(c) increases (d) succumbs
(e) stabilizes
134. (a) plans (b) attempts
(c) attention (d) resources
(e) strategy
135. (a) existing (b) glorious
(c) ancient (d) economic
(e) discouraging
136. (a) pivotal (b) neutral
(c) insignificant (d) enchanted
(e) vicious
137. (a) increasingly (b) always
(c) gradually (d) deliberately
(e) badly
138. (a) enlighten (b) validate
(c) negate (d) underestimate
(e) belittle

Directions (Qs. 139-148) : In the following passage there are blanks, each of which has been numbered. These numbers are also printed below the passage and against each five words are suggested, one of which fits the blank appropriately. Find out the appropriate words in each case.

The latest stage of the continuing **139** between India and the United States on the nuclear issue is now punctuated with pleasing diplomatic observations. Our latest round of talks with the American Deputy Secretary of State is "positive and encouraging". The US Deputy Secretary of State remarked that "none of us are pleased to have any clouds over the **140**". We in India know that these clouds have **141** towards the subcontinent from the West. The US can easily disperse the clouds if it wants. But the economic sanctions are still in place. The US is only **142** trying to come to terms with the fact that the nuclear weapons are not the **143** of the Permanent Members of the Security Council. If they do not recognize India as a nuclear power, then what is it that they are **144** to? India will not **145** by their de-recognising the nuclear tests. Both sides can happily close **146** eyes and agree to **147** what has happened. The fact that India is a sovereign nation, entitled

to take decisions beneficial for its own security, has not been altered by the tests. The US has come round to **148** that India has some say in this matter.

139. (a) adversaries (b) negotiations
(c) strifes (d) strategies
(e) disputes
140. (a) relationship (b) struggle
(c) matter (d) talks
(e) countries
141. (a) formed (b) eclipsed
(c) reined (d) covered
(e) floated
142. (a) spontaneously (b) generously
(c) grudgingly (d) gracefully
(e) willingly
143. (a) threats (b) creations
(c) properties (d) monopoly
(e) possessions
144. (a) prepared (b) objecting
(c) pointing (d) clinging
(e) planning
145. (a) gain (b) differ
(c) flourish (d) suffer
(e) develop
146. (a) their (b) our
(c) naked (d) inward
(e) both
147. (a) imitate (b) undo
(c) cherish (d) reiterate
(e) ignore
148. (a) expecting (b) suspecting
(c) accepting (d) advocating
(e) rejecting

Directions (Qs. 149-159) : In the following passage there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

Bret Bonson loved animals **149** on a family owned Zoo. He had grown up caring for antelope, deer and wildcats. He was **150** at times stubbornly protective. Once, when a tiger cub was born with a deformed leg, the local veterinarian and Bret's parents **151** the animal would never live a full life. Even so, the boy bottle-fed the cub and cared for it. **152** Bret's mothering, the cub died, but Bret's mothering **153** lived on.

He worked at a Safari park where, in 1980, he trained his first African elephant and found his true **154**. From the beginning Bonson was **155** by elephants. They have the **156** force to uproot trees and can outrun the fastest human sprinter. But they also have **157** fine motor skills. The same trunk that could **158** the front end of an automobile or fracture a predator's skull could gently **159** a peanut from the fingers of a small child.

149. (a) created (b) constructed
(c) built (d) erected
(e) raised
150. (a) methodically (b) carefully
(c) fiercely (d) suitably
(e) actually

151. (a) believed (b) valued
(c) expressed (d) imagined
(e) exhibited
152. (a) Until (b) Unless
(c) Instead (d) Despite
(e) Although
153. (a) belief (b) instinct
(c) love (d) passion
(e) care
154. (a) companion (b) attitude
(c) calling (d) friend
(e) abode
155. (a) absorbed (b) alarmed
(c) attacked (d) attached
(e) awed
156. (a) empowered (b) brute
(c) tall (d) high
(e) exhibited
157. (a) domestic (b) durable
(c) devastating (d) delicately
(e) dubious
158. (a) hoist (b) puncture
(c) disturb (d) attack
(e) deflate
159. (a) protect (b) tender
(c) abandon (d) pluck
(e) touch

Directions (Qs. 160-169): In the following passage, there are blanks, each of which has been numbered. These numbers are printed below the passage and against each, five words are suggested, one of which fits the blank appropriately. Find out the appropriate word in each case.

Gandhiji once said, "I would say that if the village perishes, India will perish too. India will be **160** more India. Her own mission in the world will get **161**. The **162** of the village is possible only when it is no more **163**. Industrialisation on a mass scale will **164** lead to passive or active exploitation of the villagers as the problem **165** competition and marketing come in. Therefore, we have to **166** on the village being self-contained, manufacturing mainly, for use. Provided this character of the village industry is **167** there would be no objection to villagers using even the modern machines and tools that they can make and **168** to use. Only, they **169** not be used as a means of exploitation of others."

160. (a) certainly (b) scarcely
(c) much (d) no
(e) any
161. (a) lost (b) extension
(c) elevated (d) flourished
(e) jeopardy
162. (a) rehabilitation (b) pruning
(c) revival (d) devastation
(e) atonement
163. (a) denuded (b) exploited
(c) contaminated (d) populated
(e) ruined

164. (a) passionately (b) surprisingly
(c) scarcely (d) never
(e) necessarily
165. (a) forming (b) enhancing
(c) between (d) of
(e) with
166. (a) concentrate (b) ponder
(c) imagine (d) ensure
(e) decide
167. (a) regained (b) neglected
(c) maintained (d) thwarted
(e) abolished
168. (a) prepare (b) afford
(c) hesitate (d) propose
(e) plan
169. (a) can (b) could
(c) need (d) would
(e) should

ANSWER KEY

1	(c)	18	(b)	35	(c)	52	(a)	69	(c)	86	(d)	103	(c)	120	(d)	137	(e)	154	(c)
2	(a)	19	(c)	36	(b)	53	(c)	70	(b)	87	(a)	104	(c)	121	(a)	138	(b)	155	(e)
3	(e)	20	(d)	37	(e)	54	(c)	71	(e)	88	(c)	105	(e)	122	(b)	139	(b)	156	(b)
4	(b)	21	(d)	38	(a)	55	(a)	72	(a)	89	(e)	106	(d)	123	(e)	140	(a)	157	(d)
5	(c)	22	(b)	39	(e)	56	(c)	73	(d)	90	(b)	107	(b)	124	(a)	141	(e)	158	(a)
6	(a)	23	(e)	40	(c)	57	(e)	74	(b)	91	(d)	108	(a)	125	(d)	142	(c)	159	(d)
7	(c)	24	(d)	41	(b)	58	(b)	75	(d)	92	(a)	109	(e)	126	(c)	143	(d)	160	(d)
8	(e)	25	(b)	42	(d)	59	(a)	76	(d)	93	(c)	110	(a)	127	(b)	144	(c)	161	(a)
9	(b)	26	(c)	43	(a)	60	(c)	77	(a)	94	(a)	111	(c)	128	(e)	145	(d)	162	(c)
10	(b)	27	(e)	44	(c)	61	(e)	78	(c)	95	(c)	112	(d)	129	(e)	146	(a)	163	(b)
11	(c)	28	(c)	45	(d)	62	(d)	79	(c)	96	(e)	113	(b)	130	(d)	147	(e)	164	(e)
12	(a)	29	(b)	46	(b)	63	(b)	80	(e)	97	(b)	114	(d)	131	(b)	148	(c)	165	(d)
13	(e)	30	(a)	47	(a)	64	(c)	81	(a)	98	(d)	115	(b)	132	(b)	149	(e)	166	(a)
14	(a)	31	(d)	48	(e)	65	(e)	82	(e)	99	(b)	116	(a)	133	(c)	150	(e)	167	(c)
15	(e)	32	(e)	49	(e)	66	(d)	83	(b)	100	(a)	117	(c)	134	(c)	151	(a)	168	(b)
16	(c)	33	(a)	50	(a)	67	(a)	84	(e)	101	(a)	118	(a)	135	(d)	152	(d)	169	(e)
17	(d)	34	(d)	51	(d)	68	(b)	85	(b)	102	(e)	119	(c)	136	(a)	153	(d)		



One Word with Different Meanings

Multiple meaning words are those which we use for different meanings in different contexts. The same word can be used as a noun, adjective or verb. English has adopted thousands of words from other languages like Spanish, French, Arabic and even Hindi. The same word but with different meaning can be found in its changed context.

In a similar way, words from different fields of professions e.g. medical, engineering, astronomy, law, business have become part of English Language to enrich it. Over the years, language has changed and more context based usage, (may be not having a direct linkage with the linguistic meaning of the word) has come in practice even by the connoisseurs of language.

Languages with such diversity use nuances of the words to convey the meaning. Sometimes due to this broader sense of words, language becomes ambiguous. But it is expected from the average learner like a Bank Officer that he should avoid this ambiguity related to these more often used words with wide scope of usage. Words that one would see in the Bank Officer's exam shall be from the daily use.

To score more in this particular section of exam -

One Key word - PRACTICE -can only help. Practice will increase your familiarity with the words.

- Read as much as you can particularly good weekly magazines and daily newspapers having columns from different fields like Engineering, Medicine, Law, Sports, and Politics etc.
- Note down the different meanings of the word from the dictionary or thesaurus.
- Make your own sentences using these words.

- Make a collection of these words and see them at least once in a day.

While attempting these questions, think at least one meaningful sentence you remember with that word or where you have seen that particular word and in which context.

In absence of familiarity a simple word can confuse and would lead to marking a wrong answer in the exam.

Let us take the example of the word **Hit**-

You can find this word on every page of a daily newspaper.

Sports - What a magnificent hit it was from the bat of Chris Gayle? (a stroke)

Business- Poor Monsoon to hit the growth rate of Agriculture Sector. (take a beating)

Politics- A US missile hit the Terrorist camp in Northern Pakistan. (an assault)

Entertainment - Jackie Chan has given another hit movie this year. (successful)

City- Power demand in Delhi hit a new high in this summer season. (reach)

Story- It suddenly hit his mind to not follow the monster blindly. (strike)

So in every example the same word is used in different contexts. Only practice can make one more familiar with the nuances of the usage of the same word.

In this section such words are selected which have a high probability of appearing in exam. Practising these will definitely enrich your understanding of the newly introduced section in the any exam.

EXERCISE

Directions (Qs. 1 to 50): Below is given a single word with options to its meaning in different contexts. You have to select all those options which are synonyms of the word when the context is changed. Select the correct alternative from (a), (b), (c), (d) and (e) which represents all those synonyms.

1. TOSS

(1) Throw	(2) Mix
(3) Decide	(4) Impatient Movement
(5) Silly	
(a) 1, 2	(b) 1, 2, 4
(c) 3, 5, 2	(d) 1, 4
(e) 4, 5	
2. TREAT

(1) Deal	(2) Party
(3) Medical aid	(4) Pay
(5) Food	
(a) 1, 2, 3	(b) 5, 3
(c) 3, 4	(d) 4, 2
(e) 1, 5	
3. EYE

(1) Vision	(2) Judgment
(3) An opening	(4) Focus
(5) A bud	
(a) 1, 2	(b) 2, 4
(c) 1, 2, 5	(d) 1, 4, 3
(e) 4, 5, 2	
4. SPRING

(1) Quick	(2) Develop
(3) Leap	(4) Resilience
(5) A Climate	
(a) 1, 2	(b) 2, 4
(c) 3, 5, 1	(d) 1, 3, 5, 4
(e) 4, 5, 3	
5. MOCK

(1) Counterfeit	(2) Fake
(3) Imitate	(4) Simulate
(5) Ridicule	
(a) 1, 2	(b) 2, 3, 4, 5
(c) 1, 3, 4, 5	(d) 1, 4
(e) 4, 5, 3	
6. SIFT

(1) Separate	(2) Examine
(3) Change	(4) Improve
(5) Ridicule	
(a) 1, 2	(b) 2, 4
(c) 3, 5	(d) 1, 4
(e) 4, 5	
7. CUT

(1) Separate	(2) Reduce
(3) Harm	(4) Hair Style
(5) Ridicule	
(a) 1, 2	(b) 2, 4
(c) 3, 5	(d) 1, 4
(e) 4, 5	
8. LIFT

(1) Pick	(2) Steal
(3) A machine	(4) Raise in position
(5) Ridicule	
(a) 1, 2	(b) 2, 4
(c) 3, 5	(d) All of the above
(e) 4, 5	
9. TEMPER

(1) Modify	(2) Composure
(3) Tone	(4) Hot
(5) Ridicule	
(a) 1, 2	(b) 2, 4
(c) 1, 3, 5	(d) 1, 4
(e) 1, 2, 3	
10. PRACTICE

(1) Habit	(2) Profession
(3) Procedures of Law	(4) Repeat
(5) Ridicule	
(a) 1, 2, 3	(b) 2, 4, 1
(c) 3, 5	(d) 1, 4
(e) 4, 3	
11. CRAFT

(1) Handmade	(2) Skill
(3) Deception	(4) Transport
(5) Ridicule	
(a) 1, 2, 3, 4	(b) 2, 4, 1
(c) 3, 4, 2	(d) 1, 4
(e) 4, 3, 1	
12. HEARING

(1) A sense	(2) A Trail
(3) A perception	(4) An opportunity
(5) Ridicule	
(a) 1, 2, 4	(b) 2, 4
(c) 3, 5	(d) 1, 4
(e) 4, 3, 1	
13. FLOCK

(1) Group	(2) Congregate
(3) Throng	(4) A species
(5) Ridicule	
(a) 1, 2, 4	(b) 1, 2, 3
(c) 3, 5	(d) 1, 4, 3
(e) 4, 3	
14. IMPRESSION

(1) An effect	
(2) A mark	
(3) An initial color of paint	
(4) An imprint of teeth	
(5) Ridicule	
(a) 1, 2	(b) 2, 4
(c) 3, 5	(d) 1, 2, 3
(e) 4, 3	
15. PRESS

(1) Racket Gripper	(2) Impel
(3) Iron	(4) Media
(5) Ridicule	
(a) 1, 2	(b) 1, 2, 3, 4
(c) 3, 5	(d) 1, 4, 3
(e) 4, 3	
16. PUNCH

(1) Fist	(2) A Beverage
(3) Blow	(4) Piercing Tool
(5) Ridicule	
(a) 1, 2, 3, 4	(b) 2, 4, 1
(c) 3, 2, 1	(d) 1, 4
(e) 4, 3	

17. TORT
 (1) Damage (2) Liability
 (3) Change (4) Pass through
 (a) 2,3 (b) 2,4
 (c) 1,2 (d) 1,4
 (e) 4,3
18. MASTER
 (1) Employer (2) Skilled Man
 (3) Possessor of Masters degree
 (4) Season
 (a) 1,2 (b) 2,4
 (c) 1,2,3, (d) 1,4
 (e) 4,3
19. NOTICE
 (1) Attention (2) Document
 (3) Report (4) Comment
 (a) 1,2 (b) 2,4
 (c) 3,5 (d) 1,4
 (e) 4,3
20. JERK
 (1) Thrust (2) Push
 (3) Rude person (4) Deceive
 (a) 1,3,4 (b) 2,4
 (c) 3,1,4 (d) 1,4
 (e) 4,3,2
21. MATTER
 (1) Concern (2) Mass
 (3) Reading material (4) Waste disposal
 (a) 1,2 (b) 2,4
 (c) 3,1,2 (d) 1,4
 (e) 4,3
22. PRESENT
 (1) Now (2) Gift
 (3) Formal Introduction (4) Immediately
 (a) 1,2 (b) 2,4
 (c) 3,1 (d) 1,2,3
 (e) 4,3
23. HAMPER
 (1) Prevent (2) A large basket
 (3) A gift (4) A laundry
 (a) 1,2 (b) 2,4
 (c) 3,1 (d) 1,4
 (e) 4,3
24. PLACE
 (1) Space (2) Put
 (3) Circumstance (4) Rank
 (a) 1,2 (b) 2,4
 (c) 3,1 (d) 1,4
 (e) 1,2,4
25. DENT
 (1) Tooth of Gearwheel (2) Sleaze
 (3) Depression (4) Penetration
 (a) 1,4 (b) 2,4
 (c) 3,1 (d) 1,2
 (e) 4,3
26. STRIKE
 (1) Military Attack (2) Discover
 (3) Lockout (4) Snap
 (a) 1,2,4 (b) 2,4
 (c) 3,1 (d) 1,4
 (e) 4,3
27. WILL
 (1) Determination (2) Mental Faculty
 (3) Future possibility (4) Bequeath
 (a) 1,2 (b) 2,4,3
 (c) 3,1 (d) 1,2,4
 (e) 4,3
28. DEEP
 (1) Intense (2) Large
 (3) Serious (4) Extend
 (a) 1,2,4 (b) 2,3
 (c) Only 1 (d) Only 4
 (e) All of (1), (2) (3) and (4)
29. STEP
 (1) Distance (2) level
 (3) Movement (4) Foot print
 (a) 2,4 (b) 3,5
 (c) 4,6 (d) All of (1), (2), (3), (4)
 (e) 2,6,5
30. TURN
 (1) Revolve (2) Change
 (3) Convert (4) Twist
 (a) 4,3 (b) 1,2
 (c) Only 2 (d) All (1), (2) (3), (4)
 (e) No one
31. FLAT
 (1) Smooth (2) Dull
 (3) Apartment (4) Dead
 (a) 3,1 (b) 4,5
 (c) 2,3 (d) 3,5
 (e) 1,3,4
32. BOOK
 (1) Literature (2) Engage
 (3) Record (4) Hire
 (a) 4,5 (b) 1,2,4
 (c) 1,2,3 (d) 2,4
 (e) 1,4
33. FIT
 (1) Proper (2) Emotional Outburst
 (3) Confusion (4) A Section of story
 (a) 1,2 (b) 1,4
 (c) 2,3 (d) 2,4
 (e) 3,1
34. COOL
 (1) Low temperature (2) Unenthusiastic
 (3) Chill (4) Happy
 (5) Joyful (6) Unfriendly
 (a) 2,3,4 (b) 1,4,3
 (c) 1,2,5 (d) 1,2,3,6
 (e) 1,3,4

35. CAN
 (1) Ability (2) Container
 (3) Desire (4) Strength
 (5) Preserve (6) Cold drink
 (a) 1, 2, 4 (b) 1, 3
 (c) 1, 4, 6 (d) 2, 5, 1
 (e) All (1), (2), (3), (5)
36. HANDLE
 (1) Manipulate (2) Conduct
 (3) Lever (4) Opportunity
 (5) Mediate (6) Adjust
 (a) 2, 3, 4 (b) 4, 5, 1
 (c) 6, 3, 2 (d) 1, 3, 4
 (e) 2, 3, 6
37. INJECT
 (1) Place in orbit (2) Drive in
 (3) Pierce (4) Fill
 (5) Medicine
 (a) 1, 2 (b) 3, 6
 (c) 3, 4, 5 (d) 1, 2, 3
 (e) 2, 3, 1
38. TENT
 (1) Portable Shelter (2) To give attention
 (3) Camp (4) Wait on
 (5) Straight (6) School
 (a) 1, 2, 3, 4 (b) 5, 3, 4, 1
 (c) 6, 3, 4, 2 (d) 1, 2, 3
 (e) 1, 2, 4
39. CROP
 (1) Cut short (2) A group
 (3) A ground (4) Cultivate
 (a) 1, 2 (b) 2, 3
 (c) 1, 3, 4 (d) 1, 2, 4
 (e) All (1), (2), (3), (4)
40. GLANCE
 (1) A quick look (2) Scan
 (3) Review (4) Reflect
 (a) 1, 2, 3 (b) 1, 2
 (c) 2, 1, 4 (d) 2, 3, 4
 (e) All of (1), (2), (3), (4)
41. EXPLOSIVE
 (1) Violent (2) Sudden
 (3) Volatile (4) Destroying
 (a) 1, 2 (b) 2, 3
 (c) 1, 2, 3 (d) 1, 2, 3, 4
42. CARRIAGE
 (1) Bearing
 (2) Transportation
 (3) A fee charged for transportation
 (4) A machine part
 (a) 1, 2, 3, 4 (b) 2, 3
 (c) 3, 4 (d) 1, 2, 3
43. TYPE
 (1) Leaving impression (2) Logic
 (3) Personality (4) Variety
 (a) Only 2 (b) Only 1
 (c) Only 1, 4 (d) Only 4
 (e) 3, 4
44. ADDRESS
 (1) A destination (2) A speech
 (3) To move (4) Deal with
 (a) 1, 2, 4 (b) 2, 3
 (c) 3, 4 (d) 1, 2, 3
 (e) All of the above
45. PLAY
 (1) Recreation (2) Operate
 (3) A drama (4) Conduct
 (a) 1, 3, 4 (b) 1, 2, 3
 (c) 2, 3, 4 (d) 1, 2, 3
46. RUN
 (1) Pierce
 (2) A score
 (3) Manage
 (4) A continuous period of operation
 (a) 2, 3, 4 (b) 2, 1
 (c) 3, 4 (d) 1, 3, 4
 (e) All of the above
47. FITTING
 (1) Appropriate (2) Accessories
 (3) A size (4) Unseemly
 (a) Only 1 (b) 1, 2
 (c) 1, 2, 4 (d) 2, 3, 4
 (e) 1, 2, 3
48. OBJECTIVE
 (1) Purpose (2) Biased
 (3) Uninfluenced (4) Ultimate
 (a) 1, 2 (b) 2, 3
 (c) 1, 3 (d) 2, 3, 4
 (e) All (1), (2), (3), (4)
49. CLASS
 (1) A group (2) Timid
 (3) Range (4) Alumni
 (a) 1, 3, 4 (b) 1, 2
 (c) 2, 3 (d) 3, 4
 (e) 1, 3, 4
50. FREE
 (1) Liberty (2) Without cost
 (3) Loose (4) Uncontrolled
 (a) 1, 2 (b) 2, 4
 (c) 3, 1 (d) All of 1, 2, 3, 4
 (e) 4, 3

ANSWER KEY

1	(b)	6	(a)	11	(a)	16	(a)	21	(c)	26	(a)	31	(c)	36	(a)	41	(d)	46	(a)
2	(a)	7	(a)	12	(a)	17	(c)	22	(d)	27	(d)	32	(b)	37	(e)	42	(a)	47	(e)
3	(c)	8	(d)	13	(b)	18	(c)	23	(a)	28	(c)	33	(a)	38	(a)	43	(c)	48	(c)
4	(d)	9	(e)	14	(d)	19	(a)	24	(e)	29	(d)	34	(d)	39	(d)	44	(a)	49	(a)
5	(c)	10	(e)	15	(b)	20	(a)	25	(a)	30	(d)	35	(a)	40	(c)	45	(b)	50	(d)

Hints & Explanations

- (b) Meaning of word toss is to throw or to mix if used as verb. Toss is done to decide between two alternatives. But it does not mean to decide. Toss also means to move impatiently here and there.

Different usage of the word Toss-

 - A coin was tossed to judge who will field first and who will bat first bat first? (throw in air)
 - The bull tossed him over the fence.(throw up down)
 - The old professor was tossing here and there in the room after reading the letter.
 - She tossed out of the room after seeing the act of young boy.
- (a) Treat is to throw a party of food and drinks. Treatment of disease is common expression. To pay or food is wrong and incomplete.

 - He treated the matter in lighter vein.
 - I will throw a treat if I get first rank in the class.
 - Sonia Gandhi is getting treatment from an American hospital for an undisclosed disease.
- (c) Eye is vision or an opening in noun form. It also means 'bud'.

 - God has given us a pair of eye to appreciate the world created by Him.(Organ)
 - He has an eye for talent. (Care)
 - Have you seen the eye of potato? (Bud)
- (d) Spring is to leap, to be quick and to develop. A season of spring is season which follows winter and precedes summer. Resilience is not the meaning of spring.

 - He sprang up in the air with his medal showing it to cheering crowd in the stadium.(Leap)
 - An Idea sprang up in my mind and I turned it into reality by my hard work.(Strike)
- (c) Mock is to ridicule, imitate and to simulate. Mock to deceive, delude or disappoint. Counterfeit also carry same meaning as mock.

 - It is a trend now: new generation always mock the ways of previous generation without any reason.
 - A mock drill was conducted to fight terrorist attack in Delhi Metro yesterday.
- (a) Sift means to examine and to separate on basis of this examination to separate and retain the coarse parts of (flour, ashes etc) with a sieve. But it is not used for improvement or change.

 - Director sifted the candidates for the job. (distinguish)
 - Special team of investigators sift the evidence (check) (to examine closely).
- (a) Cut is to separate. In economics, cut is used for giving a sense of reduction. For example - a cut in taxes. Cut is also used as to harm. But it is not used for style. Although It is a slang to say 'hair cut'

 - Mother cut the cake in two pieces and gave me one.
 - A cut of 2% in import duties can be expected in the next budget.
- (d) Lift if used as verb is to pick. Lift as a machine is used to pick people or material. Lift is also used in career terminology for giving a higher position.

 - Metro train was to leave in 2 minutes from the platform so we both ran towards the lift going from ground level to platform level and managed to get entry.
 - Someone lifted his bag from the car as one window remained open when car was parked at the parking which had no attendant (to steal).
 - This achievement can lift his career to next position.
- (e) Temper (verb) means to modify and to show the tone as noun. Other options are not right.

 - Someone has tempered with evidence last night. (modify)
 - His temper is unpredictable.(behavior)
 - Temper of his writing style is positive.(tone)
- (e) Practice is to repeat something to become expert. It is a habit. In law, it means procedures of law in practice used for over the centuries. In law, accountancy or in medical this is used to represent a profession.

 - To learn this dance step I have to practice a lot.(Repeat)
 - He is doctor by profession and his practice these days is on right track. (Profession)
 - It is his daily practice to come late and then give absurd reasons.(habit).

11. (a) Something made by hand is called craft. Craft means skillful. In other sense it is also used to denote deception. Craft in engineering also means transport means like aircraft, space craft.
- It was not the Chamber of Commerce that crafted the public policies (designed)
 - There is Asia's biggest craft market in India. (hand made)
 - Space craft in orbit of Mars was launched from the ISRO base in Karnataka. (Transport)
12. (a) Court meetings for trial of accused are called hearings in language of law. Hearing is also used as to give heed to someone's problem. Animals including human beings have sensory organs for hearing. Hearing is also used for giving opportunity.
- His next hearing is in Supreme Court on Monday, (trial).
 - That accident rendered him hearing impaired (sense).
 - He should give me a hearing to my problems as he is my senior.
13. (b) Flock means to assemble, to throng. But it is not a name of species.
- A flock of sheep (group)
 - Youngsters flocked around John Abraham who came to their college for promotion of his next film. (assembled)
14. (d) Impression is to put effect or mark on something to leave imprints.
- First impression is not the last impression but the lasting impression. (effect)
 - There is some problem with keyboard; it is giving inverted impressions.
 - Do not try to impress me with your silly ways.
15. (b) Press means to squeeze and to iron. In sports Racket gripper is also called as a press. Group of media persons is also known as Press.
- Finance Minister is pressing India's point with US. (to push for)
 - Role of electronic media and press is important in any democracy.
 - My press is not working today can you iron my shirt please?
 - Entry is free for press. (Media personnel)
16. (a) Punch means a clenched fist. An old drink or beverage is also called as Punch. In machine tools, punching machine is used as piercing tool. As a verb it is used as blow.
- Punch is a tool for making holes in metal sheets.
 - Indian Boxer registered final punch on the face of Canadian Boxer to gain winning point.
 - An old seasoned wine is a punch to swear by.
17. (c) Tort is to damage and to be a liability.
- A tort, in common law jurisdictions, is a wrong that involves a breach of a civil duty owed to someone else.
18. (c) Master is an employer. A skillful person is also called master. Person with master's degree is also called master.
- He is master of his work.
 - He has completed his Masters from California.
 - Almighty is master of all of us and we are all his servants.
 - Sachin is a master blaster.
19. (a) Only option (a) is correct in meaning. Notice is not used as other options.
- Principal has issued a notice in this regard.
 - It has come to our notice that some people are not attending classes on regular basis.
 - As we entered the school a notice board welcomed us.
20. (a) Jerk means
1. To give a sudden quick thrust, push, pull, or twist to.
 - He threw away the insect with a jerk to his hand.
 2. To utter abruptly or sharply.
 - Jerked out the answer.
 3. To make and serve (ice-cream sodas, for example) at a soda fountain.
 4. Sports- to press (a weight) overhead from shoulder height in a quick motion
He jerked with his maximum but only able to send the weight more than 10 m.
21. (c) Meaning of Matter -
1. (a) Something that occupies space and can be perceived by one or more senses; a physical body, a physical substance, or the universe as a whole.
 - Everything in this world is made up of same matter.
 - (b) Physics something that has mass and exists as a solid, liquid, gas, or plasma.
 2. A specific type of substance: inorganic matter.
 - Organic matter is different from inorganic matter as it has life in it.
 3. Discharge or waste, such as pus or feces, from a living organism.
 4. The substance of thought or expression as opposed to the manner in which it is stated or conveyed.
 5. A subject of concern, feeling, or action
22. (d) Meaning of Present
1. A moment or period in time perceptible as intermediate between past and future; now.
 - One should live in present moment.
 2. Grammar- The present tense.
 3. Existing or happening now; current
23. (a) Meaning of Hamper -
To prevent the free movement, action, or progress of A large basket, usually with a cover
- New policy of tax shifting can hamper the bubbling industrial sector.
 - His boyfriend sent her a big gift hamper on her birthday.

24. (e) Meaning of PLACE -
- An area with definite or indefinite boundaries; a portion of space.
 - A business establishment or office.
 - to put
He placed the ball in between two fielders with this magnificent shot.
25. (a) Meaning of Dent-
- A depression in a surface made by pressure or a blow:
 - A dent in the side of a car.
 - A significant, usually diminishing effect or impression: The loss put a dent in the team's confidence.
 - Irresponsible statement like this has dented his image.
 - Informal Meaningful progress; headway
 - He has not made a dent in his carrier for last some years.
26. (a) Meaning of Strike -
- To hit sharply, as with the hand, the fist, or a weapon.
 - To penetrate or pierce
 - Nail got fixed by striking with hammer.
 - (a) To collide with or crash into
 - To make a military attack on; assault.
 - To cause to become by or as if by a blow
27. (d) Meaning of Will -
- To decide on; choose.
 - To yearn for; desire
 - I cannot go against his will.
 - To resolve with a forceful will; determine.
 - To grant in a legal will; bequeath
 - His has given everything to his son in his will.
28. (c) Meaning of Deep -
- Far distant down or in:
 - Deep in the woods.
 - Coming from or penetrating to a depth:
 - a deep sigh.
 - Sports Located or taking place near the outer boundaries of the area of play:
 - deep left field.
 - Extending a specific distance in a given direction:
 - snow four feet deep.
 - Rich and intense in shade. Used of a color
 - Colors are so deep in this painting that effect our eyes.
29. (d) Meaning of Step -
- To put or press the foot
 - He stepped out with his daughter.
 - To shift or move slightly by taking a step or two
 - Can you please shift two steps on your right to adjust me on the birth?
 - To walk a short distance to a specified place or in a specified direction
 - He took some steps towards well and then suddenly turned back to surprise us.
4. To move with the feet in a particular manner
 - An important lesson in modeling is step with confidence on ramp.
5. To treat someone with arrogant indifference
 - His step motherly attitude disappointed me.
30. (d) Meaning of Turn -
- To move around an axis or center; rotate or revolve.
 - On turning on its axis Earth turns around the Sun in its orbit.
 - To progress through pages so as to arrive at a given place
 - He turned the pages of book to search for a particular question.
 - To change or reverse one's way, course, or direction
 - People thought that killing wave has gone but it turned towards them after stopping for some time.
 - To convert to a religion.
 - To depend on something for success or failure; hinge
 - Ram always turns to me for help in any type of need.
31. (c) Meaning of FLAT-
- Having a horizontal surface without a slope, tilt, or curvature.
 - Having a smooth, even, level surface
 - Wicket of Melbourne is a flat wicket.
 - This is a flat surface.
 - Lacking interest or excitement; dull
 - Apartment
 - We are living in DDA flat which has three bedrooms with attached toilets.
32. (b) Meaning of BOOK -
- A set of written, printed, or blank pages fastened along one side and encased between protective covers.
 - A set of prescribed standards or rules on which decisions are based: runs the company by the book.
 - To engage - He has been booked to Manager's office for his mistake.
33. (a) Meaning of FIT -
- a. To be the proper size and shape for ,suit
 - This suit is fit for my body.
 - This suit will fit me.
 - To be in conformity or agreement with
 - Quality means fit for use.
 - To make suitable; adapt
 - He gave a fitting reply to clerk ' question.
 - To make ready; prepare
 - Is the ground match fit?
 - To equip; outfit
 - American planes are fitted with emergency landing kits for each passenger.
 - To insert or adjust so as to be properly in place
 - Fit the part within missing link and you will get the breakthrough.

34. (d) Meaning of COOL -
1. Neither warm nor very cold; moderately cold
 2. Giving or suggesting relief from heat
 3. Marked by calm self-control
 4. Marked by indifference, disdain, or dislike; unfriendly or unresponsive
 5. Of, relating to, or characteristic of colors, such as blue and green, that produce the impression of coolness.
35. (a) Meaning of CAN -
1. Used to indicate physical or mental ability
 2. Used to indicate possession of a specified power, right, or privilege
 3. Cylindrical container
 - Please pass one more bear can to me.
36. (a) Meaning of Handle -
1. To touch, lift, or hold with the hands.
 - Handle with care.
 2. To operate with the hands; manipulate.
 - He handled the situation badly.
 3. To deal with or have responsibility for; conduct
 - His customer handling is not good.
 4. (a) To direct, execute, or dispose of
(b) To manage, administer to, or represent
 - Chief Minister handled the raging crowd pretty well.
 5. To deal or trade in the purchase or sale of
 - He handles with Chinese firms in more than one product range.
37. (e) Meaning of Inject-
1. To force or drive (a fluid) into something
 - Hot plastic grains were injected in the molding machine to give desired shape.
 2. (a) Medicine To introduce (a drug or vaccine, for example) into a body part, especially by means of a syringe.
(b) To treat by means of injection
 - He injected the medicine in his blood through a syringe.
 3. To introduce into conversation or consideration
 - He injected the topic of foreign relations.
 4. To place into an orbit, trajectory, or stream.
 - NAYAN was injected into Mar's orbit yesterday by Indian on its indigenous technology.
38. (a) Meaning of TENT-
1. A portable shelter, as of canvas, stretched over a supporting framework of poles with ropes and pegs.
 2. Something resembling such a portable shelter in construction or outline
 - Refugees have taken shelter in tents provided by the Israel.
 3. To pay heed to.
 - Tent on his speeches to get an idea of his thinking process.
4. To attend; wait on.
 - People tented on for the actor but he did not reach.
39. (d) Meaning of Crop -
1. (a) Cultivated plants or agricultural produce, such as grain, vegetables, or fruit, considered as a group
(b) The total yield of such produce in a particular season or place
 2. A group, quantity, or supply appearing at one time
 3. A short haircut.
 4. An earmark on an animal.
40. (c) Meaning of GLANCE -
1. (a) To direct the gaze briefly
(b) To move rapidly from one thing to another. Used of the eyes.
 2. To shine briefly; glint.
 3. To strike a surface at such an angle as to be deflected
 4. To make a passing reference; touch briefly
- Usage -**
- He glanced through the report and nodded in positive.
 - It glanced in the sky for a brief period and then went missing in the night sky.
 - His casual glances will not help the issue.
41. (d) Meaning of Explosive -
1. of, involving, or characterized by an explosion or explosions
 2. capable of exploding or tending to explode
 3. Potentially violent or hazardous; dangerous
- Usage -**
- Two terrorists were arrested from the airport with lots of explosives.
 - Bomb can explode anytime.
 - Carrying explosives is prohibited in Delhi Metro.
 - He is of explosive nature.
42. (a) Meaning of CARRIAGE -
1. A wheeled vehicle, especially a four-wheeled horse-drawn passenger vehicle, often of an elegant design.
 2. Chiefly British A railroad passenger car.
 3. A baby carriage.
 4. A wheeled support or frame for carrying a heavy object, such as a cannon.
 5. A moving part of a machine for holding or shifting another part
 6. (a) The act or process of transporting or carrying
- Usage -**
- The Prince used to pass through the city in his royal carriage.
 - What is the rate of carriage?
 - Take care of movements of carriage.
43. (c) Meaning of TYPE -
1. A number of people or things having in common traits or characteristics that distinguish them as a group or class.

2. The general character or structure held in common by a number of people or things considered as a group or class.
3. A small block of metal or wood bearing a raised letter or character on the upper end that leaves a printed impression when inked and pressed on paper.
- Usage:**
- Different types of cultures are found in India.
 - This is type of machine.
 - This is a typing machine
 - What type of person are you?
44. (a) Meaning of ADDRESS-
1. To direct (a spoken or written message) to the attention of
 2. To mark with a destination
 3. To deal with
- Usage:**
- Minister addressed the crowd.
 - What is your address?
 - He has addressed the real issue.
45. (b) Meaning of PLAY -
1. To occupy oneself in amusement, sport, or other recreation
 2. To act, especially in a dramatic production.
 3. Music-
 - a. To perform on an instrument
 - b. To emit sound or be sounded in performance
 4. To move or operate freely within a bounded space, as machine parts do
- Usage -**
- Cricket is played all over the world. (a game)
 - He played with my emotions. (deceive)
 - He plays guitar well. (operate)
 - Romeo and Juliet is the name of a PLAY. (drama)
 - Machine parts have a play and soon will become out of centre. (looseness)
46. (a) Meaning of RUN -
1. To move swiftly on foot so that both feet leave the ground during each stride.
 2. To retreat rapidly; flee
 3. To compete in a race for elected office
 4. To move freely, on or as if on wheels
- Usage -**
- Run fast to get there in time.
 - His run as Mayor will end today.
 - It runs 15 kilometers in one liter.
 - Running is his profession.
47. (e) Meaning of Fitting -
1. To be the proper size and shape for
 2. To be appropriate to; suit
 3. To be in conformity or agreement with
 4. To insert or adjust so as to be properly in place
- Usage :**
- Fittings of rail are missing and can cause an accident. (accessories)
 - He gave her a fitting reply. (Appropriate)
 - This suit is fitting his personality well.
 - Take my fit and then make a statue of me.
48. (c) Meaning of OBJECTIVE -
1. Having actual existence or reality.
 2. Uninfluenced by emotions or personal prejudices
 3. Grammar - Of, relating to, or being the case of a noun or pronoun that serves as the object of a verb.
- Usage:**
- What is the objective of human life?
 - Objective response is desired. (to the point)
 - A judge should be objective in his approach. (unbiased)
 - It is objective that he is not going to live for long. (factual)
49. (a) Meaning of CLASS -
1. A set, collection, group, or configuration containing members regarded as having certain attributes
 2. A division based on quality, rank, or grade
 3. A social stratum whose members share certain economic, social, or cultural characteristics: the lower income classes.
 4. A level of academic development, as in an elementary or secondary school.
 5. A group of students or alumni who have the same year of graduation
50. (d) Meaning of FREE -
1. Not imprisoned or enslaved; being at liberty.
 2. Not controlled by obligation or the will of another
 3. Having political independence
 4. Not subject to a given condition; exempt
 5. Not subject to external restraint
 6. Costing nothing; gratuitous
 7. Not occupied or used
- Usage :**
- In this package, only lunch is free.
 - Free movement of terrorists is dangerous for citizens.
 - Get freed from all bondages and unite with your true self.
 - India got free from British rule in 1947.
 - No freebies are offered by companies in non-festive season.



Sentence Completion

In this section, a sentence is given with a blank space that can be filled with multiple options while giving same sense and intended meaning to the situation described in sentence. Student has to mark the option which has correct pair of words to suit the sentence out of five choices. Six option words are given for the blank.

Main requisite for doing well in this particular section requires a rich vocabulary. This knowledge of words should be more from the usage point of view. A student shall be able to recognize how some words, although not synonymous yet highly replaceable.

While reading a book, newspaper or magazine one should always try to find out certain combinations of words. Sometimes a particular word can be attached with only other specific verbs or adjectives.

See the word conclusion it can be used in a certain way with certain verbs only.

Conclusion- Reach a conclusion, draw a conclusion

One will find word 'conclusion' used in this way more often than not in all reading materials used by all.

Some logic also goes in for solving these questions.

See the other word License-

License can be allotted or sanctioned. There are no other verbs that fit so well with process of obtaining a license.

Now have a look at following examples of adjectives which you will find interesting and helpful to solve questions. Have a stock of these and it would work like a support system for you. A list of the combinations has to be formed and revised daily to strengthen the usage based vocabulary application.

See some of the combinations that are usually seen in reading materials.

Technology-current, existing, latest, obsolete, emerging, unmatched, unbeatable, state of art.

Warning-dire, grim, ominous, stark.

Withdrawal-sudden, imminent, strategic, ignominious.

Slope- Precipitous, steep, gradual.

Recollection -Vivid, faint, hazy.

Shout- muffled, raucous, triumphant.

Suggestion-Constructive, Practical, Outrageous, Preposterous, tentative.

Proof -Conclusive, incontrovertible, irrefutable, tangible

Students should try to locate more of such combinations while reading and note them down in their diaries.

In this section of book such questions of exam level have been given for your practice. These are more or less daily usage words used in day today writings by bank officers, clerks and other professionals and similar words are expected to appear in exam.

EXERCISE

Directions (Qs. 1-50): The following questions consist of a single sentence with one blank only. You are given five or six words as answer choices you have to pick up correct pair in option, which will make the sentence meaningfully complete.

1. Despite slowing loan growth and Central Bank is taking steps to ensure liquidity, banks are borrowing record amounts of money from the central bank.

(1) Sufficient	(2) Abundant
(3) Unprecedented	(4) Enough
(5) Mandatory	(6) Redundant
(a) 1&4	(b) 1&2
(c) 5&3	(d) 5&4
(e) 1&3	
2. Many banks have decided not to mobilize high cost deposits and have therefore increased their on borrowings from the Central Bank.

(1) Dependency	(2) Reliance
(3) Faith	(4) Independence
(5) Future	(6) Trust
(a) 2 & 1	(b) 2&6
(c) 3&5	(d) 6&1
(e) 3&5	
3. Experts said Indian debt yields were high and could attract investors in developed Western markets, many of whom could borrow funds at low single digit rates.

(1) Unprecedentedly	(2) Illogically
(3) Irrationally	(4) Alluringly
(5) Fearfully	(6) Falsely
(a) 2 & 1	(b) 1&4
(c) 3&5	(d) 6&1
(e) 3&5	
4. IIM Calcutta, which its final placements on Monday, expects consulting to be strong.

(1) Kick starts	(2) Kicks off
(3) Announces	(4) Hosts
(5) Offers	(6) Pushes
(a) 2 & 1	(b) 1&4
(c) 3&5	(d) 2&3
(e) 3&5	
5. Supreme Court has cancelled many licenses by the previous Telecom Minister.

(1) Distributed	(2) Sanctioned
(3) Divided	(4) Granted
(5) Awarded	(6) Utilized
(a) 2 & 4	(b) 1&4
(c) 3&5	(d) 6&1
(e) 3&5	
6. The investigators are also not the possibility of a local, most likely a Shia trained terrorist group.

(1) Ruling out	(2) Pulling out
(3) Doubting	(4) Putting out
- (5) Leaving
- (6) Kicking out

(a) 2 & 1	(b) 3&4
(c) 1&4	(d) 6&1
(e) 3&5	
7. Our understanding is that elections would be held as early as considered by all concerned.

(1) unavoidable	(2) Needed
(3) Feasible	(4) Demanded
(5) Grilled	(6) Loathed
(a) 3 & 1	(b) 1&4
(c) 3&5	(d) 6&1
(e) 3&5	
8. The new management came out with a that could put back on growth trajectory.

(1) Plan	(2) Road map
(3) Strategy	(4) Formula
(5) Logic	(6) Tool
(a) 2 & 3	(b) 1&2
(c) 3&5	(d) 6&1
(e) 3&5	
9. Timely delivery is a given in a courier company.

(1) Vice	(2) Specialty
(3) System	(4) Faith
(5) Virtue	(6) Feature
(a) 2 & 1	(b) 1&5
(c) 3&5	(d) 6&1
(e) 3&5	
10. Tata has urged the Supreme Court to order a investigation by an independent agency.

(1) New	(2) Fresh
(3) Vital	(4) Re
(5) Fulsome	(6) Secondary
(a) 2 & 1	(b) 1&4
(c) 3&5	(d) 2&1
(e) 3&5	
11. The two parties released a press statement in the evening.

(1) Combined	(2) Compromised
(3) Joint	(4) Single
(5) Fabricated	(6) Handpicked
(a) 2 & 1	(b) 1&4
(c) 3&5	(d) 6&1
(e) 3&1	
12. When the stock market is negative .Funding, a critical element for scale, becomes a prized commodity.

(1) Emotion	(2) Trend
(3) Sentiment	(4) Feeling
(5) Curve	(6) Figure
(a) 2 & 3	(b) 1&4
(c) 3&5	(d) 6&4
(e) 3&5	

13. The powers of Centre appear to be a/an on the powers of State Government.
 (1) Crouching (2) Infringement
 (3) Invading (4) Cutting
 (5) Brushing (6) Extension
 (a) 2 & 3 (b) 1 & 4
 (c) 1 & 2 (d) 6 & 1
 (e) 3 & 5
14. The economy has been roughly for about two years.
 (1) Inclined (2) Flat
 (3) Curved (4) Sphere
 (5) Round (6) Down
 (a) 2 & 1 (b) 1 & 4
 (c) 2 & 6 (d) 6 & 1
 (e) 3 & 5
15. The before the board is that if it accepts his demand or not.
 (1) Confusion (2) Dilemma
 (3) Fear (4) Threat
 (5) Opportunity (6) Interest
 (a) 2 & 6 (b) 1 & 2
 (c) 3 & 5 (d) 6 & 1
 (e) 3 & 5
16. Building reputation in market should be seen as a agenda for growth.
 (1) Persistent (2) Continuous
 (3) Consistent (4) Urgent
 (5) Jaded (6) Final
 (a) 3 & 1 (b) 1 & 4
 (c) 3 & 5 (d) 6 & 1
 (e) 3 & 5
17. We seek a/an for our daughter who is a divorcee and 34 years of age.
 (1) Match (2) Interest
 (3) Alliance (4) Partner
 (5) Permanence (6) Joint
 (a) 3 & 1 (b) 2 & 4
 (c) 3 & 5 (d) 6 & 5
 (e) 3 & 2
18. India has moved a step to lifting the ban investments from Pakistan.
 (1) Away (2) Closer
 (3) Near (4) Further
 (5) Back (6) Positive
 (a) 2 & 3 (b) 1 & 4
 (c) 3 & 5 (d) 6 & 1
 (e) 3 & 5
19. As Finance Minister steps in, will the Economy?
 (1) Step in (2) Step up
 (3) Step ahead (4) Step down
 (5) Step off (6) Step on
 (a) 2 & 1 (b) 1 & 4
 (c) 3 & 5 (d) 2 & 3
 (e) 3 & 5
20. Lifting the ban from the investment from the long time enemy Pakistan will be a goodwill
 (1) Step (2) Virtue
 (3) Gesture (4) Offer
 (5) Move (6) Threat
- (a) 1 & 3 (b) 1 & 4
 (c) 3 & 5 (d) 6 & 1
 (e) 3 & 5
21. It will take at least five years for the electronic media sector to
 (1) Complete (2) Grow
 (3) Flourish (4) Propagate
 (5) Survive (6) Die
 (a) 2 & 3 (b) 1 & 4
 (c) 3 & 5 (d) 6 & 1
 (e) 3 & 5
22. Supreme Court took serious note of the on the protesters in Janpath ground done by police.
 (1) Tortures (2) Excesses
 (3) Beatings (4) Charges
 (5) Researches
 (a) 2 & 3 (b) 1 & 2
 (c) 3 & 5 (d) 2 & 5
 (e) 2 & 4
23. Indian Army is a well army.
 (1) Equipped (2) Trained
 (3) Guided (4) Supported
 (5) Provided (6) Reached
 (a) 2 & 5 (b) 1 & 2
 (c) 3 & 1 (d) 2 & 3
 (e) 2 & 4
24. Culprit Officers will the action after the decision of High Court.
 (1) See (2) Face
 (3) Read (4) Smell
 (5) Follow (6) Reap
 (a) 1 & 3 (b) 3 & 4
 (c) 4 & 5 (d) 1 & 2
 (e) 2 & 4
25. Manoj Tiwari with this century has his place in the Indian team for next tour.
 (1) Cemented (2) Stabilized
 (3) Plastered (4) Fixed
 (5) Approved
 (a) 1 & 2 (b) 1 & 3
 (c) 1 & 4 (d) 1 & 5
 (e) 2 & 4
26. Rare blue Eagle was after 90 years in Indian zoo.
 (1) Spotted (2) Discovered
 (3) Flown (4) Seen
 (5) Brought
 (a) 2 & 3 (b) 3 & 4
 (c) 1 & 2 (d) 1 & 5
 (e) 4 & 3
27. The bird is found between northeast Pakistan along the base of the Himalayas from Himachal to Bhutan.
 (1) Commonly (2) Usually
 (3) Rarely (4) Seldom
 (5) Often
 (a) 1 & 4 (b) 2 & 3
 (c) 3 & 4 (d) 2 & 1
 (e) 4 & 5

28. Centre an alert about a plan by leader of an outlawed fundamentalist outfit.
- (1) Issued (2) Declared
(3) Sounded (4) Cautioned
(5) Doubted
(a) Only (1) (b) 1&2
(c) 1&2&3 (d) 1&3&4
(e) All the options
29. Nina Gupta is a familiarin the fashion circles of city.
- (1) Personality (2) Leader
(3) Figure (4) Protagonist
(5) Name
(a) 1&5 (b) 1&2
(c) 1&2&3 (d) 1&3&4
30. Company has demandedmeasures to tackle the problem.
- (1) Adequate (2) Substantial
(3) Rational (4) Enough
(5) Sure
(a) Only (1) (b) 1&2
(c) 2&3 (d) 1&3
(e) 1&4
31. BBC representative said that their December episodethe country's charm, beauty and wealth along with its idiosyncrasies.
- (1) Announced (2) Portrayed
(3) Depicted (4) Pictured
(5) Confirmed
(a) 2&5 (b) 1&2
(c) 2&3 (d) 3&4
(e) 1&4
32. Wikipedia access to its widely used, user generated, free source content. No one was able to use it.
- (1) allowed (2) Blocked
(3) Blacked out (4) Increased
(5) Stopped
(a) 3&4 (b) 2&5
(c) 2&3 (d) 1&3
(e) 3&5
33. Out of the 6.5 million abortionsin 2010, 68% were performed by an unqualified person or in unsafe environment.
- (1) Recorded (2) Registered
(3) Counted (4) Performed
(5) Conducted
(a) 4&5 (b) 1&2
(c) 1&2 (d) 1&3
(e) 3&4
34. Mr. John has beenfor the top job at the ADB bank.
- (1) Shortlisted (2) Selected
(3) Appointed (4) Questioned
(5) Approved
(a) 2&3 (b) 1&2
(c) 1&4 (d) 3&5
(e) 1&2
35. The procedure adopted by the bank authorities was totallyas they did not follow the principles of natural justice.
- (1) Miscalculated (2) Flawed
(3) Irrational (4) Accurate
(5) In place
(a) Only (1) (b) 1&4
(c) 2&3 (d) 1&2
(e) 3&5
36. Delhi High Court directed RBI to respond to the plea ofcommissioner of Income tax.
- (1) Appointed (2) Sacked
(3) Removed (4) Selected
(5) Responsible
(a) 5&1 (b) 1&2
(c) 2&3 (d) 3&4
37. The High Court withdrew aapproval that allowed him to make numerous trips to hospitals in last 4 years.
- (1) Ordered (2) Pending
(3) Blanket (4) Prior
(5) False
(a) 3&4 (b) 1&2
(c) 2&3 (d) 1&3
(e) 3&5
38. You may beto see that many people sleep on the footpaths of Delhi in the bone chilling nights as well.
- (1) Astonished (2) Surprised
(3) Annoyed (4) Angry
(5) Speech less
(a) Only (1) (b) 1&2
(c) 2&3 (d) 1&3
(e) 2&5
39. The guard showedcourage and helped police to nab the robbers.
- (1) Defending (2) Exemplary
(3) Highest (4) Extreme
(5) Collected (6) Unprecedented
(a) 3&5 (b) 2&4
(c) 2&3 (d) 1&6
(e) All of the options
40. Imy felicitations to all officers and ranks of the National Disaster Relief Force and their families on the occasion of its Raising Day.
- (1) Show (2) Offer
(3) Extend (4) Sign
(5) Pay (6) Move
(a) 2 & 5 (b) 1&2
(c) 2&3 (d) 5&6
(e) 4&5
41. Our Company reserves the right to accept/reject any tender withoutany reason thereof.
- (1) Claiming (2) Assigning
(3) Notifying (4) Validating
(5) Giving (6) Disclosing
(a) 5&6 (b) 3&4
(c) 2&5 (d) 2&4
(e) 2&6

42. Hence you are requested to appearin court on the desired date.
- (1) Physically (2) In person
 (3) In self (4) As yourself
 (5) In front (6) In Proxy
 (a) 3&5 (b) 2&4
 (c) 1&2 (d) 3&4
 (e) 5&6
43. The Passengers are advised to not to try toenter/exit/obstruct the doors of metro trains.
- (1) Forcefully (2) Intentionally
 (3) Vehemently (4) Trespass
 (5) Unintentionally (6) Thrust fully
 (a) 1&6 (b) 2 &5
 (c) 1&4 (d) 6&3
 (e) 2&3
44. Railways has made itfor all passengers travelling in AC classes to carry an identity proof during journey to stop misuse of tickets.
- (1) Mandatory (2) Optional
 (3) Compulsory (4) Advisable
 (5) Urgent (6) Implied
 (a) 3 &4 (b) 1&3
 (c) 2&3 (d) 4 &6
 (e) 5&4
45. A competitive environment isfor growth.
- (1) Desired (2) Necessary
 (3) Mandatory (4) Must
 (5) Requisite (6) Required
 (a) 2 &1 (b) 2&6
 (c) 3&5 (d) 6&1
 (e) 3&5
46. Growth in the second quarter willto announcement in the Budget regarding the subsidies, tax cuts and new initiatives.
- (1) Subject (2) Amount
 (3) Revolve around (4) Yield
 (5) Prosper (6) Reliable
 (a) 2 &1 (b) 1&4
 (c) 3&5 (d) 6&1
 (e) 3&1
47. To achieve this, one of thepolicy measures would be to reduce our tarrif barriers.
- (1) Major (2) Preeminent
 (3) Prominent (4) Foremost
 (5) Leading (6) Serious
 (a) 2 &1 (b) 1&4
 (c) 3&5 (d) 3&1
 (e) 3&5
48.of competition in product markets would enable India reap both static efficiency gains and dynamic efficiency gains.
- (1) Promotion (2) Enhancement
 (3) Increment (4) Stimulation
 (5) Simulation (6) Prevention
 (a) 2 &1 (b) 1&4
 (c) 1&4 (d) 6&1
 (e) 3&5
49. All these conclusionsfrom the unit level data in National Statistical Surveys done in last year.
- (1) Draw (2) Emerge
 (3) Arise (4) Follow
 (5) Inject (6) Reach
 (a) 2 &3 (b) 1&4
 (c) 3&5 (d) 6&1
 (e) 3&5
50. Most of this increase has come due toin corporate and public savings.
- (1) Change (2) Improvement
 (3) Amalgamation (4) Turnaround
 (5) Circumspection (6) Speculation
 (a) 2 &4 (b) 6&4
 (c) 3&5 (d) 4&1
 (e) 3&6

ANSWER KEY

1	(a)	6	(c)	11	(e)	16	(a)	21	(a)	26	(b)	31	(d)	36	(c)	41	(c)	46	(e)
2	(a)	7	(a)	12	(a)	17	(a)	22	(e)	27	(d)	32	(b)	37	(a)	42	(c)	47	(d)
3	(b)	8	(b)	13	(c)	18	(e)	23	(b)	28	(d)	33	(a)	38	(d)	43	(a)	48	(c)
4	(d)	9	(b)	14	(c)	19	(d)	24	(d)	29	(a)	34	(e)	39	(b)	44	(b)	49	(a)
5	(a)	10	(d)	15	(b)	20	(a)	25	(c)	30	(c)	35	(d)	40	(c)	45	(b)	50	(d)

Hints & Explanations

- (a) Sentence indicates that central bank is taking steps to increase liquidity to a certain level. In the blank - enough, sufficient or abundant can fit. But the correct combination is given only in option (a).
- (a) Reliance/faith can fit in the blank as sentence discusses dependence on a bank. Other options are not valid with reference to the sentence.
- (b) This blank is followed by word 'high' which is logical with all the options. But debts cannot be false. Illogical or irrational is also not appropriate as experts must have some base for statement. Only unprecedentedly and alluringly fit as attraction to investors is also discussed in later part of sentence.
- (d) Kicks off and announces are appropriate fillers for the blank space in reference to a college starting its placement seasons difference.
Kick start to do sth to help a process or project start more quickly. The Govt's attempt to kick start the economy has failed.
- (a) Licenses are granted or sanctioned not distributed or divided. Utilized is out of context. Awarded also fits with license. But it has no valid pair with it.
- (c) Sentence says that the possibility of a particular terrorist group cannot be ruled out or put out.
- (a) Elections can be unavoidable or related to feasibility but not grilled/loathed or held on demand.
- (b) Management is related to planning or a strategy or a road map. Even formula can fit. So we have to search for an option with right combination.
- (b) Timely delivery is a virtue or specialty that can be linked with a courier company.
- (d) Investigation can be started with fresh outlook hence can be new or fresh. Other options do not have valid pair.
- (e) Joint statement by two parties is right expression. 'Combined' can also replace the 'joint'.
- (a) Stock market has sentiment of investment. But not emotions. Trends in stock markets are also scaled or measured. Feelings can also fit.
- (c) Conflict of powers between two authorities is discussed where one is infringing/ crouching on the powers of other.
- (c) Low economic activity is synonym to flat/down.
- (b) Board is at a point of making a decision but is in dilemma/confusion. Fear or threats do not adjust.
- (a) Consistent or persistent both give same sense to the sentence.
- (a) For marriage advertisement - match or alliance are perfect words.
- (e) Sentence hints for improvement of relationships so closer or near are correct fillers for the blank space.
- (d) Sentence asks a question that intervention by Finance minister will bring what results for economy. Hence 'step up' or 'step ahead' are correct. Other options are not correct as the meaning differs completely.
- (a) 'Lifting the ban' is a step/gesture/move.
- (a) Sentence is about the growth and future of media.
- (e) Grammatically with 'On' only Excesses and Charge fits in.
- (b) With ARMY - equipped and trained are appropriate. Other word which can be correct is 'reached' but no proper pair is given.
- (d) Other words do not fit in context. Smell, reap are out of context cannot be used for the officers.
- (c) For next tour - is being stated so fix can come in blank and cemented means to strengthen' so it can also fit in the blank space of sentence referring to a player's selection in team.
- (b) This pair best represents the idea best as words like 'rare' and '90 years' goes in line with this pair of words. Discovered and invented are wrong. Flown or brought do not fit in either.
- (d) This pair is appropriate in grammar and context as gives proper sense to the sentence referring to a bird found in a specific area.
- (d) With alert -sounded and cautioned fit best from the options.
- (a) A well known 'name' is treated as 'figure'.
- (c) Problem can be tackled with only 'adequate' measures in 'enough' quantity.
- (d) Episode is portrayed to 'depict' and 'pictured' for the same purpose.
- (b) As access is prevented so blocked /stopped can fit.
- (a) Illegal thing is not recorded or registered. It can be performed or conducted.
- (e) For a post through different processes - selection or short listing is done.

Sentence Completion

35. (d) Procedure can only be flawed or miscalculated. Other options raise a conflict in first and second part of the sentence.
36. (c) All options can fit. Only proper option with proper combination has to be selected.
37. (a) Prior /Blanket fits in grammatically and goes well with sentence.
38. (d) By seeing people sleeping on road in winter is annoying or make angry or render someone speechless or surprise so all the options can fit. But the best combination is this.
39. (b) With courage exemplary and extreme are correct. 'Unprecedented' is also good with 'courage' but is not given in the options with correct pair.
40. (c) Felicitations are offered or extended or paid.
41. (c) With 'reason' - 'assign' /notifying/giving/disclosing all are appropriate.
42. (c) Other options are not right in context and do not give desired meaning to the sentence.
43. (a) Forcefully and Thrust fully both carry similar meaning.
44. (b) Railways is authority and has made it mandatory/ compulsory to carry the identity proof with it.
45. (b) In competitive environment growth prospers. So It is necessary/requisite/required. Must is impelling and doubtful.
46. (e) Only subject and revolve around fit in. Other options are out of sync.
47. (d) Major and prominent both carry same sense and gives proper meaning to sentence.
48. (c) Sentence advocates the promotion of or stimulation of the competition.
49. (a) With conclusion - arise or emerge is suitable replacements.
50. (d) Sentence is in positive sense and change /turnaround is in sync with the situation of sentence.



Passage Completion

In this type of questions, a small paragraph will be given with a deleted sentence. This sentence can be at last or at the beginning or in between the passage. A student needs to identify the best sentence which completes the paragraph from the answer options. Even though there are several general principles and some ideas about answering these questions, most of the times a student finds the so called rules may not apply to these questions. In several instances, besides, identifying the author's style, way of thinking, tone will be difficult with just one paragraph. So it requires a lot of concentration to answer the paragraph completion questions.

In a test of English language in Bank Exams for PO, this question type is a new introduction; passage completion plays a very important role as it has a significant role in the verbal section of the test with 5 questions. Once you have spent crucial exam time on these, there is no logic to answer it incorrect. Hence a lot of practice should be done to attempt these questions with accuracy and speed.

It tests the ability of a student to logically connect the different parts of a passage. It also tests certain reasoning skills

of the student. Para-completion is nothing else but a test of your comprehension skills. All it asks of you is to complete a missing line from a paragraph. Following tips can be followed while solving these questions-

- Identify the theme of the passage.
- Identify the continuing flow of thought.
- Continue the thread of thought keeping in mind the already discussed matter.
- Try to connect the thoughts of passage.
- Judge your option on location of blank space.
- Relate the missing part with preceding and following sentences.
- Do not introduce new things.
- Do not deviate from the real issue of the passage.
- Judge the passage tone and compare it with the tone of the option.

Sufficient number of good questions is given with detailed solutions to increase your proficiency in this section.

EXERCISE

Directions (Qs. 1-49): In each of the following questions a short passage is given with one of the lines in the passage missing and represented by a blank. Select the best out of the five answer choices given, to make the passage complete and coherent.

1. There are many industries where India has an advantage because of relatively lower Costs of all forms of manpower—whether it is professional or factory labour. However, while this can give initial advantage, it should not be taken for an enduring advantage due to the following reasons. One as products become more sophisticated, labour as cost factor becomes less and less important. Two, the differences in costs are narrowed down through higher level of automation. There, in processes that require large number of cheap labour, the industry is bound to shift its operation along; the line of the ever-declining scale of poorer countries. So a poorer country than India can eventually overtake us with yet cheaper labour. Therefore, when one has established an export market on the basis of cheaper manpower
 - (a) One has to be vigilant to make sure that one builds up other advantages to compensate for the inevitable loss of this temporary advantage.
 - (b) One has to be vigilant to make sure that this advantage should not be given away
 - (c) One need not be vigilant as there is no competition in near future
 - (d) There is need of caution to see the variations in labour charges of other countries
 - (e) There is need to build this cheap labour on regular basis

2. Standards and standardization, quality systems, certification and inspections, measurement systems, testing laboratories, their accreditation and calibration service, production and supply of standard reference materials etc, are all important building blocks. Quality control through the agency of the Export Inspection Agency leaves much to be desired. It is often alleged that EIA is actually playing a retrograde role, although inadvertently.

(I) The list of items subject to compulsory export inspection need to be reviewed and shortened. A trimmer EIA list essential for a modicum of efficiency. (II) EIA should use international agencies to train people and update the equipment available for those limited items. (III) The quality development process need to be professionalized by making use of quality development skills and managerial methods available around the world. Overall, per-export inspection needs to be greatly simplified, both in the interests of speedier clearance and less harassment for the exporters as well as better administration.

 - (a) EIA is to be scrapped and new council should be made with following improvements.

- (b) This is happening in absence from a guiding international agency which can suggest a number of measures.
 - (c) This needs to be corrected.
 - (d) EIA is short of experience and therefore such a negative effect.
 - (e) Why was EIA formed in the first place ...?

3. The International Monetary Fund (IMF), the World Bank and the International Trade Organization were conceived at the Breton woods Conference in July, 1944 as institutions to strengthen international economic cooperation and to help create a more stable and prosperous global economy. While the IMF and the World Bank come into existence and started functioning from 1946, the International Trade Organization could not be set up. Instead, the General Agreement on Tariffs and Trade (GATT) was set up in 1947. Through successive round of negotiations, the GATT got transformed into what has come to be known as the World Trade Organization (WTO) that started functioning from January 1, 1995. The various institutions have set up to govern international economic relations. While all the institutions work in close coordination with each other.
 - (a) Each of the institutions is independent
 - (b) Each of these institutions works with different focus in different direction
 - (c) Each of these institutions has its own specific area of responsibilities
 - (d) Each of these institutions has major role to play in each other's work
 - (e) Each of these institutions has imprint of its work on other's performance

4. ADB finances principally specific projects in the region. It may make loans to or invest in the projects concerned. It may also guarantee loans granted to the projects. Most of the loans granted are hard loans or tied loans. However, loans form special funds set aside by the ADB up to 10 per cent of its paid-up capital are granted under soft loan term for which purpose it has set up a separate window known as the Asian Development Fund (ADF). Soft loans are normally granted to projects of high development priority requiring longer periods of repayment with lower rates of interest. ADB normally finances foreign exchange cost of the project and the loan is repayable in the currency in which it is made. India has been eligible for assistance both under the ADB and its soft loan window, ADF. However, it has been getting large assistance under the ADB.
 - (a) But India does not need any assistance from ADB.
 - (b) But India is not a member of ADB
 - (c) But India is not interested in ADB aids.
 - (d) But India has stayed away from the ADB
 - (e) But India is against ADB.

5. In the planned economy of India, foreign capital has been assigned a significant role, although it has been changing over time. In the earlier phase of planning, foreign capital was looked upon as a means to supplement domestic investment. Many concession and incentives were given to foreign investors. Later on, however, the emphasis shifted to encouraging technological collaboration between India entrepreneurs and foreign entrepreneurs. In more recent times, efforts are on to invite free flow of foreign capital
- It would be instructive in this background to examine the Government's policy towards foreign capital.
 - It would be instructive in this background to examine the World Bank's policy towards foreign capital in India
 - Let us keep our fingers crossed and look for the next parliamentary session for debate on the issue
 - Issue of Foreign capital is fragile and can be discussed only with relevant statistical figures in hand
 - New changes are waiting in the line.
6. FDI may actually be harmful to the recipient country if the economy is highly protected and foreign investment takes place behind high tariff walls. This type of investment is generally referred to as the tariff-jumping' variety of foreign investment, whose primary objective is to take advantage of the protected markets in the host country. The longer the Government shields its home market with tariffs..... and more acute will be the conflict between it and the domestic entrepreneur. In view of this, an appropriate policy framework must respond to two conflicting objectives: the need to liberalize rules governing such investment in view of the growing integration of the world economy, and the need to ensure that such investment has positive effects on the country's economy and does not lead to negative welfare effects.
- The more the foreign countries to apply pressure on India
 - The more the foreign money to come in India
 - The more the foreigner will come to exploit that protected market
 - The more the foreigner to protest against that government
 - The more the foreigner will raise the issue on international platform
7. The Indian constitution provides for demarcation of functional responsibilities and finances between the Centre and the States. The provision of public services has been largely entrusted to the States. These mainly relate to law and order, public health, sanitation, water supply and agriculture. The States have to concurrently take certain functions in areas such as education, infrastructure. Their share in combined expenditure (Centre and States) on social services is about 85 per cent, while in the case of economic services; it is about 60 per cent. Thus, the States have the primary responsibility to undertake tasks pertaining to developing social and economic infrastructure. However, their ability to undertake such development functions is critically determined by their financial position. The growing importance of state finances in the macro-economy is evident from the fact..... The size of overall development expenditures of the states has always been higher than that of the Centre and the difference has got widened rather significantly in the 1990s.
- That the States have overrun their planned expenditures and lacking freedom of further development
 - That the States have reached at the peak of their finances and overtaken Centres in revenues
 - That Centre borrows money from the states for its expenditures on educational and social welfare programmes
 - That the total expenditures of State governments has even undertaken those of the Centre
 - That the total expenditures of State and Center has widened unprecedentedly in 1990s.
8. A budget is a statement containing a forecast of revenues and expenditures for a period of time, usually a year. It is a comprehensive plan of action designed to achieve the policy objectives set by the Government for the coming year. A budget is plan and a budget document is reflection of what Government expects to do in future. While any plan need not be a budget, a budget has to be necessarily a pan. It shows detailed allocation to resources and proposed taxation or other measures for their realization. A budget is, however, not a balanced sheet (exhibiting total assets and liabilities) of the Government on a particular date- is a financial blueprint for action and is, therefore, of great advantage to Government departments, legislatures and citizens. The budget of government expresses its total activity in figures.....
- A budget reflects what the Government is doing or intends to do.
 - A budget is a legal document
 - A budget is a promise of Government to its people
 - A budget is a guideline for State Governments
 - A budget is only a plan on papers that have never been achieved
9. For a federal country like India, the budget of the Government of India is the most important instrument for implementing various economic and social objectives. The budgets of state government affect local activities. The Government of India budget influences the whole economy. The latter tries to bring about growth with social justice through its budget; it influences regional, functional and overall distribution of income and wealth through its expenditure (transfer) payments, investments and tax policies. The provisions of grants and loans to State governments and Union Territories and to the private sector and various subsidies (such as for export promotion, food grains distribution, etc.) are some of the elements of Central government budget policy for promoting growth and income distribution. Its significance lies in its ability to promote the various objectives of a modern state which has assumed the role of a welfare state and of a catalytic agent for promoting growth with social justice.
- A budget in modern times should, therefore not be judged sound or otherwise merely on the basis of its 'deficit' or 'surplus' or 'balanced' position

- (b) A budget is therefore not only instrument of implementing the economic and social objectives but it is also about growth with social justice
- (c) A budget is a reflection of success or failure of a government
- (d) A budget in modern times should, therefore not be judged on its face value
- (e) A budget in this turbulence time cannot be judged on basis of monetary indices of 'surplus' or 'deficits'
10. After the East Asia crisis, the World Bank conducted a study on the underlying reasons for the crisis. It was found that at least a major part of the fundamental responsibility was on banks, which had understated their non-performing accounts by as much as 47%. Since this was a study and not an investigation..... Nevertheless, the Basel committee on supervision did take cognizance, and issued circulars and directives not only on supervision, but also on Internal Functional Management. It will be remembered by those interested that Basel committee had also acted expeditiously after the Barring Bank's failure, to separate treasury and lending operations from the decision making processes. Bank failures are nothing new in the world, although we in India have been insulated from such traumas for more than two decades.
- (a) The findings were not taken note of
- (b) The findings were not taken seriously
- (c) The findings were not legally binding on any one
- (d) The fallout from this revelation was only taken note of
- (e) The fallout from this revelation was seriously taken
11. Whether the Government is right in bailing out a private sector bank is an issue that is decided more than by the long term social security policy of the Government, than by economic reasons alone..... Nevertheless, in a situation of scarcity of resources, bailing out somebody means the denial of resources to others. The irony of it is that in performing its duties of proper governance to the larger society through the process of bailing out, Government excuses the lack of corporate governance in banks.
- (a) Economists world over learnt it hard way during the Great depression
- (b) This is elementary principle of economics taught in schools
- (c) Reasons are not limited to these two but extend to debts, liquidity & credit ratings issues
- (d) It was unexpected and came like a bolt from the blue
- (e) Particularly true for the Asian countries like India and China
12. But no depreciation is allowed on Live Stock i.e. Horses. Although the horses are in the nature of fixed assets in the hands of the owner, no depreciation is allowed under Income Tax Act. Instead when the animal dies or becomes permanently useless the entire value of the horse can be written off as revenue loss in the year in which it dies or becomes permanently useless. When the gross income exceeds the total expenditure, it results in net profit which will be taxable at usual rates of tax applicable to the person. Although the live stock is in the nature of fixed assets of the owners, buy them, maintain them, train them, and participate in races and Sell them or send them away to studs when they are useless.
- (a) But when the gross income is less than the expenditure, then results in loss
- (b) But when the gross income is higher than the expenditure, then results in loss
- (c) But when the gross income is equal to expenditure then result is loss
- (d) But when the gross income is there loss is the result
- (e) But when the gross income is increasing then result is becoming evident
13. Aggregation of risks is somewhat quite new to banks in India. While some banks have started thinking in that line by trying to put integrated limits framework and integrated risk policies as well as using CBS solutions for technological integration, the effort required is beyond such requirement. Risk aggregation would mean aggregating the individual risk measures to decide most appropriate assets class that would contain the risk to the desired level dictated by the risk appetite .Capital allocation (about how much) would be based on such strategies.....
- (a) Most banks are yet to conceptualize the same in their processes
- (b) Most banks have already integrated it in their functioning; it is working over the years satisfactorily.
- (c) Which would in long run prove to be the growth impeding
- (d) Of risk aggregation which is really a new concept to Indian banks
- (e) On expected lines of the regulation conditions laid down in the manual of the bank
14. However, it is possible that the non-resident entity may have a business connection with the resident Indian entity. In such a case, the resident Indian entity could be treated as Permanent Establishment of the non-resident entity. During the last decade or so, India has seen a steady growth of outsourcing of business processes by non residents or foreign companies to IT-enabled entities in India. Such entities are either branches or associated enterprises of the foreign enterprise or an independent India enterprise. The non-resident entity or foreign company will be liable to tax in India only if the IT -enabled BPO unit in India constitutes its Permanent Establishment.
- (a) The tax treatment of the Permanent Establishment in such a case is under consideration
- (b) How would the profit would be shared is not decided yet?
- (c) A lengthy and cumbersome process requiring a lot of application of mind and revenue principles is ahead for the tax department of India
- (d) A new trend is seen in last decade.
- (e) Indian companies have a lot on stake as competition increases.
15. The Finance Commission is entrusted with periodic review and resolution of Central- State fiscal problems. It was the clear intention of the father of the India Constitution that all matters pertaining to normal Central-State financial adjustment should be scrutinized by the Finance commission. An incidental and by no means

- insignificant advantage of the appointment of a Finance Commission has generally been to rekindle interest in issues pertaining to financial relations between the Centre and the States and to promote an enlightened national debate on the several facets of India's federal fiscal set-up. The role of the Indian Finance Commission is unique in many ways. It is one of few commissions provided in the constitution.
- (a) which was given a pre-eminent role in the resolution of problems in fiscal federalism
- (b) Which was constituted with the vision of a modern India with modern facilities
- (c) Which was a dream of Father of Nation also
- (d) Which was to be unique in its ways and a constitutional body
- (e) Which was introduced as a backbone for Indian Economy
16. The art of medicine is the art of healing, not just treating, and not even just curing. Yet it is only when the art and science join hands that healing is best accomplished. The author then adds, remember that the practice of medicine is an art, not a trade, a calling, not a business, a calling in which your heart will be exercised equally with your head. This book is rare work of the art of medicine, from a very rare practitioner of the science of medicine.
- (a) "mankind depends on science as equally on the art"
- (b) "for the mercy's sake let us have little less science and a little more art"
- (c) "let us consider science at par with art"
- (d) "let us forget what is art and what is science"
- (e) "do not blame medicine for it"
17. The thirteen Finance commissions cover a span of more than 60 years during which many conditions have changed. Correspondingly, the approach of the later commissions may be expected to be different in several respects from the earlier ones. Nevertheless, it is possible to discern certain common elements in the thinking of the successive Finance Commissions. Which have come to evolve gradually what may be called 'the Indian Finance Commission's approach to federal finance..... According to this approach, States' share of Central taxes is not allocated strictly on the basis of need. These problems and shortcomings come later in light but have caused what was not accounted at that time.
- (a) And it happened to be in that way
- (b) There are several inadequacies in the approach of the Finance Commissions
- (c) Evolution is a long process and it is a same story for commissions
- (d) But they differ completely from them and each time new approach was looked for
- (e) This was based on the tax sharing basis principle of commissions
18. The Parihar is, for all practical purposes, a functional, fully fitted out submarine. After this brief ceremony, the submarine is to be towed out for the first time across the naval dockyard and moored in an enclosed pier called Site BravoOver the next few months, it will commence a series of harbour trials. The primary system, a nuclear reactor, generates the heat which drives the secondary system, a steam turbine which spins the submarine's propeller, is to be tested separately. First, the steam turbine is to be jumpstarted with shore based supply. The next significant step will be starting up the submarine's nuclear reactor where Zirconium rods in the core of the submarine's pressurized water reactor will be slowly raised.
- (a) It is the advent of new technology in India
- (b) It has entered in chain reaction chamber
- (c) It is like coming out from maternity ward to nursery
- (d) It is unprecedented step to start such a sequence of processes
- (e) It is very critical for a nuclear submarine
19. For all those women who perpetually complained about how all cars are designed for men, company is out with a car especially suited for them. The Your Concept Car..... is a dream come true. It has a keyless entry, additional storage space, a lower hood and the back seat screen going all the way till the rear end so that you know exactly where the car ends. Add to this a parking aid for parallel parking and their most advanced technology, Ergo vision that scans the body at the dealership, stores the data and every time you hop into the car, automatically adjusts the height of the seat, the steering wheel, the distance between them and everything else to your specifications. Even though it is a concept car that will not hit the roads, its women-friendly features have been incorporated in some of the other cars.
- (a) The first to be designed by experts
- (b) The first to be launched by company
- (c) The first to be the concept car
- (d) The first to be designed by all women team
- (e) The first to with so many features
20. The growing importance of Union excise amongst the shared taxes and the ascendancy of population as the principal basis of distribution are the two salient features of tax-sharing determined by the Finance Commissions. The finance Commission is called upon to determine the State that would be in need of grant-assistance of the quinquennium under reference and the amount of such assistance in each case. The first Finance Commission laid down some important principles governing the determination of grants -in-aid for States.
- (a) These principles have been generally, endorsed by all the subsequent Commissions.
- (b) These principles have been discarded by subsequent commissions
- (c) These principles were taken from the Finance commissions of the other countries
- (d) These principles were derivations from the elementary formulas of text books
- (e) These principles cannot be changed and are fixed
21. The biggest attraction of the public sector is that, for women with the same qualifications and skills it almost always pays better than does private industry. For men the differences are much less pronounced..... Figures are hard to come by, but in rich countries women typically hold 30-40% of senior managerial posts in central government. Hours and conditions too are usually more congenial and maternity arrangements more generous. So with better pay, conditions and promotion prospects, it is no wonder that the public sector is the employer of the choice for so many women.

- (a) The public sector is also more likely to promote women to senior jobs
 - (b) The public sector provide safe working environment for the women.
 - (c) Women are paid more than men in public sector
 - (d) Public sector is better pay master than private banks for women
 - (e) There is no issue in making a choice for women
22. The fiscal position of the Indian Governments - both Centre and States -has been under stress since the mid -1980s. The stress stems from the inadequacy of receipts in meeting the growing expenditure requirements. Reflecting the fiscal stress, the expenditure for development activities, which are directly related to growth, has suffered. On the other hand, expenditure on non-developmental purposes, largely committed, has witnessed a steady rise.in favour of developmental expenditure in order to enable higher growth. That the state of finances of States is in disarray is beyond dispute. The state finances have not been properly managed not only by the states but also by the planning commission and the central Government, which include economists who do not see states as autonomous responsible organizations.
- (a) The crucial issue, therefore, is to bring about improvement in the finances with a view to restructuring expenditure
 - (b) The crucial issue, therefore, is to analyze the finances with a view to see what can be done to expenditure
 - (c) Hence, it can be said that management of finances is important vis-à-vis management of expenditures
 - (d) Therefore, Governments have to mend their way and balance the finances and the expenditures
 - (e) What is expected in this scenario is a policy shift
23. Under taxation is at the roots of the Indian fiscal problems. The available evidence shows that the tax -GDP ratio in India is lower than the level it should have for its per capita GDP by at least 2.5 percent. It is, therefore important to focus reform efforts to increase the tax ratio. Of course, this does not mean that strategy to increase the tax ratio lies in increasing the tax rates. The strategy is to reiterate that tax administration is tax policy. All exemptions will not go. Politically, it is not possible. The world over, there was a time when we thought that equity in tax policy meant reducing the incomes of the rich. But today's tax philosophy is that equity in tax policy is increasing the incomes of the poor. The incomes of the poor cannot be increased by reducing those of the rich.....
- (a) As they are the central point of any economy their importance is preemptory
 - (b) As they have the real remote control in their hands and poor cannot see that
 - (c) As they have the capital for investment and give employment to the poor
 - (d) As they have lobbying power to decide the fate of the poor
 - (e) As they are capital rich and cannot be compared with poor
24.Enterprises worldwide are therefore, now putting in place an integrated framework for risk management, which is proactive, systematic and covers the entire organization.

- Banks in India are also moving from the individual silo system to an enterprise -wide risk management system. This is placing greater demands on the risk management skills in banks and has brought to the fore the need for capacity building. While the first mile-stone would be risk integration across the entity, banks would do well to aggregate risk across the group both in the specific risk areas as also across the risks.
- (a) Banks are most risk prone of all the financial institutions.
 - (b) Banks were managing each risk independently, in isolation, which is no longer inadequate
 - (c) It is about risk level at which an enterprise is operating to have or not have risk management system
 - (d) Risk management in India is lagging for banks in comparison with other parts of world
 - (e) What if risk becomes unmanageable and looks right in your face?
25. One of the most stubborn fallacies about inflation is the assumption that it is caused, not by an increase in the quantity of money, but by a "shortage of goods." It is true that a rise in prices (which, as we have seen, should not be identified with inflation) can be caused either by an increase in the quantity of money or by a shortage of goods or partly by both. Wheat, for example, may rise in price either because there is an increase in the supply of money or a failure of the wheat crop. But we seldom find, even in conditions of total war, a general rise of prices caused by a general shortage of goods." that even in the Germany of 1923, after prices had soared hundreds of billions of times, high officials and millions of Germans were blaming the whole thing on a general "shortage of goods"- at the very moment when foreigners were coming in and buying German goods with gold or their own currencies at prices lower than those of equivalent goods at home.
- (a) Yet so stubborn is the fallacy that inflation is caused by a "shortage of goods"
 - (b) Yet people believe on such fallacy to unimagined level
 - (c) Yet so wide is acceptance
 - (d) Yet so timely and abrupt is response to fallacy
 - (e) Yet more and more people started to believe on 'shortage of goods' fallacy
26. The cure for inflation, like most cures, consists chiefly in removal of the cause. The cause of inflation is the increase of money and credit. The cure is to stop increasing money and credit..... It is as simple as that. Although simple in principle; this cure often involves complex and disagreeable decisions on detail. Let us begin with the Federal budget. It is next to impossible to avoid inflation with a continuing heavy deficit. That deficit is almost certain to be financed by inflationary means-i.e., by directly or indirectly printing more money. Huge government expenditures are not in themselves inflationary-provided they are made wholly out of tax receipts, or out of borrowing paid for wholly out of real savings. But the difficulties in either of these methods of payment, once expenditures have passed a certain point, are so great that there is almost inevitably a resort to the printing press.

- (a) The cure for inflation, in brief, is to stop inflating
 (b) The cure for inflation, in brief, is to think positively
 (c) The cure for inflation is planning small things with little thoughts
 (d) The cure of inflation lies in inflation itself
 (e) The cure of inflation is hidden in understanding the cause of inflation.
27. The India Union has had more than 55 years of experience with fiscal federalism operating within the framework of the parliamentary democracy and planned economic development. A comprehensive review of fiscal federalism in independent India is, therefore, overdue. There have been feeble protests in form to time about the sprawling powers of the Central government eroding the foundations of fiscal federalism.....Now that single party has been dislodged from power in some of the States and parties of different hues and colours are holding office, a candid and comprehensive review of all the aspects of Centre- State relations and the working of fiscal federalism in particular is important and necessary.
- (a) But these voices were curbed by all parties.
 (b) But democracy does not allow a mechanism to redress this problem
 (c) But fiscal federalism is all about ignoring and moving on with protests
 (d) But these voices were drowned by the overwhelming influence of the same party at the centre and the States
 (e) But these protests died in with time for their feebleness
28. Do firms need banks, or can they make do with stock markets? Do firms need stock markets, or can they make do with banks? Alexander Gerschenkron long ago argued that economically "backward" countries could not trust decentralized capital markets to provide their largest firms sufficient funds..... More recently, finance theorists have reasoned from agency theory and the economics of information to much the same result. And the transition in Eastern Europe has given the issue a programmatic touch: what should scholars tell the new finance ministers to do about banks and stock markets?
- (a) Instead, they needed banks
 (b) Instead, they needed centralization mechanisms only
 (c) Hence banks and Stock markets are not needed
 (d) Therefore Banks score over Stock Markets for them
 (e) Banks or Stock markets both are not needed simultaneously
29. The Japanese economy is one of the third largest in the world The Japanese currency is the Yen. Japan's main export goods are cars, electronic devices and computers. Most important trade partners are China and the USA, followed by South Korea, Taiwan, Hong Kong, Singapore, Thailand and Germany. Imports: Japan has a surplus in its export/import balance. The most important import goods are raw materials such as oil, foodstuffs and wood. Major supplier is China, followed by the USA, Australia, Saudi Arabia, South Korea, Indonesia and the United Arab Emirates. Industries: Manufacturing, construction, distribution, real estate, services, and communication are Japan's major industries today. Agriculture makes up only about two percent of the GNP.
- Most important agricultural product is rice. Resources of raw materials are very limited and the mining industry rather small.
- (a) And it is going to achieve number one status sooner
 (b) It is eyeing for number one spot in world economy riding on its recent technological developments
 (c) Japanese Economy is going through recession and is bound to slip to lower stands in world economy
 (d) Only USA and China have a higher GNP.
 (e) It is only in terms of growth rate not in terms of GDP.
30. The prospect of renewed war between India and China is, for now, something that disturbs the sleep only of virulent nationalists in the Chinese press and retired colonels in Indian think-tanks. Optimists prefer to hail the \$60 billion in trade the two are expected to do with each other this year. But the 20th century taught the world that blatantly foreseeable conflicts of interest can become increasingly foreseeable wars with unforeseeably dreadful consequences. Relying on prosperity and more democracy in China to sort things out thus seems unwise. Two things need to be done. First, the slow progress towards a border settlement needs to resume. The main onus here is on China. It has the territory it really wants and has maintained its claim to Arunachal Pradesh only as a bargaining chip. It has, after all, solved intractable boundary quarrels with Russia, Mongolia, Myanmar and Vietnam
- (a) Surely it cannot be so difficult to treat with India?
 (b) Surely it will be more difficult with India?
 (c) Can it solve dispute with India with its non democratic values?
 (d) With India intentions are not clear.
 (e) In Indian markets, Chinese presence is increasing.
31.and the proponents of market reforms have no plans for those who do not have the resources and income to buy even two meals a day. The signals are clear that those who cannot pay for their food have no right to survive. These poorer sections of society are reduced to mere victims, beneficiaries, clients and recipients. In this dichotomous relationship, the state is seen as the 'dole giver' and the people the 'dole receiver'. It must be recognized that irrespective of market-governed politics, people remain bound to survival, livelihood and identity issues.
- (a) The governments have ceased to govern.
 (b) When the market is allowed to govern, the government becomes powerless to effect any radical social changes.
 (c) Elections have failed to make democracy distributive and justice oriented.
 (d) It is about market reforms and absence of plans for the poorest of the poor.
 (e) A patron-client relationship defines modern governments and the masses.
32. To succeed in today's crowded marketplace where most of the products and advertising look exactly the same, a small business owner must stand out, shouting above the din with a message so clear and compelling that prospects stop and take notice. It's a matter of business survival. Unfortunately, most entrepreneurs quickly retreat to the supposed security of sameness, soon to be lost in a sea of anonymity and a tidal wave of frustration. In effect, albeit at a subconscious level, they are saying, "I don't want to be different".

- In back room offices and store fronts everywhere, salespeople are telling business owners they should do this or that kind of ad because it worked so great for their competitor. The owners nod and sign on. It's already proven to be a winner, right? WRONG.
- (a) To make your advertising work, follow the principle if your competition is doing it, don't.
- (b) Following your competitor is a sure recipe for disaster.
- (c) Win the battle without a fight.
- (d) It will fill people with a sense of déjà vu.
- (e) You will do it at your own peril.
33. Google, the internet powerhouse, seeks to organize the entire world's information. The company has told publishers it will delay until November its work on copyrighted texts and will not scan any items that the copyright owner does not want included. The Assn. of American Publishers was outraged by this offer, saying Google is trying to turn copyright law inside out. Google should have to ask permission to copy a book for its database, they say, it shouldn't be up to publishers to object. Google argues that it is making a fair use of the books. The dispute could easily wind up in the courts. Building a guide to the contents of books is hardly the same as making bootlegged copies or plagiarizing. It's a monumental and costly task, and publishers have given no reason to believe they can do it for themselves. Unless their works are as well integrated with the Net as other forms of information and entertainment, they may be left waiting on the shelves for an audience that no longer bothers to walk through the stacks.
- (a) This has put both the internet search engine and the publishers on an unwarranted collision course
- (b) Since the case might drag on for years to the detriment of both the parties, an out of court settlement is well advised
- (c) Isn't it rather difficult, or even in fructuous to protect copyright on published text in this internet age?
- (d) Perhaps both the parties ought to try and appreciate the other's viewpoint, as well as legitimate apprehensions, but with the overall goal of the public good in mind.
- (e) Meanwhile, Google should show more respect for publishers' rights - and publishers should not make the mistake of using the strictures of copyright law to tie their own hands
34. Relations between the factory and the dealer are distant and usually strained as the factory tries to force cars on the dealers to smooth out production. Relations between the dealer and the customer are equally strained because dealers continuously adjust prices - make deals - to adjust demand with supply while maximizing profits. This becomes a system marked by a lack of long-term commitment on either side, which maximize feelings of mistrust. In order to maximize their bargaining positions, everyone holds back information - the dealer about the product and the consumer about his true desires.
- (a) As a result, 'deal making' becomes rampant, without concern for customer satisfaction.
- (b) As a result, inefficiencies creep into the supply chain.
- (c) As a result, everyone treats the other as an adversary, rather than as an ally
- (d) As a result, fundamental innovations are becoming scarce in the automobile industry.
- (e) As a result, everyone loses in the long run.
35. The tax system of India encourages borrowing by granting its taxpayers tax relief for interest paid on loans. The system also discourages saving by taxing any interest earned on savings. Nevertheless, it is clear that India's tax system does not consistently favour borrowing over saving, for if it did, there would be no _____
- (a) tax relief in India for those portions of a taxpayer's income, if any, that are set aside to increase that taxpayer's total savings
- (b) tax relief in India for the processing fees that taxpayers pay to lending institutions when obtaining certain kinds of loans
- (c) tax relief in India for interest that taxpayers are charged on the unpaid balance in credit card accounts
- (d) taxes due in India on the cash value of gifts received by taxpayers from banks trying to encourage people to open savings accounts
- (e) taxes due in India on the amount that a taxpayer has invested in interest-bearing savings accounts
36. Unemployment typically continues to rise even after GDP starts to increase, so pain for workers is far from over. Already 9.5% of the workforce is unemployed, and all of country's metropolitan areas reported unemployment rates of at least 10% in June. More jobless will probably mean less shopping and a slower recovery. The latest consumer-confidence numbers show that people are jittery. The quarterly GDP report also makes it clear that consumer spending, which rose slightly in the first quarter, dropped again in the second, by 1.2%. The good news, therefore, was more a result of government stimulus than evidence of a real, sustainable recovery in private demand.
- (a) A greater worry is the bleeding in country's labour market.
- (b) The Finance Department has revised its estimates of just how bad 2008 really was.
- (c) Figures released by Commerce Department confirmed what most had been expected
- (d) New GDP figures suggest some hope for country's economy. But the pain is far from over.
- (e) House prices still have a long way to go before they return to the level of a year ago
37. Everything in New Delhi is extreme. It is a city of the incredibly rich and the miserably poor. For the rich, there are expensive private schools and hospitals, concert halls and theatres - although fewer of those than formerly - and restaurants. The poor are on a hiding to nowhere: all public facilities, schools and hospitals and housing, are deteriorating. But then there are some world known social workers in it. There are thousands of heroin addicts, and an equal number of carriers of the Aids virus. This is Delhi for you.
- (a) But then there are thousands of people who are social workers
- (b) But then some of rarest examples of humanity come from this city

- (c) But then there is a faith in the City
 (d) But then there are people addict to charity and altruism also.
 (e) But then there are people who are totally against the drugs and faithful to their partners
38. Computers are used in banks for a variety of reasons. They help bank personnel operate more efficiently and effectively. Computers are used to track certain transactions and they help process other customer information as well. Without computers, it would be very hard for a bank to offer good customer service day in and day out. Computers help a bank save time and money, and can be used as an aid to generate profits. In nutshell they have become indispensable part of the banks. Bank personnel become so helpless in absence of their machine that nervousness is evident on their faces while technical glitch renders the computer systems dysfunctional for a small period of time. once again queues starts to move and crowd starts to thin with fingers starting to work on keyboards; nervousness has made way for confidence of knowing everything at just a click of mouse.
- (a) Crowd starts to swell and nervousness starts to turn in fear of failure.
 (b) A sense of relief spreads as the problem gets rectified.
 (c) There is a condition of traffic jam in banks and everything comes to a halt.
 (d) It is not their fault and they are excused for it.
 (e) Technology comes with its own disadvantages.
39. Some of the world's most expensive land can be found in central Mumbai. However, housing costs are distinctly lower in Mumbai's suburbs, surrounding prefectures and in other regions and cities of India. Additional commuting costs are often more than compensated by the savings on the rent, especially as many companies pay part or all of their employees' commuting expenses. If you prefer to live close to city centers, rented houses are an inexpensive option to consider. Utilities such as gas, water and especially electricity are expensive, and phone rates are high. For international calls, consider internet phones, callback services and other offers for the expat community.
- (a) Consequently, even tiny apartments in the city center are very expensive
 (b) This land is unauthorized land usurped by Land Mafia in the city
 (c) A new bubble - Reality bubble similar to housing bubble of West is waiting to burst
 (d) City is breathing on its seams
 (e) The prices will continue to rise till Government comes out with an effective policy for reality prices in coming months
40. Now digest the main historical event of this week: China has officially become the world's second-biggest economy, overtaking Japan. In the West this has prompted concerns about China overtaking the United States sooner than previously thought. But stand back a little farther, apply a more Asian perspective. These two Asian giants, which until 1800 used to make up half the world economy, are not, like Japan and Germany, mere nation states. In terms of size and population, each is a continent-and for all the glittering growth rates, a poor one.
- (a) China's longer-term contest is with that other recovering economic behemoth: India
 (b) China's longer term contest with USA is going to end in near future
 (c) China is now focusing on Asian Market space more than other markets
 (d) China is going in tandem with other Asian economy - India
 (e) China's long term border dispute with India affects Asian economy's growth rate
41. North India lies in the Indo-Gangetic plain. Towards the North is the Himalayas, which separates the country from Central Asia. The Vindhya ranges separate the North from the South. South India is situated in the Peninsular Deccan Plateau. This region has the Arabian Sea in the west, Bay of Bengal in the east and Indian Ocean in the south. When talking about the racial differences, the North Indians are termed as Aryans, and the South Indians as Dravidians. In physique as well, there are many differences between the people of the South and North. The North Indians are taller, and more strongly built than the South Indians. The South Indians are a bit darker than the North Indians. Salwar Kamiz is the widely used dress by North Indian women. On the other hand, women in the South wear saris. While men in the North wear Salwar, the men in South prefer dhotis. Another difference that can be seen between North and South India is their food. When compared to the North Indian food, the South Indian food is spicier. The South Indians use more tamarind and coconut when compared to North Indians. The North Indians use more milk products when compared to the people of South India. When talking about the culture, there is vast difference between North and South India. One can come across differences in their music (Northern Hindustani and Southern Carnatic), dance forms and folks.
- (a) A big difference is in their style of living
 (b) A big difference is in their fashion statements
 (c) A big difference can be seen in their dressing styles
 (d) A big difference arises in their taste for clothes based on their earnings
 (e) A big difference can be seen in their climate that demands different dressing styles
42. An open economy is an economy in which there are economic activities between domestic community and outside, e.g. people, including businesses, can trade in goods and services with other people and businesses in the international community, and flow of funds as investment across the border. Trade can be in the form of managerial exchange, technology transfers, all kinds of goods and services. Although, there are certain exceptions that cannot be exchanged, like, railway services of a country cannot be traded with another. To avail this service, a country has to produce its own. This contrasts with a closed economy in which international trade and finance cannot take place. The act of selling goods or services to a foreign country is called exporting. The act of buying goods or services from a foreign country is called importing.

There are a number of advantages for citizens of a country with an open economy. One primary advantage is that the citizen consumers have a much larger variety of goods and services from which to choose. Additionally, consumers have an opportunity to invest their savings outside of the country. In an open economy, a country's spending in any given year need not to equal its output of goods and services. A country can spend more money than it produces by borrowing from abroad, or it can spend less than it produces and lend the difference to foreigners. There is no closed economy in today's world.

- (a) Together exporting and importing are collectively called trade
 - (b) Exporting and Importing are exclusive classes of trade
 - (c) Both are independent of each other and do not constitute the term 'trade'.
 - (d) Together they make GDP of a country
 - (e) Together they are indicators of influence of a country on world map
43. A no budget film is a produced film made with very little, or no money. Young directors starting out in filmmaking commonly use this method because there are few other options available to them at that point. All the actors and technicians are employed without remuneration, and the films are largely non-profit,..... or uses a very minimum "crew" of volunteers to assist him/her on such projects where no money or financing is available, not including the cost of film. No-budget films are made every day with video tapes and consumer cameras.
- (a) Usually the director works alone on such films
 - (b) These films are huge employers in entertainment industry
 - (c) A team of experts two or three in number starts without any significant infrastructure
 - (d) Director is the cameraman, lightman, scriptwriter, screen player and sometimes even act himself in the film
 - (e) It is difficult task to find suitable people with desired skills, hence director works alone on such films
44. In finance, the term 'yield' describes the amount in cash that returns to the owners of a security. Normally it does not include the price variations, at the difference of the total return. Yield applies to various stated rates of return on stocks (common and preferred, and convertible), fixed income instruments (bonds, notes, bills, strips, zero coupon), and some other investment type insurance products (e.g. annuities)..... It can be calculated as a ratio or as an internal rate of return (IRR). It may be used to state the owner's total return, or just a portion of income, or exceed the income. It may be used for production output in other industries. Because of these differences, the yields from different uses should never be compared as if they were equal.
- (a) The term is a misnomer
 - (b) The term is understood differently by different people
 - (c) The term has no definite meaning
 - (d) The term is used in different situations to mean different things
 - (e) The term slightly differs in meaning from the textbook definitions

45. Market trends are fluctuated on the demographics and technology. In a macro economical view, the current state of consumer trust in spending will vary the circulation of currency. In a micro economical view, demographics within a market will change the advancement of businesses and companies. With the introduction of the internet, consumers have access to different vendors as well as substitute products and services changing the direction of which a market will go. Despite that, it is believed that market trends follow one direction over a matter of time, there are many different factors that can change this idea. Technology s-curves as is explained in the book The Innovator's Dilemma. It states that technology will start slow then increase in users once better understood, eventually levelling off once another technology replaces it.....
- (a) This proves that change in the market is actually consistent
 - (b) Change is inevitable
 - (c) Fluctuations with these changes do not last long
 - (d) Be prepared for the change
 - (e) Changing changes the fortunes
46. The financial year 2015-16 witnessed a slew of acquisitions across diverse sectors of the economy in India..... Of all sectors, steel was the most dominant in terms of stake sales as deals valuing \$ 3.862 billion took place in Q1 of 2015-16 by the Indian companies in the global arena. Energy ranked second, with automotive and auto components close on its heels. In the domestic segment, iron ore, aviation and steel were the most prolific in terms of mergers and acquisitions. With Indian corporate houses showing sustained growth over the last decade, many have shown an interest in growing globally by choosing to acquire or merge with other companies outside India. One such example would be the acquisition of Britain's Corus by Tata an Indian conglomerate by way of a leveraged buy-out. The Tata's also acquired Jaguar and Land Rover in a significant cross border transaction. Whereas both transactions involved the acquisition of assets in a foreign jurisdiction, both transactions were also governed by Indian domestic law.
- (a) These acquisitions are purely Indian but covering diverse sectors ranging from automobiles to Steel
 - (b) Acquisitions are like a big shark swelling a small fish without noticeable fight put up by the latter
 - (c) Unlike in the past, such activity was not limited to acquisitions within India or of Indian companies
 - (d) Globalization has brought this trend to India and Indian companies are no longer isolated from its effects
 - (e) International law of acquisitions holds true for all the countries and binding on each member
47. But there is, in fact, a vast difference. Merger generally refers to a circumstance in which the assets and liabilities of a company (merging company) are vested in another company (the merged company). The merging entity loses its identity and its shareholders become shareholders of the merged company. On the other hand, an amalgamation is an arrangement, whereby the assets and liabilities of two or more companies (amalgamating companies) become vested in another company (the amalgamated company).

The amalgamating companies all lose their identity and emerge as the amalgamated company; though in certain transaction structures the amalgamated company may or may not be one of the original companies.

- (a) Very often, the two expressions “merger” and “amalgamation” are used synonymously
- (b) ‘Merger’ and ‘amalgamation’ are terms that can be used interchangeably but up to a limit
- (c) ‘Merger’ and ‘amalgamation’ are synonymous to each other
- (d) ‘Merger’ and ‘amalgamation’ are not synonymous to each other
- (e) Words ‘merger’ and ‘amalgamation’ should be used cautiously

48. Being one of the central banks which was involved in the exercise of drawing up the Core Principles, the Reserve Bank of India had assessed its own position with respect to these Principles in 1998. The assessment had shown that most of the Core Principles were already enshrined in our existing legislation or current regulations. Gaps had been identified between existing practice and principle mainly in the areas of risk management in banks, inter-agency cooperation with other domestic/international regulators and consolidated supervision. Internal working groups were set up to suggest measures to bridge these gaps and their recommendations have been accepted by the Board for Financial Supervision and are now in the process of being implemented. Given the spread and reach of the Indian banking system, with over 60,000 branches of more than 100 banks..... However, the Reserve Bank of India is committed to the full implementation

of the Core Principles. The Bank also serves on the Core Principles Liaison Group of the BCBS, which has been formed “to promote the timely and complete implementation of these principles worldwide”.

- (a) implementation is a challenge for the supervisors
 - (b) implementation is impossible
 - (c) implementation should be done on trail basis
 - (d) implementation is a problem for supervisors
 - (e) implementation is a long process to take years
49. Indian banks having overseas operations are required to lay down internal guidelines on country risk management and fix limits based on risk rating of the country. Limits should also be fixed for a group of countries in a particular risk category subject to a maximum ceiling fixed by RBI. In the normal course, prudential exposure norms apply to all loans and investments overseas including loans to sovereign entities Adequacy of the bank’s policy on identification, measurement and control of country risk is assessed during onsite inspection by host country representatives. It is also monitored through a quarterly return on country-wise counter party exposure.
- (a) The overseas branches are governed by the host country regulations also
 - (b) Host country is speculative for the success of these branches
 - (c) Banks and host countries conduct joint audits in branches in that country
 - (d) Host country regulations do not bind on these overseas branches
 - (e) Success of overseas branches depend on only the policies of host countries

ANSWER KEY

1	(a)	6	(c)	11	(a)	16	(b)	21	(a)	26	(a)	31	(b)	36	(d)	41	(c)	46	(a)
2	(c)	7	(d)	12	(a)	17	(b)	22	(a)	27	(d)	32	(b)	37	(d)	42	(a)	47	(a)
3	(c)	8	(a)	13	(a)	18	(c)	23	(c)	28	(a)	33	(d)	38	(b)	43	(a)	48	(a)
4	(d)	9	(a)	14	(a)	19	(d)	24	(b)	29	(d)	34	(d)	39	(a)	44	(b)	49	(a)
5	(a)	10	(d)	15	(a)	20	(c)	25	(a)	30	(a)	35	(a)	40	(a)	45	(a)		

Hints & Explanations

1. (a) Passage is about the cheap labour and its advantage while competition from the other countries with even cheaper labour is there. Part before the blank space discusses the same thing like overtaking from these cheaper countries. Next part should have something (as sentence starts with 'therefore') that makes India vigilant about the fact and option (a) is having that part additionally it contains the information how India should build on the advantage it had of cheap labour as discussed in major part of the passage; hence, this is the best sentence to finish the passage.
From the other options, (b) is second best and can be an option in absence of (a). Option (c), (d), (e) are not logical.
2. (c) Option (a) is wrong as scrapping of the EIA is not discussed in any part of the passage. Rather improvement is discussed in subsequent part after the blank space. Option (b) and (e) are totally out of place as these do not go in with theme of passage. Only option which is brief and accurate for the blank space and connects two parts of passage is (c). As this is a general statement and can be inserted in without affecting the sense in which passage is flowing. Option (d) is also not right for its negative approach.
3. (c) It has been already given that all the institutes work in coordination; so, option (d) and (e) is redundant and repeating same thing in different manner. Sentence indicates that though these institutions work in coordination these are having different responsibilities to shoulder. But again there are two options which are nearly saying same thing -option (b) and Option (c). But in option (b) 'different direction' is not right. If they are working in different directions, then what is the need of coordinating? Option (a) is not correct for the context.
4. (d) Statement after the blank space contradicts what is said in the option (a). So it is not right. Membership is not being discussed here so option (b) is also not right. Reason of option (a) goes with option (c) also. Option (e) is totally wrong. Only option which comes appropriate with the passage content and position of blank space is option (d).
5. (a) Option (e) is too general and can be avoided. Option (b) is not right as Issue is related to the India not the world, so role of World Bank looks irrelevant in this context. Discussion in parliament is too farfetched in option (c). Option (a) rightly indicates that Indian Government's policy for the matter discussed in passage would be instructive. Option (d) is out of context for its deviation from the topic.
6. (c) Market is being discussed here not the countries. Option (e) is fit for the context but not for the place of the blank space where immediately before it shielding the markets is being described and immediately after conflict between the Indian and foreign entrepreneur is given. Conflict of countries is not given. So this open is too wide in its scope for the blank space and hence cannot be appropriate. Other options are inappropriately distant from the context.
7. (d) Passage is a comparison of Centre and State Government's plans, finances and expenditures. In this particular portion of passage which has the blank part, it is mentioned that State finances are increasing at rapid rate and now they have more liberty for spending on expenditures; meanwhile, a comparison is also done with centre's expenditures in part following the blank space; so, option (d) which encompasses this sense of part of passage is correct filler. Option (a) is opposite of what is being said in the passage. Option (b) and (c) discusses revenues and borrowing of centre which is not mentioned or intended in the passage so these are incorrect. Option (e) is repetition of what is given in statement after the blank space.
8. (a) Option (e) is doubtful as it seems to be judgment than a closing sentence. Legality of budget cannot be ascertained through the passage. It is not a promise either. Only option (a) captures the theme of passage in single sentence. Hence it is the finishing sentence.
9. (a) Blank part should take some common perception of budget as the passage wants to indicate that the budget is not this.... but it is that..... and option (a) in best captures the essence of this logic.
10. (d) As a study report is not a legal document it is not binding on anyone. Sentence represents study in a

- lighter vein so it must not be taken seriously but as the study is done there must be some purpose of it and results at least is taken note of. This logic brings to the option (d) which is correct part to complete the incomplete sentence of passage.
11. (a) Only option (a) seems to be logical for the context. As subsequent part of passage shows how it was a problem to bail out one and to deny other the same resources. Option (d) and (e) are out of place.
 12. (a) It is only logical option, other options do not follow any logic. If income is less than expenditure then there is definitely a loss.
 13. (a) As the passage says that risk aggregation is new at the beginning of passage it can be inferred that most banks are yet to conceptualize it in their processes. Hence option (a) is correct. Option (c) is farfetched conclusion. Option (d) is repetition of what is being stated in passage earlier. So it cannot be the answer.
 14. (a) Passage is about non-resident Indian entity and its tax deduction. Other options are not in the context of passage as they talk about the things which are not given or can be inferred from the passage.
 15. (a) Before the blank space, centre-state problems are discussed and after the blank, advantage of finance commission is given in this regard. So option (a) in right approach has shown finance commission in connection with both the problems and its own advantage. Option (c) is out of context. Option (d) is also mentioned in passage in later parts. Option (e) can be true but not the best answer.
 16. (b) Option (b) is right as it has connection with what is said in the passage after the blank space. Mercy in this option connects well with not a trade, not a business etc.
 17. (b) Last part of passage is about shortcomings given in the statement of option (b). New approach in option (d) can fit but leaves the passage stranded and two parts before the blank and after the blank cannot be joined through this option.
 18. (c) The submarine is newly developed and introduced. It is like coming out from maternity ward to nursery.
 19. (d) As this car is specially designed for the women it can be said that car is designed by all women team. This is the best option which emphasizes the point of passage.
 20. (c) First finance commission laid down some of the principles which were followed by subsequent commissions is a positive statement which is the tone of passage. Passage presents the finance commission in positive light. Option (e) and (d) are doubtful and cannot be reached from the passage.
 21. (a) In this part of passage a comparison of women with men in public or private sector is given with balance tilting to side of women. When preference is given to women in a particular sector then promotion to senior position is also imminent. Hence this option is best one to choose.
 22. (a) Passage portion is not about the management of finances but the improvement in finances and restructuring of expenditures. Mending the ways of government is too strong a statement and does not apply here.
 23. (c) Only option (c) is logical and sensible as rich cannot be centre point of any economy. They do not have the remote control either. Option (e) is just general statement and not in sync with passage. Fate of poor in the hands of rich seems irrational.
 24. (b) Certain words in other options make them doubtful - 'most' in option (a); 'Risk level' in option (c). Comparison with other parts of world is not intended here as given in option (d).
 25. (a) All options can fit. But the best one is (a) because It emphasizes the point said initially in the passage with word 'stubborn'. It relates with German issue coherently. It has detail definition of fallacy which is a requirement when one thing is being discussed again after a long gap in passage.
 26. (a) Next sentence after the blank space suggests that blank should have something simple about the inflation. This simple thing should be logical and sensible. Option (a) is simple and goes well with the flow of passage. Option (d) is not right as cure cannot lie in inflation itself. Option (e) is repetition of what was said in the introduction of passage.
 27. (d) Options like (e) and (b) are doubtful as passage does not mention such a thing in any of its part. Option (a) talks about all parties but the next statement after the blank space is contradicting it. Option (c) is negative and for fiscal federalism, passage discusses its plight not its shortcoming or of democracy as given in option (b). Only option that can fill the blank for matching with the content of passage is option (d). This sentence and next sentence both are a combination and coherent in flow.
 28. (a) Other options cannot be inserted in the blank space as they are not logical and in sync with passage. Option (b) can be right if 'only' is removed from it. Use of 'only' makes it incorrect. Banks and Stock markets are decentralization agents and hence are needed as per passage in this way option (c) is against the passage. Then option (d) unnecessarily will introduce comparison between banks and stock markets while passage presents both in as a pair. Option (e) is also wrong on the basis of this logic.
 29. (d) This question is to be solved by reading whole passage as no immediate connections can be derived with sentence preceding the blank space and one following it. If Japan is third then which one are two other - it is answered in option (d). USA and China are referred to in the entire passage. So they can be the other two. Option (a) is hypothetical in nature and needs some explanation to follow after it. Option (b) also needs some base. This is the case with option(c) and option (e).

30. (a) Last sentence shows that China has solved border dispute with a number of countries, while the passage is mainly about the relationship of India and China. This indicates that finishing statement should also be about improvement in relationships of India and China. This is given in all options. But option (a) poses a valid question as passage shows that relationships between two countries are improving. From the other options (d) is not correct as positive improvements are illustrated in passage. Markets of option (e) are not discussed here in passage. Option (b) is opposite to the spirit of the passage.
31. (b) As per the passage in starting portion, it has been given that market oriented people do not have plans for poor people or in other words no social agenda which is definitely the priority of any government. But if power of government is transferred to others (market forces in this case), then there would not be any radical social change. From the other options, (c) discusses elections but there is nothing related to elections in the passage. Option (d) is contradicting what is said in the statement following the blank space. Option (e) seems to be a finishing sentence rather than an opening sentence as it is related to last part of passage not with the starting part.
32. (b) Option (b) vehemently represents the sense of the passage; additionally it contains a message that author wants to convey. One more point that supports this option is it fits well with the capitalized word (which is of course used to emphasize) WRONG. Hence strong message should follow it.
33. (d) This option is right as it does not judge or present an opinion rather it comes up with a possibility with right approach i.e. positive and covers legal aspect of matter as well. Other options are more or less judgments or opinions that do not qualify as finishing /closing statement.
34. (d) All other options except (e) are rephrasing of already discussed facts of passage. But Option (e) is incomplete as it does not show what can be the loss specifically. But option (d) shows it. It can be inferred that holding back information would lead to lack of innovations in auto industry, these innovations can be in supply chain for dealers, new car models with improved performance at cheap pricing for customers/ end users and increased profit for company.
35. (a) Understand it this way - Although savings is discouraged, borrowings are not encouraged for a longer (persistent) period. This question is a difficult one. Best method to solve these types of questions is to use elimination method. Option (c) is out of context as talking about credit cards is rejected. Option (d) involves giving gifts by banks for opening saving account which seems to be giving triviality to the matter of paragraph. Option (e) is second best option. But contradicts what is said in passage.
- Option (a) is best answer for the blank space as it supports only what is given in passage.
36. (d) Passage shall start with a hope in the GDP figures as in next sentence that hope fades away. See the use of word 'even after' this indicates that incident detailed here should have happened before it. Another thing that goes in favour of option (d) is that it shows the pain of unemployment and its sustenance which is a major issue highlighted in paragraph.
37. (d) 'Also' of this statement connects well with the preceding sentence. Passage presents Delhi in two different shades. And this statement complements the negative statement just before the blank space. The same example is given earlier in passage - on one hand, social amenities deteriorating while on the other hand world known social workers are also working in Delhi. In the same sense while there are people with addiction for wrong things, there are also people with addiction to right things.
38. (b) Passage can be divided in two parts - one before the blank space and another after the blank space. First part says that bank people are nervous as computer systems are not working. Second part says that queues get thinner. It means problem mentioned in first part gets rectified and effect of it is seen in second part.
39. (a) This option connects well with the opening statement. Second option cannot be reached through passage. Third option also needs some mentioning in the passage. In absence of this linkage it does not qualify for the correct answer. Option (d) is irrelevant. Option (e) is again introducing governance issue that in absence of any elaboration in further reading of passage becomes inappropriate.
40. (a) 'These two Asian giants' hints reference of some Asian country in previous line. On this basis Option (b) is wrong. Option(c) is about only the China, Option (e) gives new dimension to passage by introducing border dispute which is unwarranted. Fight is between Option (d) and Option (a); latter scores over former as word 'behemoth' complements 'giants' of subsequent sentence.
41. (c) After the blank space two or three sentences are about the dressing styles of North and South Indians. It is not about the climate or earning based choice or fashion. Rather it is just the difference on general basis.
42. (a) This question is more of a checking of logic and sense than an understanding of the passage. Only export and import do not make GDP of a country. They are not the only indicators of influence of a country on world map. Option (c) is not logical and no sense prevails through it.
43. (a) Option (b) is not correct as it goes against the passage. Option (e) is illogical and does not fit as there is no reason why skilled people are not available. Option (d) seems frivolous on the basis of its impossibility. Experts are not discussed in passage. Only option which fits well in the context is director working alone on such films of low budget.

44. (b) See the part of passage after the blank space - this gives a number of meanings of term 'yield' taken in different fields. This is the same thing which is stated in the passage. From the other options, text definition angle is wrong in (e). Option (d) is linking the term with situations which is not correct. Option (a) and (c) are false.
45. (a) This is best option which expresses the fact illustrated in passage that the market is ever changing. Other options are generalized statements with no special linkage to passage.
46. (a) Let us examine the validity of each and every option one by one - Only Indian is not right; overseas acquisitions are also discussed in passage. Acquisitions are not hostile always. This can be verified with the subsequent content of the passage. Globalization is not given in passage. This option is totally out of context.
47. (a) In option (b) 'limit' is doubtful. Option (c) and Option (d) are incorrect and cannot be defined from the passage. Option (e) applies too much caution which is not intended here. Option (a) is only option which in combination with next statement and is sensible.
48. (a) Implementation can be a challenge for such a wide banking system of India but it cannot be impossible or problem (supervisors are there to implement). It is foolish to implement on trial basis on a vast scale. Option (e) can be true or false as passage does not elaborate on it.
49. (a) A little reasoning is required to solve the question. If a foreign bank is operating in a country, then it shall be governed by the regulations of that country along with its original country. Then only that country will allow it to operate. On this logic option (d) can be rejected. Little extension of this logic discards the possibility of audit in country of origin. Hence rule out (c). Success does not depend on only policies of a country it demands a lot of other ingredients. Reject (e). Option (b) is inappropriate as passage does not support it.



Odd Sentence

'Sentence Exclusion' or 'Odd Sentence'

'Sentence Exclusion' or 'Odd Sentence' is a recent addition to banking competitive exams. Many aspirants are not well acquainted with these types of questions. In fact, odd sentence is nothing but a new way of presenting the old concept of Parajumbles. Aspirants are advised not to attempt questions without understanding the concept properly as it could be counter-productive.

In these types of questions, four sentences are given; out of which three of them when arranged in a logical sequence form a coherent paragraph, but one of them does not fit into the sequence. You have to choose the sentence which does not fit into the sequence.

Hence, to deal with the odd sentence, the aspirants should strategize in the following way -

1. Spot the sentence that is most likely to start a paragraph, that sentence which introduces an idea, or a concept, and which is not abrupt often starts a paragraph.
2. Now you have to establish a connecting link; here the parajumbles come into the picture. The sentence that is taking the idea forward on similar lines will come next in the sequence. Also, check whether the subjects in the sentences are linked or not.
3. Now repeat the step 2, see if there is some coherence to the paragraph that is formed after the logical arrangement of the sentences.
4. The sentence that is left from fitting into the sequence is your answer.

Keep in mind that the subject matter of odd sentence may be very similar to that of the other sentences but you have to see if it is logically related. Aspirants are advised not to make any haste while attempting this question because a little haste may cost you a question. So, if you are not convinced of the logical connectivity, you should not mark the answer. For this, develop your reading habit and practise a lot.

Here we give some examples which will make things clear:

Example 1: (d). The computer took 45 hours of non-stop computation.

- (c) Charles Babbage proposed the first general mechanical computer, the Analytical Engine in 1837.
- (a) This is not really surprising, because with eleven items of clothing the number of possible combinations is given by multiplying 11,10,9,8 and so on, which gives over 39 million combinations.
- (b) Someone once used the IBM computer to work out the number of ways of getting dressed with eleven items of clothing.

Answer : (c) b is the opening sentence, since it introduces the narrative. d will follow b, as it tells the chronology of the event. That is what happened next. This will be followed by a. Since a begins with the reflective pronoun, that indicates the action that happened in d. Anyways, the statement in 'c' does not relate to the passage, hence, an odd sentence.

Example 2 : (d) When briefing Kennedy, Eisenhower emphasized that the communist threat in Southeast Asia required priority.

- (a) John F. Kennedy, Democratic victor in the election of 1960, was at 43, the youngest man ever to win the presidency.
- (b) On television, in a series of debates with opponent Richard Nixon, he appeared able, articulate and energetic.
- (c) In the campaign, he spoke of moving aggressively into the new decade, for "the New Frontier is here whether we seek it or not".

Answer: (d) The statement 'd' just looks odd as it does not make a coherent paragraph with the other three sentences.

Example 3: (c) One day, a 17-year old shepherd boy came to visit his brothers and asked, "Why don't you stand up and fight the giant?"

- (d) We all know the story of David and Goliath, in which there was a giant who was bullying and harassing the children in the village.
- (b) But David said, "Okay! Let's go to the town and buy some eatables".
- (a) The brothers were terrified and they replied, "Don't you see he is too big to hit?"

Answer : (b) The sentence beginning with David saying that they should go to the town and buy some eatables does not fit into the above paragraph, hence, may be excluded.

EXERCISE

Directions: Four sentences are given below a, b, c and d. Of these, three statements are in logical order and form a coherent paragraph/ passage. From the given options, choose the option that does not fit into the sequence.

1. (a) The list of horrors goes on.
(c) And one in every five is malnourished.
(d) Nobody has been able to figure out a way to reduce the speed that is at the root of India's over-population problems: a baby born every second.
(b) Foods with a high content of absorbable micronutrients are considered the best means for preventing micronutrient deficiencies.
2. (b) In fact, it suites the purpose of the politicians, they can drag the people into submission by appealing to them in the name of religion.
(a) In order to inculcate, the unquestioning belief, they condemn the other states which do not follow their religion.
(d) The emergence of the theocratic states, where all types of crimes are committed in the name of religion of the Middle Ages is dangerous.
(c) Monarchy thus entails not only a political-administrative organization but also a "court society".
3. (d) It was something I knew that it would give me a chance to be my own boss.
(b) Today I have 800 on my staff, office and members.
(c) Although if you work for an ad agency in the 1960s, evidently it isn't there either.
(a) I was sick of working for others.
4. (d) Fire ripped through another pipeline in southern Nigeria, killing at least 40 people.
(b) Fuel is supplied not only to homes, but also to a variety of businesses and commercial establishments without any difficulty.
(a) The explosion was the third in two weeks.
(c) Police were deployed to stop villagers from stealing fuel from other pipelines.
5. (d) You would be very surprised indeed to find it hot.
(b) Cold, of course.
(c) Rivers are the most obvious and significant feature of the landscape.
(a) When you go bathing in a river or a pond, do you expect the water to be hot or cold?
6. (b) In a number of cases, the drivers have refused to carry passengers according to the meter reading despite it being in working condition.
(a) Refusal to carry commuters to their respective destinations is another common complaint which has been lodged with the call centres.
(d) The most shocking is the complaints about misbehaviour by the rickshaw drivers with the passengers.
(c) It's hard to reconcile the image of the paan-chewing driver greeting you with 'Good morning'.
7. (b) Finish specialists recommended a chewing gum containing xylitol - a natural sweetener present in birch, maple, corn and straw - to be used several times a day by young children.
(c) Chewing gum is a new solution that "may work for parents whose children suffer from chronic ear infections.
(a) Sugared gums can with heavy use cause tooth decay, gum disease and cavities.
(d) After Finish studies showed that xylitol is effective in preventing cavities, a team of researchers decided to investigate its effects on a very similar type of bacteria which causes ear infections.
8. (d) The CEO's leadership role also entails being ultimately responsible for all day-to-day management decisions.
(a) The chief executive had done an excellent job in welding a group of motley and successful companies into one profitable company.
(b) It is not surprising that company had been sitting on a cash hoard of about \$24 billion year after year without any attempt to use it for growth or development.
(c) The chief executive of the General Electric Company in England once told me that he was very happy when there were no problems in any of his many divisions.
9. (d) Businesses often feel that since they have a lot of market muscle and in such a dominant position, maintenance will be enough.
(b) IBM fell behind on the concept of "connectivity" and has suffered as a result.
(a) In recent years, however, even mighty IBM found that market domination was not enough if you fall behind on concept.
(c) IBM has been well known through most of its recent history as one of the world's largest computer companies.
10. (b) In the past, the customised tailoring units were localised to the township or city and catered exclusively to domestic demand.

- (a) Traditionally, Indians preferred custom-made clothing and the concept of ready-to-wear is a relatively recent one.
- (d) This is contrary to the popular notion that Indian men do not spend as much as women on clothing.
- (c) The customised tailoring outfits have always been a major source of clothing for domestic market.
11. (a) Michael Hofman, a poet and translator, accepts this sorry fact without approval.
- (c) He acknowledges too - in fact, he returns to the point often - the best translators of poetry always fail at some level.
- (b) Poetry typically follows some type of pattern while prose does not follow any formal patterns of verse.
- (d) In terms of the gap between worth and rewards, translators come somewhere near nurses and street cleaners.
12. (b) Reservation should not exceed 50% for the civil services for want of balance and efficiency.
- (a) A common form of caste discrimination in India has been the practice of untouchability.
- (c) The number of aspirants to the civil services in India is very large and they come from various socio-economic backgrounds.
- (d) These aspirants come from both reserved and unreserved category.
13. (d) Almost a century ago, when the father of the modern automobile industry, Henry Ford, sold the first Model T car, he decided that only the best would do for his customers.
- (a) In October 2012, Toyota announced a recall of 7.43 million vehicles worldwide to fix malfunctioning power window switches, the largest recall since that of Ford Motor Company in 1996.
- (b) And for over 90 years, this philosophy has endured in the Ford Motor company.
- (c) Thus a vehicle is ready for the customers only, if it passes the Ford 'Zero Defect Programme'.
14. (a) Because, if the manager's subordinates are inefficient and ineffective and are not helped to increase their efficiency and effectiveness, the task may not be achieved.
- (b) This must be just as true as the responsibility for achieving his prescribed tasks.
- (c) Dealing with employees who don't respect you or your authority can eventually make your job unbearable.
- (d) It is often and that one of the prime responsibilities of a manager is the training and development of his staff.
15. (b) Over the last decade, Australia and India have set up Test cricket's most absorbing rivalry.
- (d) Every champion needs a counterpoint; legacies, defined referentially, draw from the dynamic between world-beater and contender.
- (c) It was tough but India outperformed most of the teams in all three departments of the game in the last two years.
- (a) India, thanks to its natural style of calm aggressive cricket, its distinctive ability to play at the level of the opposition, and the confluence of some of the finest cricketers in the contemporary game, fulfilled this role of contender.
16. (c) Early in August, as his jeep wound its way through the piles of burning tyres that angry protestors had used to barricade the road from Srinagar airport into the city, former Chief Minister Farooq Abdullah, turned to a journalist sitting next to him with a smile on his face.
- (b) "So," he said, "Are you here to write another article about how I don't know how to run a government?"
- (a) More likely than not, Dr. Abdullah's leadership - or that of Jammu and Kashmir National Conference President, his son Omar Abdullah - will soon be put to the test.
- (d) The three time chief minister of Jammu & Kashmir asserted that only dialogue can bring peace in the valley.
17. (a) A nation has gone against its historical record.
- (d) The single undeniable aspect of Obama's legacy is that he demonstrated that a black man can become president of the United States.
- (b) Risen above its worst prejudices in one, emotional incandescent moment.
- (c) Well, at least partly, and for a while Americans have voted in larger numbers than they have in decades, perhaps ever.
18. (d) This is the time of the year when people go out and shop for their winter wear.
- (b) But it seems economic recession has hit the fashion industry as well.
- (a) We haven't seen exclusive fashion shows from big designers this winter.
- (c) Winters for the past two years have been among the warmest, during December to March, in north India that heavily impacted sales of winter clothing by almost 30%.
19. (b) After all, a story told on the large screen inevitably differs from that told on the small screen.
- (c) This critical difference has an impact on viewership in terms of age, income and occupation.
- (a) In this, the age of multimedia, we have to train ourselves to understand that as a rule, the medium is the message.
- (d) In any play you've got to know what's going on around you so you can hear your cue to give a line or move in the scene.

20. (d) The size of the carbon footprint of nations in the developing world has again come in for serious international discussion.
- (c) The failed mission of Copenhagen is the immediate cause of the resumption of this debate.
- (b) While the main triggers of the debate are economic, social and cultural factors also have a major role to play.
- (a) There are both natural and human sources of carbon dioxide emissions.
21. (b) For pure vegetarians India is a heaven.
- (a) These are also prepared using different methods of cooking like baking, boiling, frying etc.
- (c) Indians like their vegetable curries real hot 'n' spicy and so add a number of spices to make them really exotic.
- (d) In factory farms around the world, animals are very often treated as commodities just to be exploited for profit.
22. (a) But it's true that Chinese people were well aware about green tea from ancient time.
- (d) We came to know about this green tea very late.
- (b) If I had said that tea is a healthy drink some years before the introduction of green tea, I might have been ridiculed.
- (c) Plain tea doesn't contain any sugar or calories, but many bottled iced teas on the market are loaded with both.
23. (c) Environment Education Unit of Centre for Science and Environment has always been working towards providing easy-to-understand reading material.
- (d) Their new publication on this subject is an attempt to lend teachers a helping hand.
- (a) It unfolds in two sections: Climate Change: how to make sense of it all, and Natural Resources: how to share and care.
- (b) During the past century, human activities have released large amounts of carbon dioxide and other greenhouse gases into the atmosphere.
24. (d) A famous Japanese rock garden is at Ryoan-ji in North West Kyoto, Japan.
- (c) A rock garden can also turn an otherwise awkward spot, like a hard-to-mow slope, into a showcase for your more delicate plants.
- (b) The garden is 30 meters long from East to West and 10 meters from North to South.
- (a) There are no trees, just 15 irregularly shaped rocks of varying sizes, some surrounded by moss, arranged in a bed of white gravel/sand that is raked every day.
25. (a) When they gathered together, the Buddha was completely silent and some speculated that perhaps the Buddha was tired or ill.
- (b) It is said that Gautama Buddha gathered his disciples one day for a Dharma talk.
- (d) The Buddha silently held up and twirled a flower and twinkled his eyes; several of his disciples tried to interpret what this meant, though none of them was correct.
- (c) Emperor Ashoka built the first temple near Bodhi tree during the 3rd Century BCE, almost 300 years after Buddha's period (566-486 B.C.E).
26. (a) The band has gone through several drummers over the years, though Travis has held the position since 1989 and is the longest-serving.
- (b) 'Judas Priest' are an English heavy metal band from Birmingham, England, formed in 1969.
- (d) The core line-up consists of lead vocalist Rob Halford, guitarist Glenn Tipton, bassist Ian Hill, and drummer Scott Travis.
- (c) Pop music is a slow and melodious form of music, where you can relax while listening to the refreshing songs sung by mega pop stars.
27. (a) In the past year, CBI has registered 170 cases but most of these relate to middlemen.
- (c) Overall, it is proposed to train nearly 550 investigators and prosecutors in these eminent national institutions over the next three years.
- (d) This is the job only half done as the agency has not been able to find any incriminating documents against the political class so far.
- (b) CBI has made some headway by identifying 121 impersonators after scanning details of over 9.5 lakh medical students.
28. (a) In urban-poor households, it is used for both lighting and cooking.
- (c) A recent report by the CEEW shows how shifting from kerosene to alternatives such as solar-assisted solutions for lighting and LPG for cooking could be economically beneficial for both the government as well as households.
- (d) The CEEW's analysis of National Sample Survey Office data highlights that kerosene is predominantly used as a lighting fuel in rural India.
- (b) LPG is used for cooking in many countries for economic reasons, for convenience or because it is the preferred fuel source.
29. (a) The income-tax department is reportedly on an overdrive to nab tax evaders.
- (d) This is extremely unfortunate and will result in harassment of the middle class.
- (b) It occurs whenever there is a change of national currency.
- (c) Punitive action against non-disclosure should be in consonance with the existing income tax law.

30. (a) Trading or investment ideas come in many ways -from stock brokers, investment advisors, media and in most cases from the man next door who just got rich by following a friend's 'tip.'
- (b) Numerous canteens across the country may soon turn quiet at the lunch hour if the Securities and Exchange Board of India (Sebi) has its way in regulating the flow of stock tips on social media.
- (d) Sebi, which wants to protect your wellbeing, may unintentionally be preventing you from getting rich.
- (c) The BSE is the world's 11th largest stock exchange with an overall market capitalization of \$1.43 Trillion as of March, 2016.
31. (c) There is no bottle of ink waiting to be typed over on to my writing pad.
- (d) I always read storybooks, newspapers, magazines, and any other material that I find interesting in my free time.
- (b) While it is true that I do most of my writing by hand, this does not mean that I will use any pencil or pen that comes to hand.
- (a) Being one of the clumsiest humans on earth, I am unable to fill or refill or empty a fountain pen of its ink without getting the said ink, black, blue or blue-black, all over my hands or onto my coat-sleeves or shirt front.
32. (a) This message was primarily aimed at China, a country with which India has had differences on the issue of Pakistan-sponsored terrorism against India.
- (c) China portrays itself as a Third World country that pursues "an independent foreign policy of peace."
- (d) China had recently put a technical hold once again at the United Nations and prevented Azhar from being designated a global terrorist, despite JeM being a UN-proscribed terror group.
- (b) The Prime Minister's focus, by and large, remained on the issue of terrorism.
33. (a) Many Indian MNCs with global footprints need linguists to help them in foreign land.
- (b) As the global marketplace expands, the need of personnel who can communicate in foreign language will increase.
- (d) But learning a foreign language is fast becoming a necessary job skill in its own right.
- (c) According to the American Community Survey, more than one in 5 individuals over the age of 5 (21%) speak a language other than English at home.
34. (d) It must be appreciated that there is an imperative need for such special legislations as the normal laws are not adequate to deal with the situation.
- (a) An important issue which has come up in this context relates to the need for special legislation to cope with the situation.
- (b) Any discussion on human rights is incomplete without reference to the security and terrorist threats facing the country.
- (c) But it remains to be seen if the demonetisation really reduced corruption and whether black money hoarders were truly affected by the policy.
35. (c) Else India will continue to be placed in no-win situations, on the outside looking in, as at present.
- (b) Asean's decision to tighten its integration should serve as a wake-up call to India's policy makers.
- (a) The success of regional trade agreements where India is not a party should prod the Centre to quickly move forward with domestic economic reforms.
- (d) The World Trade Organization (WTO) is the only global international organization dealing with the rules of trade between nations.
36. (a) In this particular case FBI has asked Apple to help them crack into one particular phone, not develop a generic backdoor into Apple's encryption.
- (b) This could help authorities unearth terror plots and save lives.
- (c) In these exceptional circumstances, a channel must be available for security agencies to access data on devices used by terrorists.
- (d) Even if it is argued that terrorism is employed by revolutionaries as a 'tactic', such means cannot justify the end.
37. (a) Ambedkar became part of the Constituent Assembly, was assigned the task of preparing the first draft of the Constitution.
- (b) He then joined Nehru's Cabinet as India's first law minister, but quit later over the question of the Hindu Code Bill.
- (d) At that point of time Ambedkar wasn't sure he would be part of the Constitution making body.
- (c) The Constitution applies to the State of Jammu and Kashmir with certain exceptions and modifications as provided in article 370 and the Constitution (Application to Jammu and Kashmir) Order, 1954.
38. (c) Most heartening is that India is now the 26th easiest place to get an electricity connection, up 25 places from last year.
- (d) That the Bank in its Doing Business 2017 report now ranks India 130 among 190 countries, just one notch higher than last year, is therefore likely to be taken as a signal of the snail's pace of economic reform.
- (a) As proof of its commitment to economic renewal, the Narendra Modi government had set itself the target of breaking into the top 50 in the World Bank's annual ranking of countries on ease of starting and operating a for-profit enterprise.

- (b) After the Modi government came the inflation had come down to around 5% while revised gross domestic product (GDP) data was pointing to a growth at 7.4% and will help India better even China.
39. (d) However, it is vulnerable to deliberate abuse, accidental bungling, and occasional failures.
- (b) Stories of such anomalies are not rare in the criminal justice system of the United States.
- (c) In every nation the justice system strives to be perfect.
- (a) The United States joins other nations in sending a clear message: we will not allow Iran to have a nuclear weapon.
40. (a) The recent announcement of Rs 11,300 crore for the Swachh Bharat Mission (SBM) in the 2016-17 budget reiterates this.
- (c) There is an urgent need to build greater momentum around a broader understanding of what will make India truly Swachh.
- (d) Nearly 17 months have passed since Prime Minister Narendra Modi launched the Swachh Bharat Abhiyan on October 2, 2014.
- (b) The effects of poor environmental sanitation are numerous and they include human disease, poor overall human health and economic disadvantages as well as social disadvantages.

ANSWER KEY

1	(b)	6	(c)	11	(b)	16	(d)	21	(d)	26	(c)	31	(d)	36	(d)
2	(c)	7	(a)	12	(a)	17	(d)	22	(c)	27	(c)	32	(c)	37	(c)
3	(c)	8	(d)	13	(a)	18	(c)	23	(b)	28	(b)	33	(c)	38	(b)
4	(b)	9	(c)	14	(c)	19	(d)	24	(c)	29	(b)	34	(c)	39	(a)
5	(c)	10	(d)	15	(c)	20	(a)	25	(c)	30	(c)	35	(d)	40	(b)

Hints & Explanations

- (b) Statement b is just out of context; hence, excluded.
- (c) The monarchy does not find mention in the paragraph, so, excluded and an odd sentence.
- (c) The sentence stating working for an ad agency does not part of the paragraph.
- (b) Statement b just looks odd in the paragraph. Hence, can be the answer.
- (c) Statement c does not connect with other three sentences, so, excluded.
- (c) The statement about the paan-chewing driver greeting you with 'Good morning' does not fit into the passage.
- (a) Sentence a seems to be out of context, hence, the odd one.
- (d) 'd' stating CEO's leadership role seems to be unfit in the paragraph, hence, can be excluded.
- (c) 'c' is the odd sentence which does not fit into the arranged paragraph, hence, the answer.
- (d) The statement denoting that Indian men do not spend as much as women on clothing seems to be out of context.
- (b) 'The difference between prose and poetry' has no mention in other sentences; hence, b is an odd sentence.
- (a) Sentence a does not match with the core issue of the paragraph, so, excluded.
- (a) The statement a seems to be unfit into the paragraph; so, excluded.
- (c) Sentence c does not match with the paragraph; hence, excluded.
- (c) Statement c does not seem to belong to the paragraph.
- (d) Statement d is not the part of the conversation between the chief minister and reporter.
- (d) The statement which talks of Obama's legacy does not seem to be the part of the paragraph.
- (c) Statement c talks of the winter season and not winter wear; hence, odd sentence.
- (d) Statement d does not match with other three sentences and is excluded.
- (a) Sentence a talks of the sources of carbon dioxide emissions which does not fit into the paragraph.
- (d) Statement d seems to be odd in the paragraph.
- (c) Sentence c talks of the demerits of the tea which is not the issue in the paragraph.
- (b) Statement b seems to be out of context, hence, may be excluded.
- (c) Statement c seems not to be so close to the paragraph, so, excluded.
- (c) Statement c talks of Ashoka building the first temple near Bodhi tree which is out of context.
- (c) Statement about pop singers is not relevant to the paragraph; so, excluded.
- (c) Proposing to train investigators and prosecutors seems to be out of context.
- (b) LPG does not find mention in the other three sentences; hence, an odd sentence.
- (b) Statement b talks of change in national currency which is irrelevant to the paragraph.
- (c) Statement c talks of Bombay Stock Exchange which is not relevant to the paragraph.
- (d) This sentence mentions writer's hobbies which is not relevant to other sentences.
- (c) Sentence c addresses China's foreign policy while other sentences discuss the terrorism issue with India.
- (c) Statement c about individuals speaking a language other than English at home is out of context.
- (c) Statement c talks of demonetization while others discuss handling terrorism by making legislations.

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| 35. (d) Statement d is about WTO whereas all three sentences talk of ASEAN. | 38. (b) Statement b focuses on inflation and GDP while other sentences discuss the ease of doing business. |
| 36. (d) Statement d does not match with other three sentences which discuss FBI and international terrorism. | 39. (a) Statement a warning Iran about its nuclear ambitions is not relevant to the paragraph. |
| 37. (c) Statement c talks of Article 370 which is not relevant to the paragraph. | 40. (b) Statement b talks of the effects of poor environmental sanitation which is not relevant here. |



Computer Knowledge

WHAT IS A COMPUTER

A computer is an electronic and programmable device that receives input, stores, manipulates and processes data to provide output in a useful format. It is used to solve problems relating to almost all fields such as administration, defence, education, home, medicine, science and technology, research, designing, accounts, publishing, etc. No doubts, in recent years, Computer and Information Technology (IT), has become an integral part of human life. As computer is an information-processing and information-accessing tool, it accepts some information/data from the outside world, processes those data and produce a new information/data. Hence, information processing is the essence of computing.

Meaning of the word 'Computer': The word computer has its origin from an English word 'Compute', which means 'to calculate'.

A computer is an advanced electronic device that takes raw data as input from the user and processes this data under the control of set of instructions (called program) and gives the result (output) and saves the output for the future reference and usage.

Computer is an electronic machine which processes the input information/data as per the given set of instructions that is called 'program'.

CHARACTERISTICS OF COMPUTER

Computer has become an essential part of our day-to-day activities. Computers are used more or less in every sphere of life. Its growing importance is because of its unique features which are as follows.

- **Accuracy :** Computers are very accurate. They do make mistakes but seldom. This is because of their physical circuit. Even if they make mistakes, it might be because of the faulty programs, some mistake made while feeding in the data or poorly designed system. The highly efficient error detecting techniques of the computer prevents it from showing false results.
- **Speed :** The computer was initially invented as a very high speed calculator. This helped in completing many scientific projects that were previously impossible. The landing on the moon would not have been possible if computer had not been there, neither would we take an umbrella if we saw clear sky and weather forecast told us that it would rain in the afternoon. We would have taken a lot of time in making the arrangements for flying abroad if computers were not there to book our seats so easily and fast. This ability to get the answers fast enough so that one has time to take an action

on them (to make alternative arrangements in case of reservations) makes real-time computing possible. It uses Electrical pulses, so its speed is virtually instantaneous. When talking about speed of the computer, we don't talk in seconds or microseconds but in nanoseconds (10^{-9} seconds) or even picoseconds (10^{-12} seconds).

- **Versatility :** This means that the computers are capable of performing any type of task, provided the activity could be put into logical steps. It can be used from cooking (microwave oven) to spending a night on the moon (through satellites). In today's world it is difficult to imagine even a single field which is untouched by computer invasion.
- **Storage :** A human mind acquires some knowledge and after it has used, it might keep it in its subconscious mind or might even forget it after some time. But computers can store massive amounts of information. This information can be used and reused time and again for years (unless something goes wrong with the hardware). Today's computers have the disks, which have the capacity of storing billions of characters. This is big enough to store the complete Britannica Theasaurus, dozens of computer programs or the applications, thousands of songs, huge databases, all the projects we have ever done in our life and much more.
- **Memory :** Sometimes if we try to recall what we studied last year, we are not able to recollect. In case of computer, it's not like that. If we store any information in the computer's memory, it remains there till we do not delete it.
- **Automation :** A computer is much more than just a calculator in which we need to give the instructions at every step. Once the instructions are fed into computer, it works automatically without any human intervention is an intelligent device and if programmed for an activity, it keeps doing it till it finishes, without any human intervention.
- **Diligence:** Computer being a machine, does not show any signs of fatigue, tiredness, lack of concentration, or lost interest. A computer will never fail to perform its task due to distraction or laziness. The speed, accuracy and the quality would be absolutely same in the first and the last calculation, even if millions of calculations are done by computer. It will not complain even once that they are bored. Thus, it is best specially for monotonous and voluminous work.
- **Reliability :** Above all qualities of the computer make them reliable and also make us too dependent on them. They can be run for years and years without any loss of data or any other problem.

- **Convenience** : Computers are usually easy to access, and allow people to find information easily that without it would be very difficult.
- **Flexibility** : Computers can be used for entertainment, for business, by people who hold different ideals or who have varied goals. Almost anyone can use a computer, and computers can be used to assist with almost any goal.

DEVELOPMENT OF COMPUTERS

• 1600 A.D.– Napier Bones

Another counting device is “Napier Bones”. John Napier, a Scottish Mathematician, invented it. The "bones" were strips of ivory with numbers written in them. When the bones were arranged properly, the user could read the numbers in adjacent columns to get the answer of a multiplication operation.

• 1642 A.D.– Adding Machine– Blaise Pascal– France

The well known French Scientist and Mathematician, Blaise Pascal invented the first machine which could add, carry digits automatically. He was only nineteen years old at that time. His machine was so revolutionary that the principle behind it is still used in most of the mechanical counters.

• 1692 A.D. – Multiplying Machine-gottfried Leibnitz- Germany

Gottfried improved upon Pascal's machine and introduced a mechanism to carry out automatic multiplication of numbers. Leibnitz is best known for his work with Sir Isaac Newton in developing a branch of Mathematics, known as Calculus. The calculator invented by him could add, subtract, multiply and divide accurately. It could even perform square root function, although not always accurately.

• 1813 A.D. – Difference Engine – Charles Babbage– England

Since early 19th century, Charles Babbage, an Englishman, had been working on the development of a machine, which could perform complex calculations. In 1813 A.D., he invented the 'Difference Engine' which could perform complex calculations and print them out as well. This machine was a steam powered machine.

• Early 1800's Jacquard Loom-joseph Marie Jacquard

In the early nineteenth century, a French weaver Joseph Marie Jacquard developed a programmable loom, which used large cards and holes punched in them to control the pattern automatically. The output was a thick rich cloth with repetitive floral or geometric patterns.

COMPUTER GENERATIONS

In recent years, the computer industry has grown at a phenomenal pace. In a short time of 35 years or so, computers have improved tremendously. In the last decade, the speed of computer has increased 200 times. Not only that the reliability curve has also taken a sharp increase. The cost per unit of calculating has gone

down by 500 times. The storage capacity is increasing so fast that now it seems that nothing is impossible to store. Large data can be stored in very small devices.

The term "generations" was initially introduced to distinguish between different hardware technologies. Gradually it shifted to both hardware and software as the total systems consists of both of them. The computers can be divided in five past generations, depending upon the technologies used. The five generations of computer are:

1st Generation (1942-1955)

- Until 1951, electronic computers were the exclusive possession of scientists and the military. Till then nobody tried to use them for business purpose. The idea of marketing them was conceived by Mauchy and Eckert, creators of ENIAC. As US census bureau was already using IBCP cards, they were the pioneers in buying this computer for the first time in 1951. The company created by M and ETS became UNIVAC division of Sperry and Corporation.
- The bringing of first UNIVAC (Universal Automatic Computers) general purpose electronic digital computer, marks the beginning of the first generation of electronic computers. These computers used valves and all the components were joined by copper wires. Due to large size of the components and due to the facts that the components had to be spaced apart as the valves dissipated a lot of heat, the computers were very bulky and required huge electric power, airconditioners, maintenance and space for their installation.
- Computers belonging to this generation had the following characteristics:
 1. Comparatively large in size as compared to present day computers.
 2. Generated lot of heat, they were not consistent and reliable as the valves tended to fail frequently.
 3. Low capacity internal storage.
 4. Individual, non-related models.
 5. Processors operated in the speed range of milliseconds.
 6. Internal storage consisted of magnetic drum and relay lines.

2nd Generation (1955-1964)

- First Generation Computers were very unreliable, mainly because of vacuum tubes which kept on burning out. Users had to be prepared all the time with dozen of extra tubes to replace them. The computers of this generation were characterized by the use of solid state devices (transistors) instead of vacuum tubes. Transistorised circuits were smaller, generated little heat, were less expensive and consumed less power than vacuum tube circuits and were much greater in processing capacity.
- Computers of this generation had the following characteristics:
 1. Smaller in size compared to the first generation computers.
 2. Generated a lower level of heat, as components were much smaller.
 3. Greater degree of reliability because of solid state technology.
 4. Higher capacity of internal storage.
 5. Use of core storages instead of magnetic drum and relay lines.

3rd Generation (1964-1975)

- A revolution in the computer development took place with the development of Integrated Circuits (IC) on a single silicon chip. In 1958, Jack St. Clair Kelby and Robert Noyce invented the first IC. IC incorporated number of transistors and electronic circuits on a single wafer or chip of silicon. IC was called chip because of the way they were made. One more technology development which took place was the launching of first telecommunication satellite. The communication stations on the earth were now in a position to send and receive data by means of satellite communications between the computer systems around the world.
- Computers of this generation has the following characteristics:
 1. Smaller in size as compared to second generation computers.
 2. High capacity internal storage.
 3. Remote communication facilities.
 4. Multiprogramming facilities.
 5. Wide range of optional peripherals.

4th Generation (1975-1989)

- The 1970's marked the beginning of a new generation of computers, the development of microprocessor chip which contains an entire Central Processing Unit (CPU) on a single silicon chip led to the mushroom growth of expensive computers. They were not computers by themselves but they can perform all the functions of arithmetic and logic unit and control units of the CPU, memory and input-output devices, they become microcomputers. The semiconductor memories were also very small and very cheap. There were several types of memory chips. Three of the most commonly used are (a) Random Access Memory (RAM) in which data can be read or written corresponding to the main memory of the conventional computer. (b) Read Only Memory (ROM) and (c) Programmable Read Only Memory (PROM).

5th Generation (1989-Present)

- Till fourth generation of computers, the major stress was on improving the hardware from valves to transistors and then to integrated circuits, which resulted in *miniaturization* and fast speed of computers. However, the lack of thinking power has forced the scientists to work further for Fifth generation computers. The concept of "Artificial Intelligence" is being used in these computers and Japanese call them "Knowledge Processors".
- The fifth generation has three functional requirements:
 1. Easy to use computers with high intelligence and *natural* human input and output mechanism.
 2. Reliable and efficient software development by new languages, new computer architectures and systems software which overcome previous problems.
 3. Improved overall functions and performance aimed at making computers smaller, lighter, faster of greater capacity, more flexible and more reliable.

These are the objectives which set the main themes for the future of computing, whatever techniques are used to achieve them.

CLASSIFICATION OF COMPUTERS

Computers can be classified according to the following types:

Based on Work

Analog

The analog computers are computer systems that measure variations in quantities such as temperature, voltage, speed, etc. Analog computers are used to measure the data that varies continuously. Common examples of analog computers include Voltmeter and Ammeter.

Digital

Digital computers are the computer systems that count things by manipulation of certain discontinuous numbers and letters through representation of binary digits (also called bits) in contrast to analog computers that measures the variations in quantities. In other words, texts and graphics are treated numerically.

Examples of digital computers are desktop, personal computers, workstations, tablet PC, etc.

Hybrid

Hybrid computers as the name suggests are a good mix of analog as well as digital computers, using an analog computer front-end, which is then fed into a digital computer's repetitive process. Hybrid computers are used for scientific calculations and in defence systems.

Based on Purpose

On the basis of purpose, computers are categorised as following:

General Purpose

These computers are designed to work on different types of applications. In these types of computers the programs are not stored permanently, rather programs are input at the time of their execution. Personal computers, including desktops, notebooks, smartphones and tablets, are all examples of general-purpose computers. Various tasks can be accomplished by using general purpose computers. For example, writing and editing (word processing), manipulating different facts and figures in various databases, tracking manufacturing inventory, making scientific calculations, controlling organization's security system, electricity consumption, building temperature, etc.

Special Purpose

Special-Purpose computers are task specific computers and are designed to solve a particular problem. They are also known as dedicated computers, because these computers are dedicated to perform a single particular task repetitively. Examples of such computer systems include the traffic control system, they are also used in video games, navigational systems in an aircraft, weather forecasting, satellite launch tracking, oil exploration, and in automotive industries, keeping time in a digital watch, or Robot helicopter.

Based on Memory Size and Performance

Computers can be generally classified by size and power as follows –

Micro Computer

A microcomputer is a computer that uses a microprocessor as its central processing unit. Microcomputers are physically smaller

in size as compared to mainframe and minicomputers. Many microcomputers when equipped with a keyboard and screen for input and output respectively can be used as personal computers (in the generic sense). Microcomputers are easier to use and also inexpensive as the memory used by them, i.e., microprocessors and semi conductors have become cheaper in the last few years.

E.g. : The various micro computers widely available are IBM pc's, APPLE, mac, etc., the small types of pc's like the palmtop and handheld are now becoming available.

Minicomputer

It is a midsize computer. In the past few years the difference between large minicomputers and small mainframes has decreased significantly, just like the distinction between small minicomputers and workstations. A minicomputer can support upto 200 users at the same time.

E.g. : The various machines widely available are vax series 8200 and 8300, honeywell (xps-100), icl's series 36 level 20,50,60 galaxy-21, hcl-4, nelco-5000 and others.

Mainframe

Mainframe computers known as the "Big Iron" are computers that are used primarily by corporate and governmental organizations. Modern mainframe design is generally defined by the following features:

- High reliability and security.
- Extensive input-output facilities with the ability to offload to separate engines.
- Strict backward compatibility with older version of software.

Supercomputer

Supercomputer is a term used for one of the fastest computers that exist today. They are developed for specialized applications that require processing of highly critical data and immense amounts of mathematical calculations. **E.g. :-** Weather forecasting requires a supercomputer.

- PARAM is a series of supercomputers designed and developed by the Centre for Development of Advanced Computing (C-DAC) in Pune, India. The latest machine in the series is the PARAM Yuva II.
- China's vast Tianhe-2 is the fastest supercomputer in the world.

Personal Computers

Personal Computers are computers that are designed for an individual user. These computers are small and relatively cheaper. In price, personal computers can range anywhere from a few hundred pounds to over five thousand pounds. Personal Computers use the microprocessor technology as they enable manufacturers to put an entire CPU onto one chip. They serve myriad purposes and can be put to use by various businesses for word processing, accounting, desktop publishing, and for running spreadsheet and database management applications. People across the globe use internet for playing games, surfing net and other online applications at their homes and personal use.

Types of Personal Computers

Personal computers can be classified on the basis of its size. There are two basic types of the traditional designs, i.e., the desktop models and tower models. There are several variations on these two basic types also :

- **Tower model :** This model of personal computer refers to a computer in which the power supply, motherboard, and other mass storage devices are stacked on top of each other in a cabinet.
- **Desktop model :** Desktop model means computer that are designed to fit comfortably on top of a desk, with the monitor sitting on top of the computer. Desktop model computers as compared to the tower model are broad and low, whereas tower model computers are narrow and tall.
- **Notebook computer :** Also called ultra book. These are extremely popular because they are very lightweight and portable. Because of their small size, typically less than 6 pounds or lesser than that, they have become so popular. These flat-panel technologies can produce a lightweight and non-bulky display screen. The quality of notebook display screens also differs considerably. Modern notebook computers are very similar to personal computers in terms of computing power.
- **Laptop computer :** Laptop are now a days also called notebook computers. These are small and portable. You can make them sit on your lap and work on them.
- **Subnotebook computer :** Subnotebook computers are portable computers that are even lighter and smaller than a full-sized notebook computer. They are light weight because they use a small keyboard and screen as compared to a notebook computer.
- **Hand-held computer :** These computers are portable enough to be carried in one's hand. They are extremely convenient for use but due to extremely small size of their keyboards and screens they have still not succeeded in replacing notebook computers.
- **Palmtop :** These computers as the name suggest fit in your palm. Due to extremely small size their use is limited to phone books and calendars .
- **PDA :** PDA's have electronic pens rather than keyboards for inputs unlike laptop. They also incorporate handwriting recognition features and voice recognition technologies, i.e., can also react to voice input. PDAs are also called palmtops, hand-held computers and pocket computers.
- **Smartphones :** Smartphones are cellular phones that function both as a phone and a small PC. They may use a pen or may have a small keyboard. They can be connected to the internet wirelessly. Apple, Samsung, Sony are some manufacturers of smartphones.

COMPONENTS OF COMPUTERS

Following are the various components of a computer system—

Input Unit

Data and instructions must enter the computer system before any computation can be performed on the supplied data. The input unit that links the external environment with the computer system performs this task. An input unit performs the following functions:

- It accepts (or reads) the list of instructions and data from the outside world.
- It converts these instructions and data in computer acceptable format.
- It supplies the converted instructions and data to the computer system for further processing.

Output Unit

The job of an output unit is just the reverse of that of an input unit. It supplied information and results of computation to the outside world. Thus it links the computer with the external environment. As computers work with binary code, the results produced are also in the binary form. Hence, before supplying the results to the outside world, it must be converted to human acceptable (readable) form. This task is accomplished by units called output interfaces.

Following functions are performed by an output unit:

- It accepts the results produced by the computer which are in coded form and hence cannot be easily understood by us.
- It converts these coded results to human acceptable (readable) form.
- It supplied the converted results to the outside world.

Storage Unit

The data and instructions that are entered into the computer system through input units have to be stored inside the computer before the actual processing starts. Similarly, the results produced by the computer after processing must also be kept somewhere inside the computer system before being passed on to the output units. The Storage Unit or the primary / main storage of a computer system is designed to do all these things. It provides space for storing data and instructions, space for intermediate results and also space for the final results.

The specific functions of the storage unit are to store:

- All the data to be processed and the instruction required for processing (received from input devices).
- Final results of processing before these results are released to an output device.

Central Processing Unit

The main unit inside the computer is the CPU. This unit is responsible for all events inside the computer. It controls all internal and external devices, performs “Arithmetic and Logical operations”. The operations a Microprocessor performs are called “instruction set” of this processor. The instruction set is “hard

wired” in the CPU and determines the machine language for the CPU. The more complicated the instruction set is, the slower the CPU works. Processors differed from one another by the instruction set. If the same program can run on two different computer brands they are said to be compatible. Programs written for IBM compatible computers will not run on Apple computers because these two architectures are not compatible.

Arithmetic and Logic Unit (ALU)

The arithmetic and logic unit (ALU) of a computer system is the place where the actual execution of the instructions take place during the processing of operations. All calculations are performed and all comparisons (decisions) are made in the ALU. The data and instructions, stored in the primary storage prior to processing are transferred as and when needed to the ALU where processing takes place. No processing is done in the primary storage unit. Intermediate results generated in the ALU are temporarily transferred back to the primary storage until needed at a later time. Data may thus move from primary storage to ALU and back again as storage many times before the processing is over. After the completion of processing, the final results which are stored in the storage unit are released to an output device.

Control Unit

The control unit directs and controls the activities of the internal and external devices. It interprets the instructions fetched into the computer, determines what data, if any, are needed, where it is stored, where to store the results of the operation, and sends the control signals to the devices involved in the execution of the instructions.

INPUT DEVICES

Keyboard

Keyboard is used to input the data to the computer. In traditional times the typewriter was used. The keyboard has the layout similar to that of a typewriter but some additional keys are present that have additional functions. The keys are following :

Table : Keys

Sr. No.	Keys	Description
1	Typing Keys	These keys include the letter keys (A-Z) and digits keys (0-9) .
2	Numeric Keypad	It is used to enter numeric data or cursor movement. It has a set of 17 keys that are in the same layout as that of calculators.
3	Function Keys	There are twelve functions keys present on the keyboard. These are arranged in a row along the top of the keyboard. Each function key has unique meaning and is used for some specific purpose.
4	Control Keys	These keys are used to provide cursor and screen control. It includes four directional arrow keys. Control keys also include Home, End, Insert, Delete, Page Up, Page Down, Control(Ctrl), Alternate(Alt), Escape(Esc).
5	Special Purpose Keys	Keyboard also contains some special purpose keys such as Enter, Shift, Caps Lock, Num Lock, Space bar, Tab, and Print Screen.

Mouse

Mouse is a cursor-control device. It is a pointing and drop device. Its size is good enough to fit the palm. It has a palm size box with a round ball at its base. It senses the movement of mouse and

sends corresponding signals to CPU on pressing of the buttons. There are two buttons that provide the left click and the right click. A scroll bar is present in the mid. Mouse is only used to control the position of cursor on screen.

Scanner

Scanner is an input device, which works on a similar principle of a photocopy machine. It is used when some information is available on a paper and it is to be transferred to the hard disk of the computer for further manipulation.

Touch Screen

A touch screen is an electronic visual display that the user can control through simple or multi-touch gestures by touching the screen with a special stylus/pen and-or one or more fingers. Some touch screens use an ordinary or specially coated gloves to work while others use a special stylus/pen only.

Magnetic Ink Character Recognition (MICR)

We see in banks, libraries, etc using MICR as an input device. As large number of cheques are processed everyday MICR serves a very useful purpose. A special type of ink that contains particles of magnetic material that is machine readable, is used to read the code number and cheque number that are printed on the cheques in banks. This reading process is called Magnetic Ink Character Recognition (MICR). The main advantage of MICR is that it is highly accurate and fast in reading.

OMR (Optical Mark Recognition)

Optical mark recognition (also called Optical Mark Reading and OMR) is the process of capturing human-marked data from document forms such as surveys and test.

SCR (Smart Card Readers)

A small electronic device about the size of a credit card that contains electronic memory, and possibly an embedded Integrated Circuit (IC). Smart cards containing an IC are sometimes called Integrated Circuit Cards (ICCs).

Bar Code Readers

Bar Code Reader is a device used for reading bar coded data (data in form of light and dark lines). Bar coded data is generally used in labelling goods, numbering the books, etc. Bar Code Reader scans a bar code image by converting it into an alphanumeric values. This value is then fed to the computer to which bar code reader is connected.

Webcam

A webcam is a video camera that feeds or streams its image in real time to or through a computer to computer network. When "captured" by the computer, the video stream may be saved, viewed or sent on to other networks via systems such as the internet, and email as an attachment. When sent to a remote location, the video stream may be saved, viewed or on sent there. Unlike an IP camera (which connects using Ethernet or Wi-Fi), a webcam is generally connected by a USB cable, or similar cable, or built into computer hardware, such as laptops.

OUTPUT DEVICES

An output device is that component of computer hardware that communicates the results of data that is processed by the computer and converts the digital information into a form easily read and understood by humans. Various Output devices are used in Computers.

Monitors

Monitor or the Visual Display Unit (VDU) is the main output device of a computer. It forms images in the form of tiny dots, known as pixels. The sharpness of the image can be determined by the number of the pixels.

Printers

Printer is among the most common output device, which is used to print information on paper.

There are two types of printers:

- (a) **Impact Printers:** An impact printer makes contact with the paper. It generally forms the image by pressing an inked ribbon against the paper using a hammer or pins. Various types of impact printers are as follows:
- **Dot-Matrix Printers:** The dot-matrix printer uses print heads which contains 9 to 24 pins. These pins produce patterns of dots on the paper to form the individual characters. The general rule is the more pins, the clearer the letters on the paper. Dot-matrix printers are inexpensive and typically print at speeds of 100-600 characters per second.
 - **Daisy-Wheel Printers:** It is called daisy-wheel printer because the print mechanism looks like a daisy; at the end of each "Petal" is a fully formed character which produces solid-line print. Its speed is slow typically 25-55 characters per second.
 - **Line Printers:** In business functions where a large amount of material are printed, the character-at-a-time printers are too slow; therefore, such users need line-at-a-time printers. Drum, chain, and band printers are line-at-a-time printers:
 - **Drum Printer:** A drum printer consists of a solid, cylindrical drum that has raised characters in bands on its surface. The number of print positions across the drum equals the number available on the page. This number typically ranges from 80-132 print positions. The drum rotates at a rapid speed. For each possible print position there is a print hammer located behind the paper. These hammers strike the paper, along the ink ribbon, against the proper character on the drum as it passes. One revolution of the drum is required to print each line. Typical speeds of drum printers are in the range of 300 to 2000 lines per minute.
 - **Chain Printers:** A chain printer uses a chain of print characters wrapped around two pulleys. Like the drum printer, there is one hammer for each print position. The circuit inside the printer detects when the correct character appears at the desired print location on the page. The hammer then strikes the page, pressing the paper against a ribbon and the character located at the desired print position. An impression of the character is left on the page. The chain keeps rotating until all the required print positions on the line have filled. Then the page moves up to print the next line. Speeds of chain printers range from 400 to 2500 characters per minute.
 - **Band Printers:** A band printer operates similar to chain printer except it uses a band instead of a chain and has fewer hammers. Band printer has a steel band divided into five sections of 48 characters each. The hammers on a band printer are mounted on a cartridge that moves across the paper to the appropriate positions. Characters are rotated into place and struck by the hammers. Font styles can easily be changed by replacing a band or chain.

- (b) **Non-impact Printers:** Non-impact printers do not use a striking device to produce characters on the paper; and since these printers do not hammer against the paper, they are much quieter. Following are some non-impact printers:
- **Ink-jet Printers:** Ink-jet printers work in the same fashion as dot-matrix printers in the form of images or characters with little dots. However, the dots are formed by tiny droplets of ink. Ink-jet printers form characters on paper by spraying ink from tiny nozzles through an electrical field that arranges the charged ink particles into characters at the rate of approximately 250 characters per second. The ink is absorbed into the paper and dries instantly. Various colors of ink can also be used.
 - **Laser Printers:** A laser printer works like a photocopy machine. Laser printers produce images on paper by directing a laser beam at a mirror which bounces the beam onto a drum. The drum has a special coating on it to which toner (an ink powder) sticks. Using patterns of small dots, a laser beam conveys information from the computer to a positively charged drum to become neutralized. From all those areas of drum which become neutralized, the toner detaches. As the paper rolls by the drum, the toner is transferred to the paper printing the letters or other graphics on the paper. A hot roller bonds the toner to the paper.

SOFTWARE

Software is a set of programs, which is designed to perform a well defined function. A program is a sequence of instructions written to solve a particular problem.

Software includes the computer operating system and other computer programs which run. Software is written in a High level language (such as Basic, C, Java, or others) by programmers. The High level language is in a text format and can be read by a person although if he/she do not understand the structure and rules of the language. Once a program is written, an operation is performed on it which is called compiling.

Types of Software

There are two types of software:

- (a) **System Software:** The system software is collection of programs designed to operate, control, and extend the processing capabilities of the computer itself. System softwares are generally developed by computer manufacturers. These software products comprise of programs written in low-level languages which interact with the hardware at a very basic level. System software serves as the interface between hardware and the end users. Some examples of system software are Operating Systems, Compilers, Interpreters, Assemblers, etc.
- (b) **Application Software:** Application software products are developed to satisfy a particular need of a particular environment. All software applications prepared in the computer lab can come under the category of application software. Application software may consist of a single program, such as a Microsoft's notepad for writing and editing simple text. Examples of application software are Payroll Software, Student Record Software, Inventory Management Software, Income Tax Software, etc.

Microsoft Office: An Introduction

Microsoft Office, also called MS-Office, is an office suite of applications, servers, and services developed by Microsoft. It was first announced by Bill Gates on 1 August 1988, at COMDEX in Las Vegas. Initially a marketing term for a bundled set of applications, the first version of Office contained Microsoft Word, Microsoft Excel, and Microsoft PowerPoint.

The current desktop version is Office 2016 for Windows and OS X, released on 22 September 2015 and 9 July 2015, respectively.

Main Components of MS-Office

The main components of MS-Office which are generally used are as follows:

(a) **MS-Word: Word Processing**

Microsoft Word is a full-featured word processing program for writing and editing text documents. Word includes tools that let multiple users share information and collaboratively edit documents. Word is included in every edition of Microsoft Office.

(b) **MS-Excel: Spreadsheet Analysis**

Microsoft Excel is a spreadsheet program used for tasks such as creating budgets, tracking data, and creating charts and graphs. With Excel, you create what Microsoft calls a Workbook, which can contain any number of individual worksheets. Users can copy or export the graphs and charts created in Excel to Word, PowerPoint, or Publisher or OneNote. Excel is included in every edition of Microsoft Office 2007.

(c) **MS-PowerPoint: Presentation Software**

Microsoft PowerPoint is Microsoft's presentation software, used for creating slide show presentations. Users can import graphs and charts from Excel or text from Word, or use PowerPoint's own tools for creating slide text and graphics. The program also has the capacity to add special effects like fade-ins or fade-outs between slides, as well as audio and video. PowerPoint is included in every edition of Microsoft Office 2007.

(d) **MS-Outlook: Email and Personal Contacts Manager**

Microsoft Outlook is Microsoft's e-mail client, and it also includes a calendaring program, address book and contact organizer, and task list. With Outlook, you can manage any number of e-mail addresses and create personal mailing lists.

(e) **MS-Publisher: Design**

Microsoft Publisher is Microsoft's solution for home and business users who want to create posters, flyers, letterhead, brochures or other marketing materials. Publisher simplifies the design process by including a number of predefined color schemes, page borders, as well as clip art and templates for popular types of publications like bake sale flyers, calendars, and personal stationery.

(f) **MS-Access: Database and Form Design**

Microsoft Access lets users work with data by creating databases, data entry forms and queries. Access can be used as a standalone database program or to interface with Microsoft SQL Server databases. Access is included with Microsoft Office Professional, Professional Plus, Ultimate and Enterprise.

(g) Specialized Office Components

Some of the improved versions of Microsoft Office include extra programs designed to help customers with specific needs, like small business owners. Some of these programs are - Accounting Express, which is a financial accounting package aimed at small business owners; Groove 2007, a collaboration tool for users who work collaboratively from different physical locations or offline; InfoPath 2007, a forms-creation tool for business users and developers; Communicator 2007, which is a communications client used for Internet-based audio and video conferencing; and, finally, OneNote, which serves as a virtual notebook to store text, graphics, Web links or other information organized by topic, subject or project.

IMPORTANT SHORTCUT KEYS IN MS-WORD

Shortcut	Description
Ctrl + A	Select all contents of the page.
Ctrl + B	Bold highlighted selection.
Ctrl + C	Copy selected text.
Ctrl + D	Open the font preferences window.
Ctrl + E	Aligns the line or selected text to the center of the screen.
Ctrl + F	Open find box.
Ctrl + I	Italic highlighted selection.
Ctrl + J	Aligns the selected text or line to justify the screen.
Ctrl + K	Insert a hyperlink.
Ctrl + L	Aligns the line or selected text to the left of the screen.
Ctrl + M	Indent the paragraph.
Ctrl + N	Opens new, blank document window.
Ctrl + O	Opens the dialog box or page for selecting a file to open.
Ctrl + P	Open the print window.
Ctrl + R	Aligns the line or selected text to the right of the screen.
Ctrl + S	Save the open document. Just like Shift + F12.
Ctrl + T	Create a hanging indent.
Ctrl + U	Underline the selected text.
Ctrl + V	Paste.
Ctrl + W	Close the currently open document.
Ctrl + X	Cut selected text.
Ctrl + Y	Redo the last action performed.
Ctrl + Z	Undo last action.
Ctrl + Shift + L	Quickly create a bullet point.
Ctrl + Shift + F	Change the font.
Ctrl + Shift + >	Increase selected font +1pts up to 12pt and then increase font +2pts.
Ctrl +]	Increase selected font +1pts.
Ctrl + Shift + <	Decrease selected font -1pts if 12pt or lower; if above 12, decreases font by +2pt.
Ctrl + [Decrease selected font -1pts.
Ctrl + / + c	Insert a cent sign (¢).
Ctrl + ' + <char>	Insert a character with an accent (grave) mark, where <char> is the character you want. For example, if you wanted an accented è you would use Ctrl + ' + e as your shortcut key. To reverse the accent mark use the opposite accent mark, often on the tilde key.
Ctrl + Shift + *	View or hide non printing characters.

Ctrl + <left arrow>	Moves one word to the left.
Ctrl + <right arrow>	Moves one word to the right.
Ctrl + <up arrow>	Moves to the beginning of the line or paragraph.
Ctrl + <down arrow>	Moves to the end of the paragraph.
Ctrl + Del	Deletes word to right of cursor.
Ctrl + Backspace	Deletes word to left of cursor.
Ctrl + End	Moves the cursor to the end of the document.
Ctrl + Home	Moves the cursor to the beginning of the document.
Ctrl + Spacebar	Reset highlighted text to the default font.
Ctrl + 1	Single-space lines.
Ctrl + 2	Double-space lines.
Ctrl + 5	1.5-line spacing.
Ctrl + Alt + 1	Changes text to heading 1.
Ctrl + Alt + 2	Changes text to heading 2.
Ctrl + Alt + 3	Changes text to heading 3.
Alt + Ctrl + F2	Open new document.
Ctrl + F1	Open the Task Pane.
Ctrl + F2	Display the print preview.
Ctrl + Shift + >	Increases the selected text size by one.
Ctrl + Shift + <	Decreases the selected text size by one.
Ctrl + Shift + F6	Switches to another open Microsoft Word document.
Ctrl + Shift + F12	Prints the document.
F1	Open Help.
F4	Repeat the last action performed (Word 2000+)
F5	Open the Find, Replace, and Go To window in Microsoft Word.
F7	Spellcheck and grammar check selected text or document.
F12	Save As.
Shift + F3	Change the text in Microsoft Word from uppercase to lowercase or a capital letter at the beginning of every word.
Shift + F7	Runs a Thesaurus check on the selected word.
Shift + F12	Save the open document. Just like Ctrl + S.
Shift + Enter	Create a soft break instead of a new paragraph.
Shift + Insert	Paste.
Shift + Alt + D	Insert the current date.
Shift + Alt + T	Insert the current time.

IMPORTANT SHORTCUT KEYS IN MS-EXCEL

Shortcut	Description
F2	Edit the selected cell.
F3	After a name has been created, F3 will paste names.
F4	Repeat last action. For example, if user changed the color of text in another cell, pressing F4 will change the text in cell to the same color.
F5	Go to a specific cell. For example, C6.
F7	Spell check selected text or document.
F11	Create chart from selected data.
Ctrl + Shift + ;	Enter the current time.
Ctrl + ;	Enter the current date.
Alt + Shift + F1	Insert New Worksheet.
Alt + Enter	While typing text in a cell, pressing Alt + Enter will move to the next line, allowing for multiple lines of text in one cell.

Shift + F3	Open the Excel formula window.	Ctrl + A	Select all items on the page or the active text box
Shift + F5	Bring up search box.	Ctrl + B	Applies bold to the select text
Ctrl + I	Open the Format Cells window.	Ctrl + D	Duplicates the selected object
Ctrl + A	Select all contents of the worksheet.	Ctrl + F	Opens the find dialog box
Ctrl + B	Bold highlighted selection.	Ctrl + G	Opens the grids and guies dialog box
Ctrl + I	Italic highlighted selection.	Ctrl + H	Opens the replace dialog box
Ctrl + K	Insert link.	Ctrl + I	Applies Italics to the selected text
Ctrl + S	Save the open worksheet.	Ctrl + M	Inserts a new slide
Ctrl + U	Underline highlighted selection.	Ctrl + N	Opens a new blank presentations
Ctrl + P	Bring up the print dialog box to begin the printing process.	Ctrl + O	Opens the open dialog box
Ctrl + Z	Undo last action.	Ctrl + T	Opens the font dialog box
Ctrl + F3	Open Excel Name Manager.	Ctrl + U	Applies underlining to the selected text Paste
Ctrl + F9	Minimize current window.	Ctrl + V	Paste
Ctrl + F10	Maximize currently selected window.	Ctrl + W	Closes the presentation
Ctrl + Page up	Move between work sheets in the same document.	Ctrl + Y	Repeats the last comand entered
Ctrl + Page down	Move between work sheets in the same document.	Home	Moves cursor to beginning of current line of text
Ctrl + Tab	Move between Two or more open Excel files.	End	Moves cursor to end of current line of text
Alt +=	Create a formula to sum all of the above cells.	Ctrl + Home	Moves cursor in beginning of presentations
Ctrl + `	Insert the value of the above cell into the cell currently selected.	Ctrl + End	Moves cursor to end of presentation
Ctrl + Arrow key	Move to next section of text.	Shift + Click	Selects more than one slide in a presentation each side
Ctrl + Space	Select entire column.	Shift + F1	Help
Shift + Space	Select entire row.		
Ctrl + -	Delete the selected column or row.		
Ctrl + Shift +=	Insert a new column or row.		
Ctrl + Home	Move to cell A1.		

MS ACCESS : SHORTCUTS

The following is a list of general shortcuts or hotkeys in Access :

Key Sequence	Description
F1	Display the Microsoft Access Help. This may be context-sensitive help depending on what you are positioned on.
F11	Display the Database window.
F12	Open the Save As dialog box.
CTRL+N	Open a new database.
CTRL+O	Open an existing database.
CTRL+P	Print the current or selected object.
CTRL+S	Save the current database object.
CTRL+W	Close the active window.
ALT+SPACEBAR	Display the Control menu.
ALT+F11	Toggle between the Visual Basic editor and the Access Database window.
SHIFT+F10	Display the shortcut menu (ie: popup menu).

MS- POWER POINT: SHORTCUTS

Shortcut Keys	Description
F5	View the Slide Show
Shift + Ctrl + Home	Selects all text form the cursor to the sart of the active text box
Shift + Ctrl + End	Selects all text form the cursor to the end of the active text box
Spacebar or click the mouse	Moves to next slide or next animation
S	Stop the show press S again to restrat the show
Esc	End the side show

HARDWARE

The term 'Computer Hardware' is used for the physical parts or components of a computer, such as the monitor, printers, mouse, keyboard, CD-Drive, Hard Disk Drive (HDD), graphic cards, sound cards, Random Access Memory (RAM), motherboard and so on, all of which are tangible physical objects.

Types of Hardware

Computer hardware can be divided into many different parts. The most important types of computer hardware are motherboard, random access memory, basic input-output system, power supply, video display controller, computer bus and hard disk. Another most important type of computer hardware is Central Processing Unit (CPU). CPU seeks the software commands and interprets and process data. Random access memory is the key component which allows the data to be reached in any form. Next is the basic input-output system, which loads and runs the software. Video display controller helps in the logical conversion of the visual data in order to run a signal to be used by display medium. Computer bus is used to transfer the data within the computer or with other computers. Hard disk is a storage device that stores data on a magnetic surface, placed on hard disk platters.

PROGRAMMING LANGUAGES

A programming language is a set of commands, instructions, and other syntax used to create a software program. Languages that programmers use to write code are called "high-level languages." This code can be compiled into a "low-level language," which is recognized directly by the computer hardware.

(a) **Low Level Languages :** Low level computer languages are machine codes or close to it. Computer cannot understand instructions given in high level languages or in English. It can only understand and execute instructions given in the form of machine language, i.e., language of 0 and 1. There are two types of low level languages:

- I. Machine Language :** The set of instructions executed directly by a computer's Central Processing Unit (CPU) is called Machine code. In machine language each and every instruction performs specific operation. The machine code is in the form a numerical code (i.e., not assembly code) and is the lowest-level representation of a compiled and/or assembled computer program. Machine language is also called as a primitive and hardware-dependent programming language.
- II. Assembly Language :** A personal computer has a microprocessor of its own that manages the computer's arithmetical, logical and control activities. All these operations are managed through a set of instructions

by each family of processors. These operations are handled by getting input from keyboard and displaying information on screen and performing various other jobs. These set of instructions are called machine language instructions.

- (b) High-Level Language :** High-level programming languages allowed the specification of writing a program closer to those used by human beings. With the advent of high level languages, programming became far easier, less error-prone and also removed the programmer from having to know the details of the internal structure of a particular computer. Fortran II was one of the first high level language introduced in about 1958.

Table : High Level Languages

Language	Application Area	Developer
COBOL(Common Business Oriented Language)	Business applications	Grace Hopper in 1959
FORTRAN (Formula Translation)	Engineering & Scientific Applications	IBM in 1957
PASCAL	General use and as a teaching tool	Niklaus Wirth in 1972
C & C++	General Purpose - currently most popular	C was developed by Dennis Ritchie in 1972, C++ was developed by Bjarne Stroustrup in 1983.
LISP (List Processing)	Artificial Intelligence	John Mc Carthy in 1958
JAVA	General Purpose - Internet Oriented Programming	James Gosling in 1995

4GL and 5 GL

4GL and 5GL represent the leaps or the "generations" in the evolution of programming languages.

- 1GL or first-generation language was (and still is) the machine language generation. It refers to the level of instructions and data that is fed to the processor of a computer (which in conventional computers is a string of 0s and 1s).
- 2GL or second-generation language is the assembly language generation. An assembler converts the assembler language statements into machine language.
- 3GL or third-generation language is a "high-level" programming language, such as C/C++ or Java.
- A 4GL or fourth generation (programming) language is a grouping of programming languages that attempt to get closer than 3GLs to human language, form of thinking and conceptualisation. 4th generation language, is known as the domain specific language, or a high productivity language.
- 5GL or fifth-generation language is a programming language that has a visual or graphical development interface to develop the source code but compiled with a 3GL or 4GL language compiler. There are several business corporations that make these languages such as the Microsoft, Borland, IBM, etc.

OPERATING SYSTEM

The operating system is the core software component of the computer. It performs many functions and is in very basic terms an interface between your computer and the outside world. A computer can be described as combination of several components including your monitor, keyboard, mouse and other parts. The operating system provides an interface to these parts using what

is referred to as "drivers". This is why sometimes when you install a new printer or other piece of hardware, your system will ask you to install more software called a 'driver'.

Types of Operating System

Following are the important types of operating systems which are most commonly used:

- (a) Batch Operating System:** The users of batch operating system do not interact with the computer directly. Each user prepares his job on an off-line device like punch cards and submits it to the computer operator. To speed up processing, jobs with similar needs are batched together and run as a group. Thus, the programmers left their programs with the operator. The operator then sorts programs into batches with similar requirements.

Disadvantages of Batch Systems

- Lack of interaction between the user and job.
 - CPU is often idle, because the speed of the mechanical I/O devices is slower than CPU.
 - Difficult to provide the desired priority.
- (b) Time-sharing Operating Systems:** Time-sharing is a technique which enables many people located at various terminals to use a particular computer system at the same time. Time-sharing or multitasking is a logical extension of multiprogramming. Processor's time which is shared among multiple users simultaneously is termed as time-sharing. The main difference between Multi-programmed Batch Systems and Time-Sharing Systems is that in case of Multi-programmed batch systems, objective is to maximize processor use, whereas in Time-Sharing Systems objective is to minimize response time.

Multiple jobs are executed by the CPU by switching between them, but the switching occurs so frequently such that the user can receive an immediate response. For example, in a transaction processing, processor executes each user program in a short burst or quantum of computation. That is if n users are present, each user can get time quantum. When the user submits the command, the response time is in few seconds at most.

Operating system uses CPU scheduling and multi-programming to provide each user a small portion of time. Computer systems that were designed primarily as batch systems have been modified to time-sharing systems.

Advantages of Time-Sharing Operating Systems

- Provide quick response.
- Avoids software piracy.
- Reduces CPU idle time.

Disadvantages of Time-sharing Operating Systems

- Problem of reliability.
- Question of security and integrity of user programs and data.
- Problem of data communication.

- (c) **Distributed Operating Systems:** Distributed systems use multiple central processors to serve multiple real time application and multiple users. Data processing jobs are distributed among the processors accordingly to which one can perform each job most efficiently.

The processors communicate with one another through various communication lines (such as high-speed buses or telephone lines). These are referred as loosely coupled systems or distributed systems. Processors in a distributed system may vary in size and function. These processors are referred as sites, nodes, computers and so on.

Advantages of Distributed Systems

- With resource sharing facility user at one site may be able to use the resources available at another site.
- Speedup the exchange of data with one another via electronic mail.
- If one site fails in a distributed system, the remaining sites can potentially continue operating.
- Better service to the customers.
- Reduction of the load on the host computer.
- Reduction of delays in data processing.

- (d) **Network Operating System:** Network Operating System runs on a server and provides server the capability to manage data, users, groups, security, applications, and other networking functions. The primary purpose of the network operating system is to allow shared file and printer access among multiple computers in a network, typically a Local Area Network (LAN), a private network or to other networks. Examples of network operating systems are Microsoft Windows Server 2003, Microsoft Windows Server 2008, UNIX, Linux, Mac OS X, Novell NetWare, and BSD.

Advantages of Network Operating Systems

- Centralized servers are highly stable.
- Security is server managed.
- Upgrades to new technologies and hardware can be easily integrated into the system.
- Remote access to servers is possible from different locations and types of systems.

Disadvantages of Network Operating Systems

- High cost of buying and running a server.
- Dependency on a central location for most operations.
- Regular maintenance and updates are required.

- (e) **Real Time Operating Systems:** Real time system is defined as a data processing system in which the time interval required to process and respond to inputs is so small that it controls the environment. Real time processing is always online whereas online system need not be real time. The time taken by the system to respond to an input and display of required updated information is termed as response time. So in this method response time is very less as compared to the online processing.

Real-time systems are used when there are rigid time requirements on the operation of a processor or the flow of data and real-time systems can be used as a control device in a dedicated application. Real-time operating system has well-defined, fixed time constraints otherwise system will fail. For example, Scientific experiments, medical imaging systems, industrial control systems, weapon systems, robots, and home-appliance controllers, Air traffic control system, etc.

There are two types of real-time operating system:

- **Hard Real-time Systems:** Hard real-time systems guarantee that critical tasks complete on time. In hard real-time systems secondary storage is limited or missing with data stored in ROM. In these systems virtual memory is almost never found.
- **Soft Real-time Systems:** Soft real time systems are less restrictive. Critical real-time task gets priority over other tasks and retains the priority until it completes. Soft real-time systems have limited utility than hard real-time systems. For example, Multimedia, virtual reality, Advanced Scientific Projects like undersea exploration and planetary rovers, etc.

They include from most recent to the oldest:

- **Windows XP Professional Edition:** A version used by many businesses at workstations. It has the ability to become a member of a corporate domain.
- **Windows XP Home Edition:** A lower cost version of Windows XP which is for home use only and should not be used in a business.
- **Windows 2000:** A better version of the Windows NT operating system which works well both at home and as a workstation in a business. It includes technologies which allow hardware to be automatically detected and other enhancements over Windows NT.
- **Windows ME:** An upgraded version from Windows 98 but it has been historically plagued with programming errors which may be frustrating for home users.
- **Windows 98:** This was produced in two main versions. The first Windows 98 version was plagued with programming errors but the Windows 98 Second Edition which came out later was much better with many errors resolved.
- **Windows NT:** A version of Windows made specifically for businesses offering better control over work station capabilities to help network administrators.
- **Windows 95:** The first version of Windows after the older Windows 3.x, versions offering a better interface and better library functions for programs.

There are other worthwhile types of operating systems not made by Microsoft. The greatest problem with these operating systems lies in the fact that not as many application programs are written for them. However, if you can get the type of application programs you are looking for, one of the systems listed below may be a good choice.

- **Unix:** A system that has been around for many years and it is very stable. It is primarily used as a server rather than a workstation and should not be used by anyone who does not understand the system. It can be difficult to learn, Unix must normally run on a computer made by the same company that produces the software.
- **Linux:** Linux is similar to Unix in operation but it is free. It also should not be used by anyone who does not understand the system and can be difficult to learn.
- **Apple Macintosh :** Most recent versions are based on Unix but it has a good graphical interface so it is both stable (does not crash often or have as many to learn). One drawback to this system is that it can only be run on Apple produced hardware.
- **Windows XP:** An operating system, sometimes called an "OS", is the main program the computer used to function properly. Operating systems act as a link between you, the user, and the programs you use on a computer. Different types of computers use different types of operating systems. The majority of computers used either run Microsoft Windows or MacOS. While files can be shared between these two types of systems, they are generally incompatible.
- **Embedded Operating System :** An embedded system is a computer that is part of a different kind of machine. Examples include computers in cars, traffic lights, digital televisions, ATMs, airplane controls, Point of Sale (POS) terminals, digital cameras, GPS navigation systems, elevators, digital media receivers and smart meters, among many other possibilities.

COMPUTER NETWORKS

A computer network is a group of computer systems and other computing hardware devices that are linked together through communication channels to facilitate communication and resource-sharing among a wide range of users.

Types of Computer Networks

- **Personal Area Network (PAN) :** A Personal Area Network or simply PAN, is smallest network which is very personal to a user. This may include Bluetooth enabled devices or infra-red enabled devices. PAN has connectivity range up to 10 meters.
- **Local Area Network (LAN) :** A computer network spanned inside a building and operated under single administrative system is generally termed as Local Area Network. Usually, Local Area Network covers an organization such as offices, schools, college/universities, etc. Number of systems may vary from as least as two to as much as 16 million. LAN provides a useful way of sharing resources between end users. Resources like Printers, File Servers, Scanners and internet is easy sharable among computers.
- **Metropolitan Area Network (MAN) :** MAN, generally expands throughout a city such as cable TV network. It can be in form of Ethernet, Token-ring, ATM or FDDI. Metro Ethernet is a service which is provided by ISPs. This service enables its users to expand their Local Area Networks. For

example, MAN can help an organization to connect all of its offices in a City. Backbone of MAN is high-capacity and high-speed fiber optics.

- **Wide Area Network (WAN) :** As name suggests, this network covers a wide area which may span across provinces and even a whole country. Generally, telecommunication networks are Wide Area Network. These networks provides connectivity to MANs and LANs. Equipped with very high speed backbone, WAN uses very expensive network equipment.
- **Virtual Private Network (VPN) :** VPN is a network that is constructed by using public wires usually the Internet to connect to a private network, such as a company's internal network.
- **Internetwork :** A network of networks is called internetwork, or simply Internet. It is the largest network in existence on this planet. Internet hugely connects all WANs and it can have connection to LANs and Home networks. Internet uses TCP/IP protocol suite and uses IP as its addressing protocol. Present day, Internet is widely implemented using IPv4. Because of shortage of address spaces, it is gradually migrating from IPv4 to IPv6.
 - **Computer Network Topologies :** Topology can be referred as the physical arrangement of a computer system. Each computer system in a topology is known as node. In a fully connected network with n nodes, there are $n(n-1)/2$ direct links.
 - **Bus Topology :** In contrast to point-to-point, in bus topology all device share single communication line or cable. All devices are connected to this shared line. Ethernet is commonly known protocol in networks connected in bus topology.
 - **Ring Topology :** In ring topology, each host machine connects to exactly two other machines, creating a circular network structure. This topology uses the token ring protocol for controlling access. Each workstation is connected to two other components on either side, and it communicates with these two adjacent neighbours. Data travels around the network, in one direction. Sending and receiving of data takes place by the help of TOKEN.
 - **Star Topology :** In Star topology, all the components of network are connected to the central device called "hub" which may be, a router or a switch. All the data on the star topology passes through the central device before reaching the intended destination. Hub acts as a junction to connect different nodes present in Star Network, and at the same time it manages and controls whole of the network. Depending on which central device is used, "hub" can act as repeater or signal booster.
 - **Mesh Topology :** In this type of topology, a host is connected to one or two or more than two hosts. This topology may have hosts having point-to-point connection to every other hosts or may also have hosts which are having point to point connection to few hosts only.
 - **Tree Topology :** Also known as Hierarchical Topology is the most common form of network topology in use present day. This topology imitates as extended Star Topology and inherits properties of Bus topology.
 - **Hybrid Topology :** A network structure whose design contains more than one topology is said to be Hybrid Topology. Hybrid topology inherits merits and demerits of all the incorporating topologies.

DATABASE MANAGEMENT SYSTEM (DBMS)

Database Management Systems (DBMS) are specially designed software which is used to create and maintain a database. It acts as an interface between users and a database or multiple databases. DBMS is comprised of tables that made up of rows called records and columns called fields.

Some of the Database Management system are

- (1) **Microsoft Access** : This is the database management system developed by Microsoft. It stores data in its own format based on the Access Jet Database Engine. It also has the facilities like importing or linking directly to data stored in other databases and applications.
- (2) **MySQL** : MySQL is open source database management system, one of the most popular dbms on the web. It is reliable, fast and flexible also.
- (3) **Oracle** : Developed by Oracle corporation. It is object relational database management system. The original version of Oracle software was developed by Software Development Laboratories (SDL). Oracle is regarded to be one of the safest DBMS.
- (4) **Microsoft SQL Server** : Microsoft developed this relational database server. The primary function of this software is to store and retrieve the data as requested by other applications, whether those applications are on the same computer or running on other computers across the network (including internet).

Components of Database System

The database system can be divided into four components:

- **Users** : Users may be of various type such as Database Administrator, System developer and End users.
- **Database application** : Database application may be Personal, Departmental, Enterprise and internal.
- **DBMS** : Software that allow users to define, create and manages database access. Ex : Mysql, Oracle, etc.
- **Database** : Collection of logical data.

Database Model

A Database model defines the logical design of data. The model describes the relationships between different parts of the data. In history of database design, three models have been in use.

- (i) **Hierarchical Model** : In this model, each entity has only one parent but can have several children. At the top of hierarchy there is only one entity which is called Root.
- (ii) **Network Model** : In the network model, entities are organised in a graph, in which some entities can be accessed through several path.
- (iii) **Relational Model** : In this model, data is organised in two-dimensional tables called relations. The tables or relation are related to each other.

Entity Relationship Model

E-R model is a very popular conceptual data model which is used to develop conceptual design of databases. This data model describes or perceives the real world data in form of entities.

The E-R Model: The enterprise is viewed as set of

- Entities
- Relationships among entities

Symbols used in E-R Diagram

- Entity – rectangle
- Attribute – oval
- Relationship – diamond
- Link - line

ENTITY : It is a basic unit of E-R model which is an object or a thing in real world having independent existence. An entity may be concrete and a physical existence (e.g., person, place) or it can be abstractor conceptual existence like loan, course. Entity is an object that is involved in the enterprise and that be distinguished from other objects.

- Can be person, place, event, object, concept in the real world
- Can be physical object or abstraction
- Ex: “John”, “CSE305”

ENTITY SET : It is a collection of entities of a particular entity type at any point of time. For example, a firm is having many employees, these are defined as entities(e1, e2, e3,en) and all these entities are having same attributes under entity type employee. The set of students (e1, e2, e3.....) is entity set.

Value Set or Domain Values : A set of possible values that can be assigned to a given attribute in individual entity. For example, the attribute employee name in employee entity type can have character data and integer value. Hence the values in this attribute will be a non-integer domain.

Entity Type : It is the set of similar objects or a category of entities; they are well defined.

- A rectangle represents an entity set.
 - For example : *students, courses*.
 - We often just say “entity” and mean “entity type”.
- Attribute** : It describes one aspect of an entity type; usually [and best when] single valued and indivisible (atomic)
- Represented by oval on E-R diagram.
 - For example, *name, maximum enrollment*
 - May be **multi-valued** – use double oval on E-R diagram.
 - May be **composite** – attribute has further structure; also use oval for composite attribute, with ovals for components connected to it by lines.
 - May be **derived** – a virtual attribute, one that is computable from existing data in the database, use dashed oval. This helps reduce redundancy.

Functions of DBMS

- Provides data independence.
- Concurrency Control.
- Provides Recovery services.
- Provides Utility services.
- Provides a clear and logical view of the process that manipulates data.

Advantages of DBMS

- Segregation of application program.
- Minimal data duplicacy.
- Easy retrieval of data
- Reduced development time and maintenance need.

Disadvantages of DBMS

- Complexity.
- Costly.
- Large in size.

Relational Database Management System (RDBMS)

RDBMSs have become a predominant choice for the storage of information in new databases used for financial records, manufacturing and logistical information, personnel data, and much more since the 1980s. Relational databases have often replaced legacy of hierarchical databases and network databases because they are easier to understand and use. However, relational databases have been challenged by object databases, which were introduced in an attempt to address the object-relational impedance mismatch in relational database, and XML databases.

ABBREVIATIONS

AAC	: Advanced Audio Coding (audio compression format defined by the MPEG-2 standard)	CAI	: Computer-Aided Instruction
ABI	: Application Binary Interface	CAM	: Computer-Aided Manufacturing
ABR	: Area Border Router	CAT	: Computer-Aided Translation
ABR	: Available Bit Rate	CAQ	: Computer-Aided Quality Assurance
AD	: Active Directory	CD	: Compact Disc
ADC	: Analog to Digital Converter	CD-R	: CD-Recordable
ADC	: Apple Display Connector (DVI variant)	CD-ROM	: CD-Read Only Memory
AH	: Active Hub	CD-RW	: CD Rewritable
AHA	: Accelerated Hub Architecture	CG	: Computer Graphics
Ajax	: Asynchronous Java Script and XML	CGA	: Colour Graphics Array
AL	: Active Link	CGI	: Common Gateway Interface
ALGOL	: Algorithmic Language	CGI	: Common Generated Imagery
ALU	: Arithmetic and Logical Unit	CIFS	: Common Internet File System
AM	: Active Monitor	CLI	: Command Line Interface
AMD	: Advanced Micro Devices	CLR	: Common Language Runtime
AMR	: Audio Modem Riser	CNC	: Computer Numerical Control
AoE	: ATA over Ethernet	COBOL	: Common Business-Oriented Language
APCI	: Application Layer Protocol Control Information	CPU	: Central Processing Unit
API	: Application Programming Interface	CRT	: Cathode Ray Tube
APIPA	: Automatic Private IP Addressing	CSI	: Common System Interface
ASCII	: American Standard Code for Information Interchange	CT	: Computerised Tomography
ASG	: Abstract Semantic Graph	CTCP	: Client to Client Protocol
ASP	: Application Service Provider	CTL	: Computational Tree Logic
AST	: Abstract Syntax Tree	CTS	: Clear To Send
ATA	: Advanced Technology Attachment	CUA	: Common User Access
ATM	: Asynchronous Transfer Mode	DAC	: Digital-To-Analog Converter
AVC	: Advanced Video Interleaved	DAP	: Directory Access Protocol
AWT	: Abstract Windowing Toolkit	DBA	: Database Administrator
BASIC	: Beginner's All-Purpose Symbolic Instruction Code	DBMS	: Database Management System
BCD	: Binary Coded Decimal	DCC	: Direct Client-to-Client
BEEP	: Blocks Extensible Exchange Protocol	DDR	: Double Data Rate
BER	: Bit Error Rate	DES	: Data Encryption Standard
BFD	: Binary File Descriptor	DFD	: Data Flow Diagram
BGP	: Border Gateway Protocol	DFS	: Distributed File System
bin	: binary	DHTML	: Dynamic HTML
BINAC	: Binary Automatic Computer	DIVX	: Digital Video Express
BIOS	: Basic Input Output System	DLL	: Dynamic Link Library
Blog	: Web Log	DLP	: Digital Light Processing
BMP	: Basic Multilingual Plane	DMA	: Direct Memory Access
BOOTP	: Bootstrap Protocol	DOS	: Disk Operating System
BPEL	: Business Process Execution Language	DPI	: Dots Per Inch
bps	: bits per second	DPMI	: DOS Protected Mode Interface
CAD	: Computer-Aided Design	DSL	: Digital Subscriber Line
CAE	: Computer-Aided Engineering	DSL	: Domain-Specific Language
		DSN	: Database Source Name
		DTE	: Data Terminal Equipment
		DTR	: Data Terminal Ready
		DVD	: Digital Versatile Disc
		DVD	: Digital Video Disc
		DVD-R	: DVD-Rewritable
		DVI	: Digital Visual Interface
		DVR	: Digital Video Recorder
		EAP	: Extensible Authentication Protocol
		EBCDIC	: Extended Binary Coded Decimal Interchange Code
		EDO	: Extended Data Out
		EEPROM	: Electronically-Erasable Programmable Read-Only Memory
		EFF	: Electronic Frontier Foundation
		EFI	: Extensible Firmware Interface

EGA	: Enhanced Graphics Array	IRP	: I/O Request Packet
EGP	: Exterior Gateway Protocol	IRQ	: Interrupt Request
eID	: electronic ID	ISC	: Internet Storm Center
EIGRP	: Enhanced Interior Gateway Routing Protocol	ISO	: International Organisation for Standardisation
ELF	: Executable and Linkable Format	ISOC	: Internet Society
ELM	: Electronic Mail	ISP	: Internet Service Provider
EOM	: End of Message	ISR	: Interrupt Service Routine
EPROM	: Erasable Programmable Read-Only Memory	ISV	: Independent Software Vendor
EUC	: Extended Unix Code	IT	: Information Technology
EXE	: EXEcutable	ITU	: International Telecommunication Union
FAP	: FORTRAN Assembly Program	J2CE	: Java 2 Cryptographic Edition
FAT	: File Allocation Table	JDS	: Java Desktop System
FIFO	: First In First Out	JMX	: Java Management Extensions
FHS	: File System Hierarchy Standard	JMS	: Java Message Service
FCS	: Frame Check Sequence	JNDI	: Java Naming and Directory Interface
FPU	: Floating Point Unit	JNI	: Java Native Interface
FS	: File System	JPEG	: Joint Photographic Experts Group
FSB	: Front Side Bus	JS	: Java Script
FTP	: File Transfer Protocol	JSON	: Java Script Object Notation
FXP	: File eXchange Protocol	JSP	: Java Server Pages
Gb	: Gigabit	JUG	: Java Users Group
GB	: Gigabyte	Kb	: Kilobit
GCR	: Group Code Recording	KB	: Kilobyte
GDI	: Graphics Device Interface	kHz	: Kilohertz
GIF	: Graphics Interchange Format	LAN	: Local Area Network
GIGO	: Garbage In, Garbage Out	LIFO	: Last In First Out
GPU	: Graphics Processing Unit	LSB	: Least Significant Bit
GUI	: Graphical User Interface	MAN	: Metropolitan Area Network
HAL	: Hardware Abstraction Layer	MANET	: Mobile Ad-Hoc Network
HDD	: Hard Disk Drive	Mb	: Megabit
HD DVD	: High Definition DVD	MB	: Megabyte
HDL	: Hardware Description Language	MBCS	: Multi Byte Character Set
HHH	: Hybrid Hard Drive	MBR	: Master Boot Record
HIG	: Human Interface Guidelines	MDI	: Multiple Document Interface
HPFS	: High Performance File System	MICR	: Magnetic Ink Character Recognition
HSM	: Hierarchical Storage Management	MIMO	: Multiple-Input Multiple-Output
HTM	: Hierarchical Temporal Memory	MIPS	: Million Instructions Per Second
HTML	: Hypertext Markup Language	MIME	: Multipurpose Internet Mail Extensions
HTTP	: Hypertext Transfer Protocol	MMX	: Multimedia Extensions
HVD	: Holographic Versatile Disc	MNG	: Multiple-Image Network Graphics
IBM	: International Business Machines	MPEG	: Motion Pictures (Coding) Experts Group
ICMP	: Internet Control Message Protocol	MSB	: Most Significant Bit
ICP	: Internet Cache Protocol	MS-DOS	: Microsoft DOS
IDL	: Interface Definition Language	MVS	: Multiple Virtual Storage
IE	: Internet Explorer	NFS	: Network File System
IGMP	: Internet Group Management Protocol	NIO	: New I/O
IGRP	: Interior Gateway Routing Protocol	NMI	: Non-Maskable Interrupt
IHV	: Independent Hardware Vendor	NNTP	: Network News Transfer Protocol
IIOIP	: Internet Inter-Orb Protocol	NOP	: No Operation
IIS	: Internet Information Services	NOS	: Network Operating System
IM	: Instant Messaging	NTP	: Network Time Protocol
IMAP	: Internet Message Access Protocol	OOP	: Object-Oriented Programming
I/O	: Input/Output	OPML	: Outline Processor Markup Language
IP	: Internet Protocol	OS	: Operating System
IPC	: Inter-Process Communication	OSS	: Open-Source Software
IPP	: Internet Printing Protocol	P2P	: Peer-To-Peer
Ipssec	: Internet Protocol Security	PAN	: Personal Area Network
IPTV	: Internet Protocol Television	PAP	: Password Authentication Protocol
IRC	: Internet Relay Chat	PATA	: Parallel ATA

PC	: Personal Computer	URN	: Uniform Resource Name
PCI	: Peripheral Component Interconnect	USB	: Universal Serial Bus
PCLe	: PCI Express	Var	: Variable
PCL	: Printer Command Language	VB	: Visual Basic
PGA	: Pin Grid Array	VBA	: Visual Basic for Applications
PIC	: Peripheral Interface Controller	VBS	: Visual Basic Script
PIC	: Programmable Interrupt Controller	VFAT	: Virtual FAT
PINE	: Program for Internet News & Email	VFS	: Virtual File System
PIO	: Programmed Input/Output	VGA	: Video Graphics Array
PoE	: Power over Ethernet	VGCT	: Video Graphics Character Table
PPC	: Power PC	VLAN	: Virtual Local Area Network
PPI	: Pixels Per Inch	VM	: Virtual Memory
PPP	: Point-to-Point Protocol	VOD	: Video On Demand
PPPoA	: PPP over ATM	VoIP	: Voice over IP
PPTP	: Point-to-Point Tunneling Protocol	VPN	: Virtual Private Network
PSU	: Power Supply Unit	WAFS	: Wide Area File Services
QDR	: Quad Data Rate	WAIS	: Wide Area Information Server
QFP	: Quoted For Permanence	WAN	: Wide Area Network
QoS	: Quality of Service	WAP	: Wireless Application Protocol
RADIUS	: Remote Authentication Dial In User Service	Wi-Fi	: Wireless Fidelity
RAID	: Redundant Array of Independent Disks	WiMAX	: Worldwide Interoperability for Microwave Access
RAM	: Random Access Memory	WInFS	: Windows Future Storage
RARP	: Reverse Address Resolution Protocol	WINS	: Windows Internet Naming Service
RDBMS	: Relational Database Management System	WLAN	: Wireless Local Area Network
RDF	: Resource Description Framework	WMA	: Windows Media Audio
REFAL	: REcursive Functions Algorithmic Language	WMV	: Windows Media Video
RIP	: Routing Information Protocol	WOL	: Wake-on-LAN
ROM	: Read Only Memory	WOM	: Wake-on-Modem
ROMB	: Read-Out Motherboard	WPA	: Wi-Fi Protected Access
RTOS	: Real Time Operating System	WSDL	: Web Services Description Language
SaaS	: Software as a Service	WWID	: World Wide Identifier
SAN	: Storage Area Network	WWW	: World Wide Web
SATA	: Serial Advanced Technology Attachment	XAML	: eXtensible Application Markup Language
SAX	: Simple API for XML	XHTML	: eXtensible Hypertext Markup Language
SBP-2	: Serial Bus Protocol 2	XML	: eXtensible Markup Language
SBU	: Standard Build Unit	XMMS	: X Multimedia System
SCSI	: Small Computer System Interface	XNS	: Xerox Network Services
SDL	: Simple Direct Media Layer	XSL	: eXtensible Stylesheet Language
SDN	: Service Delivery Network	XSL-FO	: eXtensible Stylesheet Language Formatting Objects
SDR	: Software-Defined Radio	XSLT	: eXtensible Stylesheet Language Transformations
SDRAM	: Synchronous Dynamic Random Access Memory	XUL	: XML User Interface Language
SMBIOS	: System Management BIOS	ZIFS	: Zero Insertion Force Socket
SMTP	: Simple Mail Transfer Protocol	ZISC	: Zero Instruction Set Computer
SPI	: Serial Peripheral Interface	ZMA	: Zone Multicast Address
SQML	: Structured Query Language		
SUS	: Single UNIX Specification		
SVD	: Structured VLSI Design		
TCP	: Transmission Control Protocol		
TCP/IP	: Transmission Control Protocol/Internet Protocol		
TTA	: True Tap-Audio		
TTF	: True Type Font		
TTS	: Text-to-Speech		
TTY	: Teletype		
UAC	: User Account Control		
UART	: Universal Asynchronous Receiver Transmitter		
UEFI	: Unified Extensible Firmware Interface		
UI	: User Interface		
UPS	: Uninterruptible Power Supply		
URI	: Uniform Resource Identifier		

GLOSSARY

- **Access Time:** Access time is the time from the start of one storage device to the time when the next access can be started.
- **Accessory:** An Accessory is a device attached to a host computer, but not a part of it, and is more or less dependent on the host. It expands the host's capabilities, but does not form part of the core computer architecture. Examples are printers, image scanners, tape drives, microphones, loudspeakers, webcams, and digital cameras.
- **Active Cell:** The cell that contains the value being used or modified in a spreadsheet program, and that is highlighted by the cell pointer. Also known as current cell.

- **Active Window :** The window in Microsoft Windows with which the user may interact.
- **Accumulator:** The computer register in which the result of an arithmetic or logic operation is performed (related to arithmetic and logic unit).
- **Algorithm:** A standard method for computing something; essentially, a mathematical recipe.
- **Analog:** A continuous waveform signal that can be used to represent things such as sound, temperature, and velocity.
- **Analog Computer:** A computer in which numerical data are represented by measurable physical variables, such as electrical pulses.
- **Antivirus:** Antivirus refers to a software program that can protect your computer from unwanted viruses and remove any, that penetrate your computer's security.
- **Arithmetic Logic Unit (ALU):** An Arithmetic Logic Unit (ALU) is the part of a computer's processor (CPU) that carries out arithmetic and logic operations on the operands in computer instruction words.
- **Artificial Intelligence:** Artificial Intelligence (AI) is the capability of machines to simulate human behaviour and the branch of computer science that aims to create it. In textbooks it is the field of "study and design of intelligent agents" where an intelligent agent is a system that perceives the environment and takes actions that maximize its chances of success.
- **ASCII (American Standard Code for Information Interchange):** ASCII is a code for information exchange between computers made by different companies; a string of 7 binary digits represents each character; used in most microcomputers.
- **Assembly Language:** A programming language that is once removed from a computer's machine language. Machine languages consist entirely of numbers and are almost impossible for humans to read and write. Assembly languages have the same structure and set of commands as machine languages, but they enable a programmer to use names instead of numbers.
- **Auxiliary Memory:** A high-speed memory bank used in mainframes and supercomputers. It is not directly addressable by the CPU; rather, it functions like a disk. Data are transferred from auxiliary memory to main memory over a high-bandwidth channel.
- **Backup:** A backup or the process of backing up is making copies of data which may be used to restore the original after a data loss event.
- **Band Width:** In computer networking and computer science, bandwidth, network bandwidth, data bandwidth or digital bandwidth is a bit rate measure of available or consumed data communication resources expressed in bits/second or multiples of it (kilobit/s, megabit/s, etc.).
- **BIOS:** BIOS stands for Basic Input Output System. This is the basic set of instructions that tells the computer how to act. Most computers have these instructions built into a chip that plugs into the motherboard.
- **Bar Code:** A bar code (often seen as a single word, barcode) is the small image of lines (bars) and spaces that is affixed to retail store items, identification cards, and postal mail to identify a particular product number, person, or location.
- **Binary:** Computers are based on the binary numbering system, which consists of just two unique numbers, 0 and 1.
- **Biometric Device:** Biometrics (or biometric authentication) consists of methods for uniquely recognizing humans based upon one or more intrinsic physical or behavioural traits.
- **Bitmap:** In computer graphics, a bitmap or pixmap is a type of memory organization or image file format used to store digital images.
- **Bluetooth:** Bluetooth is a proprietary open wireless technology standard for exchanging data over short distances (using short wavelength radio transmissions in the ISM band from 2400-2480 MHz) from fixed and mobile devices, creating Personal Area Networks (PANs) with high levels of security.
- **Booting:** To boot (as a verb; also "to boot up") a computer is to load an operating system into the computer's main memory or Random Access Memory (RAM).
- **Browse:** In database systems, browse means to view data. Many database systems support a special browse mode, in which you can flip through fields and records quickly. Usually, you cannot modify data while you are in browse mode.
- **Bug:** A software bug is the common term used to describe an error, flaw, mistake, failure, or fault in a computer program or system that produces an incorrect or unexpected result, or causes it to behave in unintended ways.
- **Byte:** Byte is a unit of digital information in computing and telecommunications that most commonly consists of eight bits.
- **CD-ROM (Compact Disk-Read Only Memory):** A type of optical disk capable of storing large amounts of data -- up to 1GB, although the most common size is 650MB (megabytes).
- **CD-R/W (Compact Disk-Recordable):** A type of CD disk that enables you to write onto it in multiple sessions. One of the problems with CD-R disks is that you can only write to them once.
- **Central Processing Unit (CPU):** The CPU is the computer's control center. Think of it as the brain that does all the thinking (computation), thus it is called the Central Processing Unit. The actual CPU is about 1.5 inches square, yet it is the most critical part of the computer. Having a fast CPU (measured in MegaHertz) greatly improves the overall speed of your computer.
- **CMOS:** Acronym of "Complimentary Metal Oxide Semiconductor". A CMOS computer circuit consumes very little power and is used in computers to keep track of the system setup information, data, time, type of disk and hard drives, etc., that a computer has installed.
- **Compressed File:** Computer files that have been reduced in size by a compression program. Such programs are available for all computer systems.
- **Central Processing Unit (CPU):** The Central Processing Unit (CPU) is an electronic component that interprets and carries out the instructions of any application that run on a computer. It is a place where all the computing is done.
- **Data:** Representations of facts. The raw material of information. (Plural of datum.)
- **Database:** The integrated data resource for a computer-based information system.
- **DDR:** This is a new type of RAM called Double Data Rate RAM. It is used in some of the newer video cards such as the Nvidia GeForce cards.
- **Desktop:** The screen in Windows upon which icons, windows, a background, and so on are displayed.

- **Desktop Publishing (DTP):** Software that allows users to produce near-typeset-quality copy for newsletters, advertisements, and many other printing needs, all from the confines of a microcomputer.
- **Dial up :** A dial-up Internet account allows you to use a computer with a modem and appropriate software to connect to the Internet by an Internet Service Provider (ISP). The software “dials” the ISP’s access numbers and you can then send e-mail, browse the World Wide Web or engage in other Internet activities.
- **Digital:** Terms used to describe any information that has been translated into a corresponding series of 1's and 0's; any information text, sound, image, colour, may be digitized.
- **Digital Computer:** A reference to any system based on discrete data, such as the binary nature of computers.
- **Digital Video/Versatile Disk (DVD):** The successor technology to the CD-ROM that can store up to 10 Gigabytes.
- **Disk:** A magnetically encoded storage medium in the form of a plate (also called a platter).
- **Disk Operating System (DOS):** A disk operating system manages disks and other system resources. Sort of a subset of OSes, sort of an archaic term for the same. MS-DOS is the most popular program currently calling itself a DOS. CP/M was the most popular prior to MS-DOS.
- **Domain Names:** A name given to a host computer on the Internet, E-mail names are good examples of domain names (for example, bijendra@aiets.com).
- **Downloading:** Retrieving a file or group of files from the Internet so that they can be stored on a local hard drive.
- **Electronic Mail:** When a message is sent, electronically through internet, it is called electronic mail. The message is sent first to the SMTP server, which acts as an "outbox" for users. The message is then relayed to the appropriate mail server, which can be found listed after the @ symbol in the recipient's address. The message then waits on that server until the recipient accesses the message and then deletes it.
- **Ethernet:** A transport method (protocol) used to connect computers to a LAN (Local Area Network) and exchange data.
- **File:** (1) A collection of related records. (2) A named area on a disk-storage device that contains a program or digitized information (text, image, sound, and so on). (3) A component of an overall program or application.
- **Font:** In a simplistic sense, a font can be thought of as the physical description of a character set. While the character set will define what sets of bits map to what letters, numbers, and other symbols, the font will define what each letter, number, and other symbol looks like.
- **Format:** Formatting is a process of preparing a data storage device such as a hard disk drive, solid state drive, or USB flash drive for initial use. (1) The logical or physical arrangement of the tracks and sectors on a floppy diskette or a hard disk. To be usable, a disk must be formatted so that the tracks and sectors are laid out in a manner compatible with the operating system in use. (2) To prepare a disk or diskette, dividing it into sectors so that it is ready to receive data.
- **Gigahertz:** One gigahertz is equivalent to 1000 megahertz, or 1,000,000,000 hertz.
- **Hacker:** An individual with vast experience with security protocols who attempts to illegally access secure servers in an attempt to download private information, damage systems, or act in some other way to "free information".
- **Hard Copy:** A readable printed copy of computer output.
- **Hard Disk:** Hard disk (internal) is a permanent file and data storage device housed in a computer case.
- **Hardware:** Collective term for any computer-related object that can be kicked or battered.
- **Hexadecimal Number System:** A numeric notation system with a base of 16 decimal frequently used to specify addresses in computer memory. In hexadecimal notation, the decimal numbers 0 through 15 are represented by the decimal digits 0 through 9 and the alphabetic “digits” A through F (A = decimal 10, B = decimal 11, etc.) can be formed as two 4-bit binary numbers from an 8-bit binary number split into two parts.
- **Home Page:** The web page which is the starting point for accessing information at a site or in a particular area.
- **Host:** A computer, attached to a network which provides services to another computer beyond simply storing and forwarding information.
- **Hyper Text Markup Language (HTML):** This is the code by which web pages are created so they can be graphically organized in various ways. The web browser downloads the text of the HTML file, and then decodes the text into what can be seen.
- **HTTP:** Acronym of "Hypertext Transfer protocol". The protocol that forms the basis of World Wide Web technology. HTTP is the set of rules governing the software that transports hyperlinked files along the Internet.
- **Information Technology (IT):** Including ICT (Information and Communication Technology) is the application of appropriate (enabling) technologies to information processing.
- **Input/Output (I/O):** A generic reference to input and/or output to a computer.
- **IP:** Acronym of "Internet Protocol". The standard protocol used by systems communicating across the Internet.
- **IP Address:** A digital code that precisely locates a computer connected to the Internet.
- **MAC:** Short form of "Macintosh"; the other type of personal computer, manufactured by Apple Computers.
- **Inkjet Printer:** A non-impact printer in which the print head contains independently controlled injection chambers that squirt ink droplets on the paper to form letters and images.
- **Integrated Services Digital Network (ISDN):** A digital telecommunications standard for data delivery over twisted-pair lines with transmission speeds up to 128 Kbps (two 64 Kbps line pairs).
- **InterFace:** (1) A specific hardware or software connection. (2) Making two devices capable of communication. Used most often to refer the design of hardware and software that allows connection of network components and transfer of information.
- **Internet:** Internet is the largest wide area network in the world which links millions of computers. Through internet information can be shared, business can be conducted and research can be done.
- **IP Address (Internet Protocol Address) :** A unique numeric Internet address identifying any piece of equipment hooked up to the Internet.
- **Intranet:** An Internet-like network whose scope is restricted to the networks within a particular organization.

- **Java:** Java is a programming language and has a "sandboxed" code interpreter which permits programs to be downloaded to PC's from the Web, but isolates these applications from access to other applications running on the PC.
- **JPEG (Joint Photographic Experts Group):** A bitmapped file format that compresses image size.
- **Jukebox:** A storage device for multiple sets of CD-ROMs, tape cartridges, or disk modules enabling ready access to vast amounts of online data.
- **Keyboard:** It is one of computer components which used to input data to a computer. It is an input device.
- **Laptop:** Laptop is small and lightweight computer in which all the main parts fitted into single unit. It is designed to carry it around. Particularly, it is ideal for travelers, journalists, commentators and professionals who want to work both at the office and home.
- **LCD:** Acronym of "Liquid Crystal Display" is the technology used for displays in notebook and other smaller computers.
- **Linux:** An open source spin-off of the UNIX operating system that runs on a number of hardware platforms and is made available for free over the Internet.
- **Local Area Network:** Many multiple-computer homes have found ways to link their computers through a central device called a "hub". This way, each computer can share information directly, without the need to transfer data via a portable storage device, like a floppy disk. A properly set up LAN can also permit the connected computers to access the Internet through a single Internet account.
- **Log-on & Log-off:** Each server that is accessed must have some way to ensure security of their sensitive information. Thus, servers restrict access by forcing users to "log-on" with either personal access codes or anonymously. Anonymous access usually requires the individual's e-mail address, and the user's IP address is also logged. Once the desired information has been obtained, the user can "log-off", disconnecting access to the server.
- **Machine Language:** Machine language consists of the raw numbers that can be directly understood by a particular processor. Each processor's machine language will be different from other processors' machine language. Although called "machine language", it is not usually what people think of when talking about computer languages. Machine language dressed up with mnemonics to make it a bit more human-readable is called assembly language.
- **Mainframe Computer:** A large computer that can service many users simultaneously in support of enterprise-wide applications.
- **Memory:** One of the essential components of a computer's central processing unit. Memory is the area where information and programs are actively processed.
- **Micro Computer:** A microcomputer is a small relatively inexpensive computer with a microprocessor as its central processing unit (CPU).
- **Microprocessor:** A computer on a single chip. The central processing component of a microcomputer.
- **Modem:** Modem is a telecommunication device that converts digital signals to analog and vice versa. It is used in dial-up internet connection to connect telephone line to a computer.
- **Monitor:** The high-resolution TV-like tube that displays your computer's output. Today's monitors have much better quality displays than any TV is capable of producing.
- **Motherboard:** Motherboard is the core of a computer system. It is the circuit board where all other parts connect. It communicates and controls the overall system.
- **MP3 :** This stands for "MPEG-I Audio Layer-3" and is a Digital Compressed music file (these files always end with an extension mp3). MP3 files are often downloaded or exchanged between people online.
- **MPEG:** Acronym of "Motion Picture Experts Group". A video file compression system used on the web.
- **Mouse:** A small, handheld device attached to a computer; when moved across any flat surface (such on the computer screen called a cursor) includes one or more buttons that allow the user to select graphics or text onscreen.
- **Multimedia Applications:** Computer applications that involve the integration of text, sound, graphics, motion video, and animation.
- **Multitasking:** The concurrent execution of more than one program at a time.
- **Offline:** Pertaining to data that are not accessible by, or hardware devices that are not connected to a networked computer system.
- **Online:** Pertaining to data and/or hardware devices accessible to and under the control of a networked computer system.
- **Operating Systems or Platform:** These terms refer to the software that your computer uses to operate (otherwise known as your OS) and not to a manufacturer or company. Windows 2000, Windows XP, and OSX (Mac) are common platforms.
- **Password:** Password is a series of characters used to protect resources in a computer from unauthorized access. It is one of the ways to secure computer information from unauthorized users.
- **Peripherals:** A physical device (such as a printer, scanner, or disk subsystem) that is externally attached to a workstation or to the network.
- **Plugin:** A helper application that works within a browser. It adds more functionality to a browser commonly associated with the Netscape Navigator browser software.
- **Personal Computer:** A small computer designed to use by an individual.
- **Processor:** The logical component of a computer system that interprets and executes program instructions.
- **Program:** (1) Computer instructions structured and ordered in a manner that, when executed, causes a computer to perform a particular function. (2) The act of producing computer software to perform some application.
- **Programming:** The act of writing a computer program.
- **Programming Language:** The language programmers use to communicate instructions to a computer is called programming Language.
- **RAM:** Acronym of "Random Access Memory". The computer's "short-term" memory used whenever an action is performed by a program. It is also called the "active memory". RAM is what the computer used to run all applications. RAM is usually specified in Megabytes or MB.
- **ROM:** Acronym of "Read Only Memory" in which information is saved once and can never be altered. For example, CD-ROM drives read information saved on Compact Disks (CD's). A CD-ROM drive can read that information, but cannot make changes to it. For that you need a CD-RW drive. Some ROM is built into your computer to help it get started when you turn it on.

- **Scanner:** A scanner is a piece of hardware that will examine a picture and produce a computer file that represents what it sees. A digital camera is a related device. Each has its own limitations.
- **Search Engine:** A tool used which matches keywords you enter with titles and description on the Internet. It then displays the matches allowing you to easily locate a subject. Similar to a card catalog, but not as efficient. Common search engines are Webcrawler, Yahoo, Alta Vista, Infoseek, and Lycos.
- **Server:** A computer or its software that "serves" other computers by administering network files and network operations. Three types of Internet servers are Web servers, e-mail servers, and Gopher servers.
- **Software:** Software is a set of instructions developed by programming language which tells a computer what to do.
- **System Software:** System Software controls the overall operation of a computer. Some of the activities include managing system memory, controlling system resources, executing computer hardware functions and interfacing a user with computer hardware and applications.
- **Unix:** UNIX is a family of OSes, each being made by a different company or organization but all offering a very similar look and feel.
- **Upload:** The process of transferring information from one computer to another, generally from a client to a server is called uploading.
- **USB:** Acronym of "Universal Serial Bus" (the plug is very flant and has no pins or pronga). This is a style of port connection that is used by many peripheral devices such as Palm Pilots, phones, scanners, printers, etc. This type of connection is much faster than more traditional kind of connections such as serial and parallel ports.
- **UPS:** Acronym of "Uninterrupted Power Supply". An Uninterrupted Power Supply (UPS) is a device that allows your computer to keep running for at least a short time when the primary power source is lost.
- **Virus:** It is an acronym of 'Vital Information Resource Under Seize'. A virus is a program that will seek to duplicate itself in memory and on disks, but in a subtle way that will not immediately be noticed. A computer on the same network as an infected computer or that uses an infected disk (even a floppy) or that downloads and runs an infected program can itself become infected.
- **WAN:** Acronym of "Wide Area Network". A larger computer network that is geographically dispersed, such as one that stretched across a university campus.
- **Web Page:** A single screen (document) on a Website.
- **Webcasting:** "Webcasting" is a term that describes the ability to use the Web to deliver or delayed versions of sound or video broadcasts.
- **Website:** The location of published hypertext content. Physically, a Website can occupy an entire Web server or a part of a server; or it can be spread out among different servers as long as its sections are all linked, directly, to the same home page.
- **WLAN:** Acronym of "Wireless Local Area Network". In a Wireless Local Area Network (WLAN), an access point is a station that transmits and receives data (sometimes referred to as a transceiver).
- **World Wide Web or WWW:** The World Wide Web is so named because each page in the WWW has links to other pages, which have links to other pages, and so on, creating what could visually be seen as a web-like network of links.
- **Desktop:** The desktop is the area you see when the computer is not running applications. It consists of the icons on top of it as well as the Start button and other features. The desktop can be used to temporary store information or to move around documents and windows.
- **Icon:** Icons are little pictures that represent different programs or saved items. Double-clicking on the Icon accesses the information represent.
- **Window:** Each application opened will appear in its own window or its own little section of the screen. Windows can be moved and resized so that you can operate many different applications at the same time.
- **Dialogue Box:** When you ask the computer to act on certain commands, as to save your work, the computer will need more information from you and this will appear in a dialogue box. These boxes contain options and commands for computers to execute.
- **Start Menu:** In the lower left- hand corner of the Windows screen is the Start button. When you click on the button, a menu will appear, which we will call the Start menu. This menu gives you access to all the different parts and functions of the computer.
- **Task Bar:** At the very bottom of the screen there is a horizontal bar called the task bar. This bar contains (From left to right) the Start button, shortcuts to various programs, minimized programs, and another section of shortcuts that includes sound, volume, printers and the time.
- **The Internet:** The World Wide Web, or the Web are all names used to describe the vast network of information in cyberspace, available to anyone who has access to a computer, a browser (software), and a connection to an Internet service provider through a modem (or other connection such as DSL, ISDN, LAN, etc.). Many people use the terms Internet and World Wide Web (a.k.a. the Web) interchangeably, but in fact the two terms **are not synonymous**. The Internet and the Web are two separate but related things.
The Internet is a massive network of networks, i.e., a networking infrastructure. It connects millions of computers together globally, forming a network in which any computer can communicate with any other computer as long as they both are connected to the Internet.
- **Blog :** A Blog, short for weblog, is usually a personal, time stamped, online journal that appears on a website. It can be periodically updated by the owner, sometimes called a blogger. Many sites offer free software to create blogs on personal websites.
- **Downloading:** When you take a file from someone else's computer and put it on your own then it is called downloading. A file can be anything from a pretty picture to the enitre text of the Declaration of Independence.
- **E-mail:** E-mail is the more common abbreviation for Electronic mail. It allows computer users locally and worldwide to exchange messages. Each user of e-mail has a mailbox address to which messages are sent.

- **Internet Service Provider (ISP):** It connects you to the Internet.
- **Search Engines/Search Directories:** A search engine is a searchable database of Internet files collected by a computer program (this program is sometimes called a wanderer, crawler, robot, worm, spider, etc.). An index is created for the collected files, e.g., title, full text, size, URL, etc. There is often no selection criteria for these collection of files, except a ranking of "best fit" results.
- **URL:** URL stands for Uniform Resource Locator. The URL specifies the internet address of a file stored on a host computer connected to the Internet. Every file on the Internet, no matter what its accessing protocol, has a unique URL. Each web site must have its own specific address, similar to the way, each home must have a unique address in order to receive mail delivery service.
- **Web Browser:** A web browser is a software, installed on your computer, that allows you to navigate. Internet Netscape Navigator and Microsoft Internet Explorer are two of the most commonly used web browsers.
- **Web Site:** Contains all the information offered by a particular organization, individual, or company and will sometimes include links to other sites as well. Each web site generally starts with a home page and then links to other pages within the site containing various types of information and/ or services/products. A website can be made up of a single webpage document or hundreds/thousands, limited only by the size restrictions of the webserver it is housed in.
- **Menu Bar:** Contains menu items that open up dropdown lists for related options. Among the items options are for printing, customizing IE, copying and pasting text, managing Favourites, and accessing Help.
- **Navigation Toolbar:** Contains icons for a variety of features including navigating among Web pages. Searching the Web using a selection of search tools, accessing and managing Favourites, viewing a History of visited pages, printing, and accessing email and newsgroups.
- **Address Bar:** This is not really a toolbar, but this is where you type in the URL, (Web address) of the page. When you press the Enter key, it will take you to this address.
- **Home:** The home icon takes you back to the page that was on the screen when you first started IE, You can customize your selection.
- **Search:** The search button opens up a function that uses one or more Web search tools. You can choose the search tool(s) you want as default.
- **History:** The history function allows you to view and select Web pages you have recently visited. You can sort your items by clicking on the black triangle to the right of the word View. You can sort by size, date the number of times visited, and the order you have visited today.
- **Mail:** You can read e-mail from this window. Choose the e-mail software you wish to use by going back to the Menu Bar and choosing Tools/Internet Options/Programs.

POINTS TO REMEMBER

- A computer is a data processing machine having two main parts: Hardware and Software.
- Hardware comprises of the physical units of a computer system while software is a set of programs.
- Hardware and software together makes a computer system functional.
- Data are raw facts and figures.
- An operating system is an interface between the user and the computer hardware and it manages computer resources.
- An operating system performs different functions and is responsible for process management, file management, etc.
- There are many kinds of operating system. Some popular names are:- DOS, UNIX, Windows, Linux, Mac OS, etc.
- The Windows Explorer program is more efficient for viewing folders in Windows.
- Windows Explorer is divided vertically into two parts of two panes. The left side pane displays disk drives and folders in a hierarchical order, while the right pane displays the content of the folder drive that is selected on left side pane.
- The process of linking text values in a series within a formula is called 'concatenation'.
- A computer is a data processing machine. Data processing involves some activities like data capturing, data manipulation and information management.
- Collection of interrelated data is called a database.
- Computers are very useful for maintaining databases.
- A relational database is a collection of data items arranged as a set of formally described tables from which data can be accessed or reassembled in many different ways without having reorganization of the database tables.
- MS Access is a powerful program to create and manage the databases.
- Collection of data about a specific topic is called a table.
- A form is a graphical representation of a table.
- A report is a Presentation of data in a printed form.
- We can create mailing labels for your database using MS Access.
- Internet is the network of computer networks with million of computers connected to it.
- Website are files in servers, which are powerful computers.
- Website contain pages to be known as Web Pages.
- The collection of all websites is known as World Wide Web (WWW).
- Ted Nelson, in 1960s, first coined the term 'Hyper Text'.
- HTML is used to create Web Pages. It uses commands which are known as Tags.
- To compose HTML documents, text editors are used. HTML documents are viewed in Web browser.
- The tools are grouped by type in the Photoshop toolbox.
- Some of the tool icons have a tiny black triangle in the lower-right corner of their icons. This means that there are more tools of the same general kind available on a pop-up menu.

EXERCISE

1. What is called as the main folder on a storage device?
 - (a) Platform
 - (b) Interface
 - (c) Root Directory
 - (d) Home Page
 - (e) None of the above
2. RAM is _____ and _____.
 - (a) Volatile, temporary
 - (b) Non-volatile, permanent
 - (c) Non-volatile, temporary
 - (d) Volatile, permanent
 - (e) None of the above
3. Which is not an item of hardware?
 - (a) An MP3 file
 - (b) A keyboard
 - (c) A monitor
 - (d) A mouse
 - (e) None of the above
4. The box that contains the central electronic components of the computer is the _____.
 - (a) Motherboard
 - (b) System unit
 - (c) Peripheral
 - (d) Input device
 - (e) None of the above
5. Which type of device is computer monitor?
 - (a) Input
 - (b) Output
 - (c) Processing
 - (d) Software
 - (e) None of the above
6. Which menu is selected to cut, copy, and paste?
 - (a) File
 - (b) Edit
 - (c) Tools
 - (d) Table
 - (e) None of the above
7. Storage device, inside the computer is
 - (a) CD-ROM
 - (b) Zip Disk
 - (c) Super Disk
 - (d) Hard Disk
 - (e) None of the above
8. If you are going to a site you use often, instead of having to type in the address every time, you should _____.
 - (a) Save it as a file
 - (b) Make a copy of it
 - (c) Bookmark it
 - (d) Delete it
 - (e) None of the above
9. Which of these keys is not on the number keypad?
 - (a) Ctrl
 - (b) Delete
 - (c) Enter
 - (d) Num Lock
 - (e) None of the above
10. A program that converts a high-level language source file into a machine-language file is called a _____.
 - (a) Translator
 - (b) Assembler
 - (c) Compiler
 - (d) Linker
 - (e) None of the above
11. A CD-ROM disk
 - (a) cannot be erased and rewritten
 - (b) has more storage capacity than a CD-R
 - (c) holds less data than a floppy disk
 - (d) can be written to only once
 - (e) None of the above
12. The smallest unit of information, a computer can understand and process is known as a _____.
 - (a) digit
 - (b) kilobyte
 - (c) bit
 - (d) byte
 - (e) None of the above
13. For creating a document, you use _____ command at File Menu.
 - (a) Open
 - (b) Close
 - (c) New
 - (d) Save
 - (e) None of the above
14. Applications are often referred to as _____.
 - (a) Data files
 - (b) executable files
 - (c) system software
 - (d) the operating system
 - (e) None of the above
15. A directory within a directory is called _____.
 - (a) Mini Directory
 - (b) Junior Directory
 - (c) Part Directory
 - (d) Sub Directory
 - (e) None of the above
16. Compatibility in regard to computers refers to _____.
 - (a) the software doing the right job for the user
 - (b) it being versatile enough to handle the job
 - (c) the software being able to run on the computer
 - (d) software running with other previously installed software
 - (e) None of the above
17. What is a file?
 - (a) A file is a section of main storage used to store data
 - (b) A file is a collection of information that has been given a name and is stored in secondary memory
 - (c) A file is the part of a program that is used to describe what the program should do
 - (d) A file is another name for floppy disk
 - (e) None of the above
18. The _____ key and the _____ key can be used in combination with other keys to perform shortcuts and special tasks.
 - (a) Control, Alt
 - (b) Function, toggle
 - (c) Delete, Insert
 - (d) Caps Lock, Num Lock
 - (e) None of the above
19. The primary output device for computers is a _____.
 - (a) video monitor
 - (b) printer
 - (c) keyboard
 - (d) mouse
 - (e) None of the above
20. The name of the location of a particular piece of data is its _____.
 - (a) address
 - (b) memory name
 - (c) storage site
 - (d) data location
 - (e) None of the above
21. Two different files can have the same name if _____.
 - (a) they are in different folders
 - (b) they are on different drives
 - (c) they are on the same drive
 - (d) they are in same folder
 - (e) both (a) and (b)

22. A device that is connected to the motherboard is _____
 (a) called an external device
 (b) called an adjunct device
 (c) called a peripheral device
 (d) must connect using ribbon cable
 (e) None of the above
23. The first computers were programmed using _____
 (a) assembly language (b) machine language
 (c) spaghetti code (d) source code
 (e) None of the above
24. Documentation of computer programs is important so that _____
 (a) users can learn how to use the program
 (b) other programmers can know how to maintain the program
 (c) the programmer can see why the code is written that way while searching for source of error
 (d) All of the above
 (e) None of the above
25. Provide the means to move the pointer on the screen and give information to the computer by clicking its buttons _____
 (a) scanner (b) mouse
 (c) keyboard (d) program
 (e) None of the above
26. When you cut or copy information it gets place in the _____
 (a) Clipart (b) Clipboard
 (c) Internet (d) Motherboard
 (e) None of the above
27. Secondary storage _____
 (a) does not require constant power
 (b) does not use magnetic media
 (c) consists of four main types of devices
 (d) does not store information for later retrieval
 (e) None of the above
28. A device that provides emergency power to your computer, conditions the voltage, and protects against powers surges is called a _____
 (a) PSU = Power Supply Unit
 (b) USP = Universal Surge Protector
 (c) UPPS = Universal Power Protection and Supply
 (d) UPS = Uninterrupted Power Supply
 (e) None of the above
29. Output which is made up of pictures, sounds, and video is called _____
 (a) COM (b) hard copy
 (c) graphics (d) multimedia
 (e) None of the above
30. Several computers linked to a server to share programs and storage space _____
 (a) Network (b) grouping
 (c) library (d) integrated system
 (e) None of the above
31. A prescribed set of well-defined instructions for solving mathematical problems is called _____
 (a) a compiler (b) a code
 (c) a description (d) an algorithm
 (e) None of the above
32. LAN stands for _____
 (a) Local Access Network (b) Local Area Network
 (c) Logical access network (d) Logical Area Network
 (e) None of the above
33. A Field is a related group of _____
 (a) Records (b) Files
 (c) Characters (d) Cables
 (e) None of the above
34. Meaningful filename helps in easy file _____
 (a) Storing (b) Accessing
 (c) Identification (d) Printing
 (e) None of the above
35. To restart the computer _____ key is used.
 (a) Del + Ctrl (b) Backspace + Ctrl
 (c) Ctrl + Alt + Del (d) Reset
 (e) None of the above
36. Housing all hardware, software, storage, and processing in one site location is called _____
 (a) time-sharing (b) a distributed system
 (c) centralized processing (d) A host computer
 (e) None of the above
37. A computer works on a _____ number system.
 (a) binary (b) octal
 (c) decimal (d) hexadecimal
 (e) None of the above
38. A record is related to a file, as a statement is related to a _____
 (a) procedure (b) file
 (c) program (d) data
 (e) None of the above
39. Soft copy refers to _____
 (a) printed output (b) music sounds
 (c) screen output (d) digitizing
 (e) None of the above
40. WWW stands for _____
 (a) World Work Web (b) Wide Work Web
 (c) Wide World Web (d) World Wide Web
 (e) None of the above
41. The physical components of a computer system is _____
 (a) Software (b) Hardware
 (c) ALU (d) Control Unit
 (e) None of the above
42. Which is a graphical representation of an application?
 (a) Windows 95 (b) Windows Explorer
 (c) Icon (d) Taskbar
 (e) None of the above
43. OCR stands for _____
 (a) Optical Character Recognition
 (b) Optical CPU Recognition
 (c) Optimal Character Rendering
 (d) Other Character Restoration
 (e) None of these
44. If a new device is attached to a computer, such as a printer or scanner, its _____ must be installed before the device can be used.
 (a) buffer (b) driver
 (c) pager (d) server
 (e) None of these

45. The software that allows users to surf the Internet is called a/an _____.
- Search engine
 - Internet Service Provider (ISP)
 - Multimedia application
 - Browser
 - None of these
46. The method of file organization in which data records in a file are arranged in a specified order according to a key field is known as the _____.
- Direct access method
 - Queuing method
 - Predetermined method
 - Sequential access method
 - None of these
47. In Excel _____ contains one or more worksheets.
- Template
 - Workbook
 - Active cell
 - Label
 - None of these
48. Which of the following is a popular programming language for developing multimedia web pages, websites, and web-based applications?
- COBOL
 - Java
 - BASIC
 - Assembler
 - None of these
49. A CD-RW disk _____.
- has a faster access than an internal disk
 - is a form of optical disk, so it can only be written once
 - holds less data than a floppy disk
 - can be erased and rewritten
 - None of these
50. The first page of a Web site is called the _____.
- Homepage
 - Index
 - Java Script
 - Book mark
 - None of those
51. A word in a web page that, when clicked, opens another document _____.
- anchor
 - URL
 - hyperlink
 - reference
 - None of these
52. The _____ manual tells you how to use a software program.
- documentation
 - programming
 - technical
 - user
 - None of these
53. What disk is used to cold boot a PC?
- Setup disk
 - System disk
 - Diagnostic disk
 - Program disk
 - None of these
54. The _____ tells the computer how to use its components.
- utility
 - network
 - operating system
 - application program
 - None of these
55. A _____ contains buttons and menus that provide quick access to commonly used commands.
- menu bar
 - toolbar
 - window
 - action bar
 - None of these
56. Numbers in table columns are usually _____.
- right-aligned
 - left-aligned
 - justified
 - centered
 - None of these
57. To access a mainframe or supercomputer, users often use a _____.
- terminal
 - node
 - desktop
 - handheld
 - None of these
58. By default, your documents print in _____ mode.
- Landscape
 - Portrait
 - Page Setup
 - Print View
 - None of these
59. What characteristic of Read-Only Memory (ROM) makes it useful?
- ROM information can be easily updated
 - ROM provides very large amounts of inexpensive data storage
 - Data in ROM is nonvolatile, that is, it remains there even without electrical power
 - ROM chips are easily swapped between different brands of computers
 - None of these
60. What are bas, doc, and htm examples of?
- extensions
 - domains
 - protocols
 - databases
 - None of these
61. ctrl, shift and alt are called _____ keys.
- adjustment
 - function
 - modifier
 - alphanumeric
 - None of these
62. Which type of file is created by word processing programs?
- database file
 - storage file
 - worksheet file
 - document file
 - graphical file
63. Personal computers can be connected together to form a _____.
- server
 - supercomputer
 - network
 - enterprise
 - None of these
64. A modem _____.
- translates analog signals from a computer into digital signals that can travel along conventional telephone lines.
 - translates digital signals from a computer into analog signals that can travel along conventional telephone lines.
 - demodulates digital signals from a computer.
 - modulates signals from an analog telephone line.
 - None of these
65. Which of the following menu types is also called a drop-down menu?
- fly-out
 - cascading
 - pop-up
 - pull-down
 - None of these
66. Data (information) is stored in computer as _____.
- files
 - directories
 - floppies
 - matter
 - None of these
67. The central processing unit contains which of the following as a component?
- Memory Regulation Unit
 - Flow Control Unit
 - Arithmetic Logic Unit
 - Instruction Manipulation Unit
 - None of these

68. Memory unit is a part of _____.
- (a) Control unit (b) Central Processing Unit
(c) Input device (d) Output device
(e) None of these
69. The process of writing out computer instructions is known as _____.
- (a) assembling (b) compiling
(c) executing (d) coding
(e) None of these
70. A Web site address is a unique name that identifies a specific _____ on the Web.
- (a) Web browser (b) PDA
(c) Website (d) link
(e) None of these
71. An example of a telecommunications device is a _____.
- (a) keyboard (b) mouse
(c) printer (d) modem
(e) None of these
72. _____ is a procedure that requires users to enter an identification code and a matching password.
- (a) Paging (b) Logging on
(c) Time-sharing (d) Multitasking
(e) None of these
73. Which device is used as the standard pointing device in a Graphical User Environment?
- (a) Keyboard (b) Mouse
(c) joystick (d) Track ball
(e) None of these
74. The simultaneous execution of two or more instructions is called _____.
- (a) sequential access
(b) reduced instruction set computing
(c) multiprocessing
(d) disk mirroring
(e) None of these
75. Multiprogramming systems _____.
- (a) Are easier to develop than single programming systems.
(b) Execute each job faster .
(c) Execute more jobs in the same time period.
(d) Use only one large mainframe computer.
(e) None of these.
76. Which of the following is not an output device?
- (a) Plotter (b) Printer
(c) Monitor (d) Touch Screen
(e) None of these
77. Every component of your computer is either _____.
- (a) software or CPU/RAM
(b) input devices or output devices
(c) application software or system software
(d) hardware or software
(e) None of these
78. A collection of interrelated records is called a _____.
- (a) management information system
(b) spread sheet (c) database
(d) text file (e) None of these
79. Codes consisting of bars or lines of varying widths or lengths that are computer-readable are known as _____.
- (a) a bar code (b) an ASCII code
(c) a magnetic tape (d) a light pen
(e) None of these
80. A _____ contains specific rules and words that express the logical steps of an algorithm.
- (a) programming language (b) programming structure
(c) syntax (d) logic chart
(e) None of these
81. _____ is a set of keywords, Symbols and a system of rules for constructing statements by which humans can communicate the instructions to be executed by a computer.
- (a) A computer program (b) A programming language
(c) An assembler (d) Syntax
(e) None of these
82. The general term “peripheral equipment” is used for _____.
- (a) any device that is attached to a computer system
(b) large-scale computer systems
(c) a program collection
(d) other office equipment not associated with a desktop computer
(e) None of these
83. _____ is the process of finding errors in software code.
- (a) Compiling (b) Assembling
(c) Interpreting (d) Debugging
(e) None of these
84. Which of the following converts all the statements in a program in a single batch and the resulting collection of instructions is placed in a new file?
- (a) compiler (b) interpreter
(c) converter (d) instruction
(e) None of these
85. Digital photos and scanned images are typically stored as _____ graphics with extensions such as .bmp, .png, .jpg, .tif, or .gif.
- (a) vector (b) bitmap
(c) either vector or bitmap (d) neither vector nor bitmap
(e) None of these
86. _____ is one reason for problems of data integrity
- (a) Data availability constraints
(b) Data inconsistency
(c) Security constraints
(d) Unauthorized access of data
(e) Data redundancy
87. When you install a new program on your computer, it is typically added to the _____ menu.
- (a) All Programs (b) Select Programs
(c) Start Programs (d) Desktop Programs
(e) None of these
88. After a user has saved and deleted many files, many scattered areas of stored data remained that are too small to be used efficiently, causing _____.
- (a) disorder (b) turmoil
(c) disarray (d) fragmentation
(e) None of these
89. Which of the following is the communications protocol that sets the standard used by every computer that accesses Web-based information?
- (a) XML (b) DML
(c) HTTP (d) HTML
(e) None of these

90. A _____ is a computer attached to the Internet that runs a special Web server software and can send Web pages out to other computers over the Internet.
 (a) web client (b) web system
 (c) web page (d) web server
 (e) None of these
91. _____ are a type of inexpensive digital camera that remains tethered to a computer and used for videoconferencing, video chatting, and live Web broadcast.
 (a) Webcams (b) Webpics
 (c) Browsercams (d) Browserpics
 (e) None of these
92. Which one of the following is a key function of a firewall?
 (a) Monitoring (b) Deleting
 (c) Copying (d) Moving
 (e) None of these
93. The standard protocol of the Internet is _____.
 (a) TCP/IP (b) Java
 (c) HTML (d) Flash
 (e) None of these
94. A program that generally has more user-friendly interface than a DBMS is called a _____.
 (a) front end (b) repository
 (c) back end (d) form
 (e) None of these
95. Computers connected to LAN can _____.
 (a) run faster
 (b) Share-information and/or share peripheral equipment
 (c) e-mail
 (d) go online
 (e) None of these
96. Input, output, and processing devices grouped together to represent a(n) _____.
 (a) mobile device
 (b) information processing cycle
 (c) circuit board
 (d) computer system
 (e) None of these
97. Which of the following system components is the brain of the computer?
 (a) Circuit board (b) CPU
 (c) Memory (d) Network card
 (e) None of these
98. The abbreviation ISP stands for
 (a) International Spy Project
 (b) Indian Social Planning
 (c) Internet Solution Provider
 (d) Internet Service Provider
 (e) None of these
99. This component is required to process data into information and consists of integrated circuits
 (a) Hard disk (b) RAM
 (c) CPU (d) ROM
 (e) None of these
100. Computers manipulate data in many ways, and this manipulation is called _____.
 (a) utilizing (b) batching
 (c) upgrading (d) processing
 (e) None of these
101. A file extension is separated from the main file name with a(n) _____ but no spaces.
 (a) question mark (b) exclamation mark
 (c) underscore (d) period
 (e) None of these
102. An adhoc query is a _____.
 (a) pre-planned question
 (b) pre-scheduled question
 (c) spur-of-the-moment question
 (d) question that will not return any results
 (e) None of these
103. A Web _____ consists of one or more Web pages located on a Web server.
 (a) hub (b) site
 (c) story (d) template
 (e) None of these
104. A computer _____ is a set of program instructions that can attach itself to a file, reproduce itself, and spread to other files.
 (a) worm (b) virus
 (c) trojan horse (d) phishing scam
 (e) None of these
105. The desktop contains small graphics called _____.
 (a) windows (b) logos
 (c) icons (d) pictures
 (e) None of these
106. C, BASIC, COBOL, and Java are examples of _____.
 (a) low-level (b) computer
 (c) system programming (d) high-level
 (e) None of these
107. A(n) _____ camera is a peripheral device used to capture still images in a digital format that can be easily transferred into a computer and manipulated using graphics software.
 (a) digital (b) analog
 (c) classic (d) film
 (e) None of these
108. _____ makes it possible for shoppers to make purchases using their computers.
 (a) E-world (b) E-commerce
 (c) E-spend (d) E-business
 (e) None of these
109. Networks are monitored by security personnel and supervised by _____ who set(s) up accounts and passwords for authorized network users.
 (a) IT managers (b) the government
 (c) network administrators (d) password administrators
 (e) None of these
110. Application software is designed to accomplish _____.
 (a) real-world tasks (b) computer-centric tasks
 (c) gaming tasks (d) operating system tasks
 (e) None of these
111. The human-readable version of a program is called _____.
 (a) source code (b) program code
 (c) human code (d) system code
 (e) None of these

112. A _____ computer (also referred to as a laptop), is a small, lightweight personal computer that incorporates the screen, the keyboard, storage, and processing components into a single portable unit.
- (a) notebook (b) journal
(c) diary (d) briefcase
(e) None of these
113. Programs such as Internet Explorer that serve as navigable windows into the Web are called _____.
- (a) Hypertext (b) Networks
(c) Internet (d) Web browsers
(e) None of these
114. A computer-intensive problem runs on a _____.
- (a) server (b) mainframe
(c) supercomputer (d) super PC
(e) None of these
115. Approximately how many bytes make one Megabyte?
- (a) One Thousand (b) Ten Thousand
(c) One Hundred (d) One Million
(e) None of these
116. All the deleted files go to _____.
- (a) Recycle Bin (b) Task Bar
(c) Tool Bar (d) My Computer
(e) None of these
117. _____ this is the act of copying or downloading a program from a network and making multiple copies of it.
- (a) Network piracy (b) Plagiarism
(c) Software piracy (d) Site-license piracy
(e) None of these
118. Which is the best definition of a software package?
- (a) An add-on for your computer such as additional memory
(b) A set of computer programs used for a certain function such as word processing
(c) A protection you can buy for a computer
(d) The box, manual and license agreement that accompany commercial software
(e) None of these
119. In MICR, C stands for _____.
- (a) Code (b) Colour
(c) Computer (d) Character
(e) None of these
120. Fax machines and imaging systems are examples of _____.
- (a) bar-code readers (b) imaging systems
(c) scanning devices (d) pen-based systems
(e) None of these
121. When writing a document, you can use the _____ feature to find an appropriate word or an alternative word if you find yourself stuck for the right word.
- (a) dictionary (b) word finder
(c) encyclopedia (d) thesaurus
(e) None of these
122. In an information system, alphanumeric data normally takes the form of _____.
- (a) Sentences and paragraphs
(b) Numbers and alphabetical characters
(c) Graphic shapes and figures
(d) Human voice and other sounds
(e) None of these
123. When installing _____, the user must copy and usually decompress program files from a CD-ROM or other medium to the hard disk.
- (a) programming software (b) system hardware
(c) applications hardware (d) applications software
(e) None of these
124. A collection of interrelated files in a computer is a _____.
- (a) file manager (b) field
(c) record (d) database
(e) None of these
125. A _____ computer is a large and expensive computer capable of simultaneously processing data for hundreds or thousands of users.
- (a) server (b) mainframe
(c) desktop (d) tablet
(e) None of these
126. The trend in computer systems is toward the use of Graphical User Interfaces (GUIs). In these operating systems, a trackball is described as
- (a) a roller ball which moves the cursor _____
(b) a pen-shaped device which allows data to be entered through the CRT screen
(c) a figure which resembles a familiar office device
(d) an outdated input device
(e) None of these
127. What is usually used for displaying information at public places ?
- (a) Monitors
(b) Overhead Projections
(c) Monitors and Overhead Projection
(d) Touch Screen Kiosks
(e) None of these
128. The real business and competitive value of information technology lies in _____.
- (a) The software applications that are used by many companies.
(b) The capabilities of the software and value of the information a business acquires and uses.
(c) The infrastructure of hardware, networks, and other IT facilities that are commonly used by most companies.
(d) The capabilities of the hardware and the speed at which it processes information.
(e) None of these.
129. Companies use which of the following vendors to provide access to software and services rather than purchasing the applications and maintaining the applications themselves ?
- (a) Open source vendors
(b) Alliances
(c) Application service providers
(d) All of the above
(e) None of these
130. Which one of the following would be considered as a way that a computer virus can enter in a computer system ?
- (a) Opening an application previously installed on the computer
(b) Borrowed copies of software
(c) Viewing a website without causing any additional transactions
(d) Running antivirus programs
(e) None of these

131. Collecting personal information and effectively posing as another individual is known as the crime of _____.
(a) spooling (b) identity theft
(c) spoofing (d) hacking
(e) None of these
132. The first step in the transaction processing cycle is _____.
(a) database operations (b) audit
(c) data entry (d) use inquiry
(e) None of these
133. In the information systems concept, the output function involves _____.
(a) Capturing and assembling elements that enter the system to be processed.
(b) Transformation processes that convert input into output.
(c) Transferring elements that have been produced by a transformation process to their ultimate destination.
(d) Monitoring and evaluating feedback to determine whether a system is moving toward the achievement of its goal.
(e) None of these
134. When a computer runs a program, the _____ processes through the program's sequence of instructions.
(a) AMD (b) ASCII
(c) CPU (d) transistor
(e) None of these
135. Bytes combined to represent a named collection of instructions or data stored in the computer or digital device is a(n) _____.
(a) digitalization (b) kilobyte
(c) record (d) file
(e) None of these
136. _____ is a type of high-speed memory that a processor can access more rapidly than RAM.
(a) Cache memory
(b) Magnetic-storage
(c) Read-Only Memory (ROM)
(d) Solid state storage
(e) None of these
137. The trend of digital electronic devices becoming smaller and increasingly powerful has fully supported the move to an increasingly _____ workforce.
(a) desktop (b) intelligent
(c) server (d) mobile
(e) None of these
138. _____ hard drives are permanently located inside the system unit and are not designed to be removed, unless they need to be repaired or replaced.
(a) Static (b) Internal
(c) External (d) Remove
(e) None of these
139. A barcode is _____ code that represents data with bars of varying widths or heights.
(a) read/write (b) magnetic
(c) optical (d) laser
(e) None of these
140. The Internet allows you to _____.
(a) send electronic mail
(b) view Web pages
(c) connect to servers all around the world
(d) All of the above
(e) None of these
141. The name that the User gives to a document is referred to as _____.
(a) name given (b) document given
(c) file name (d) document identity
(e) none of these
142. Editing a document consists of reading through the document you've created, then _____.
(a) correcting your errors (b) printing it
(c) saving it (d) deleting it
(e) None of these
143. Which of the following controls the manner of interaction between the user and the operating system ?
(a) User interface (b) Language translator
(c) Platform (d) Screen saver
(e) None of these
144. What type of software is most useful for the creation of brochures, posters, and newsletters?
(a) Spreadsheet software
(b) Web authoring software
(c) Multimedia authoring software
(d) Desktop publishing software
(e) None of these
145. The quickest and easiest way in MS-Word, to locate a particular word or phrase in a document is to use the _____ command.
(a) Replace (b) Find
(c) Lookup (d) Search
(e) None of these
146. One or more defects or problems that prevent the software from working as intended or working at all is a(n).
(a) bug (b) bot
(c) programming language (d) fuzzy logic
(e) None of these
147. _____ shows the files, folders, and drives on your computer, making it easy to navigate from one location to another within the file hierarchy.
(a) Microsoft Internet Explorer
(b) Windows Explorer
(c) My Computer
(d) Folders Manager
(e) None of these
148. A(n) _____ provides commands for writing software that is translated to the detailed step-by-step instructions executed by the processor to achieve an objective or solve a problem.
(a) programming language (b) software patch
(c) presentation language (d) All language
(e) None of these
149. A program written in a high level language is referred to as _____.
(a) source code (b) object code
(c) machine code (d) assembly code
(e) none of these

150. In order to save an existing document with a different name you need to _____
- (a) Retype the document and give it a different name.
 - (b) Use the Save as command.
 - (c) Copy and paste the original document to a new document and then save.
 - (d) Use Windows Explorer to copy the document to a different location and then rename it.
 - (e) None of these
151. File extensions are used in order to _____.
- (a) name the file
 - (b) ensure the filename is not lost
 - (c) identify the file
 - (d) identify the file type
 - (e) None of these
152. Passwords enable users to _____.
- (a) get into the system quickly
 - (b) make efficient use of time
 - (c) retain confidentiality of files
 - (d) simplify file structures
 - (e) None of these
153. In page preview mode _____.
- (a) You can see all pages of your document
 - (b) You can only see the page you are currently working on
 - (c) You can only see pages that do not contain graphics
 - (d) You can only see the title page of your document
 - (e) None of these
154. To navigate to a new Web page for which you know the URL, type that URL in the browser's _____ and press Enter.
- (a) Address bar
 - (b) Domain bar
 - (c) Address button
 - (d) Name button
 - (e) None of these
155. The CPU, also called the _____ when talking about PCs, does the vast majority of the processing for a computer.
- (a) macroprocessor
 - (b) RAM
 - (c) Memory System
 - (d) microprocessor
 - (e) None of these
156. A computer's type, processor, and operating system define its _____
- (a) brand
 - (b) size
 - (c) platform
 - (d) speed
 - (e) None of these
157. A kiosk _____
- (a) is data organized and presented in a manner that has additional value beyond the value of the data itself.
 - (b) combines microscopic electronic components on a single integrated circuit that processes bits according to software instructions.
 - (c) is a computer station that provides the public with specific and useful information and services.
 - (d) describes a computer's type, processor, and operating system
 - (e) None of these
158. The part of the CPU that accesses and decodes program instructions, and coordinates the flow of data among various system components is the _____
- (a) ALU
 - (b) Control unit
 - (c) Megahertz
 - (d) Motherboard
 - (e) None of these
159. Computer programs are written in a high-level programming language; however, the human-readable version of a program is called—
- (a) cache
 - (b) instruction set
 - (c) source code
 - (d) word size
 - (e) None of these
160. What is the difference between a CD-ROM and a CD-RW ?
- (a) They are the same—just two different terms used by different manufacturers
 - (b) A CD-ROM can be written to and a CD-RW cannot
 - (c) A CD-RW can be written too, but a CD-ROM can only be read from
 - (d) A CD-ROM holds more information than a CD-RW
 - (e) None of these
161. The process of a computer receiving information from a server on the Internet is known as –
- (a) Pulling
 - (b) Pushing
 - (c) Downloading
 - (d) Transferring
 - (e) None of these
162. When sending an e-mail, the _____ line describes the contents of the message
- (a) Subject
 - (b) To
 - (c) Contents
 - (d) cc
 - (e) None of these
163. You organize files by storing them in _____
- (a) archives
 - (b) folders
 - (c) indexes
 - (d) lists
 - (e) None of these
164. _____ are specially designed computer chips that reside inside other devices, such as your car or your electronic thermostat.
- (a) Servers
 - (b) Embedded computers
 - (c) Robotic computers
 - (d) Mainframes
 - (e) None of these
165. Which of the following places the common data elements in order from smallest to largest ?
- (a) Character, file, record, field, database.
 - (b) Character, record, field, file, database.
 - (c) Character, field, record, file, database
 - (d) Bit, byte, character, record, field, file, database
 - (e) None of these
166. Which of the following statements is false concerning file names?
- (a) Files may share the same name or the same extension but not both
 - (b) Every file in the same folder must have a unique name
 - (c) File extension is another name for file type.
 - (d) The file extension comes before the dot (.) followed by the file name
 - (e) None of these

167. Distributed processing involves _____.
- solving computer component problems from a different computer
 - solving computing problems by breaking them into smaller parts that are separately processed by different computers.
 - allowing users to share files on a network.
 - allowing users to access network resources away from the office
 - None of these
168. The operating system determines the manner in which all of the following occurs except _____
- user creation of a document
 - user interaction with the processor
 - printer output
 - data displayed on the monitor
 - None of these
169. Office LANs that are spread geographically apart on a large scale can be connected using a corporate _____.
- CAN
 - LAN
 - DAN
 - WAN
 - TAN
170. The taskbar is located _____.
- on the Start menu
 - at the bottom of the screen
 - on the Quick Launch toolbar
 - at the top of the screen
 - None of these
171. Generally, you access the Recycle Bin through an icon located _____.
- on the desktop
 - on the hard drive
 - on the shortcut menu
 - in the Properties dialog box
 - None of these
172. The physical arrangement of elements on a page is referred to as a document's _____.
- features
 - format
 - pagination
 - grid
 - None of these
173. Where is data saved permanently?
- Memory
 - Storage
 - CPU
 - Printer
 - None of these
174. Which of the following is not true about computer files?
- They are collections of data saved to a storage medium
 - Every file has a filename.
 - A file extension is established by the user to indicate the file's contents.
 - Files usually contain data.
 - None of these.
175. Which is not a basic function of a computer ?
- Copy text
 - Accept input
 - Process data
 - Store data
 - None of these
176. The _____ is the box that houses the most important parts of a computer system.
- software
 - hardware
 - input device
 - system unit
 - None of these
177. Which of the following are computers that can be carried around easily ?
- Minicomputers
 - Supercomputers
 - PCs
 - Laptops
 - None of these
178. The basic goal of computer process is to convert data into
- files
 - tables
 - information
 - graphs
 - None of these
179. Which of the following refers to the fastest, biggest and most expensive computers ?
- Personal Computers
 - Supercomputers
 - Laptops
 - Notebooks
 - None of these
180. A central computer that holds collections of data and programs for many PCs, workstations and other computers is a(n) _____.
- supercomputer
 - minicomputer
 - laptop
 - server
 - None of these
181. A _____ is an electronic device that process data, converting it into information.
- computer
 - processor
 - case
 - stylus
 - None of these
182. A personal computer is designed to meet the computing needs of a(n)
- individual
 - department
 - company
 - city
 - None of these
183. Super computer developed by Indian scientists
- Param
 - Super301
 - Compaq Presario
 - Cray YMP
 - Blue Gene
184. A computer used at supermarkets, departmental stores and restaurant etc. is called _____ terminal
- P-O-S
 - Dumb
 - Intelligent
 - Smart
 - calculating
185. Supercomputers _____
- are smaller in size and processing capability than mainframe computers
 - are common in majority of households
 - contain thousands of microprocessors
 - are rarely used by researchers due to their lack of computing capacity
 - are of the same size as laptops
186. The name of the computer's brain is
- monitor
 - hardware
 - CPU
 - byte
 - None of these
187. The output devices make it possible to
- view or print data
 - store data
 - scan data
 - input data
 - None of these

188. The most common method of entering text and numerical data into a computer system is through the use of a
(a) keyboard (b) scanner
(c) printer (d) plotter
(e) None of these
189. Which of the following groups consist of only input devices?
(a) Mouse, Keyboard, Monitor
(b) Mouse, Keyboard, Printer
(c) Mouse, Keyboard, Plotter
(d) Mouse, Keyboard, Scanner
(e) None of these
190. Which of the following groups consist of only output devices?
(a) Scanner, Printer, Monitor
(b) Keyboard, Printer, Monitor
(c) Mouse, Printer, Monitor
(d) Plotter, Printer, Monitor
(e) None of these
191. A series of instructions that tells a computer what to do and how to do it is called a
(a) program (b) command
(c) user response (d) processor
(e) None of these
192. Which part of the computer displays the work done ?
(a) RAM (b) Printer
(c) Monitor (d) ROM
(e) None of these
193. Any data or instruction entered into the memory of a computer is considered as
(a) storage (b) output
(c) input (d) information
(e) None of these
194. A scanner scans _____
(a) Pictures
(b) Text
(c) Both Pictures and Text
(d) Neither Pictures nor Text
(e) None of the above
195. Back up of the data files will help to prevent _____
(a) loss of confidentiality
(b) duplication of data
(c) virus infection
(d) loss of data
(e) None of the above
196. To access properties of an object, the mouse technique to use is _____.
(a) right-clicking (b) shift-clicking
(c) dragging (d) dropping
(e) None of these
197. A _____ can make it easier to play games.
(a) mouse (b) joystick
(c) keyboard (d) pen
(e) None of these
198. Which keys enable the input of numbers quickly?
(a) Ctrl, Shift and Alt (b) function keys
(c) the numeric keypad (d) arrow keys
(e) None of these
199. Why is the Caps Lock key referred to as a toggle key?
(a) Because its function goes back and forth every time it is pressed
(b) Because it cannot be used for entering numbers
(c) Because it cannot be used to delete
(d) Because it cannot be used to insert
(e) None of these
200. Using output devices one can
(a) input data (b) store data
(c) scan data (d) view or print data
(e) None of these
201. Which of the following categories would include a keyboard?
(a) Printing Device (b) Output Device
(c) Pointing Device (d) Storage Device
(e) Input Device
202. What type of keys are 'Ctrl' and 'Shift'?
(a) adjustment (b) function
(c) modifier (d) alphanumeric
(e) None of these
203. The term _____ refers to data storage systems that make it possible for a computer or electronic device to store and retrieve data.
(a) retrieval technology (b) input technology
(c) output technology (d) storage technology
(e) None of these
204. The term _____ refers to any computer component that is required to perform work.
(a) bootstrap (b) kernel
(c) resource (d) source code
(e) None of these
205. The _____ is responsible for performing calculations and contains decision-making mechanisms.
(a) Central Processing Unit
(b) Memory Unit
(c) Arithmetic and Logic Unit
(d) Output Unit
(e) None of these
206. Computer _____ is whatever is typed, submitted, or transmitted to a computer system.
(a) input (b) output
(c) data (d) circuitry
(e) None of these
207. Which process checks to ensure the components of the computer are operating and connected properly?
(a) Booting (b) Processing
(c) Saving (d) Editing
(e) None of these
208. All the characters that a device can use is called its ?
(a) Skill Set (b) Character Alphabet
(c) Character Codes (d) Keyboard Characters
(e) Character Set
209. Which unit controls the movement of signals between CPU and I/O ?
(a) ALU (b) Control Unit
(c) Memory Unit (d) Secondary Storage
(e) None of these

210. The three main parts of the processor are _____.
- ALU, Control Unit and Registers
 - ALU, Control Unit and RAM
 - Cache, Control Unit and Registers
 - Control Unit, Registers and RAM
 - RAM, ROM and CD-ROM
211. Which of the following does not relate to Input Unit ?
- If accepts data from the outside world.
 - It converts data into binary code that is understandable by the computer.
 - It converts binary data into the human readable form that is understandable to the users.
 - It sends data in binary form to the computer for further processing.
 - None of these.
212. Video controller
- Controls the resolution of images on screen.
 - Controls the signals to be sent and received from processor for display.
 - Handles the entire electronic work behind the formation of images on the screen.
 - Is responsible for allocating pixels for formation of images.
 - None of these.
213. Decreasing the amount of space required to store data and programs is accomplished by _____.
- pressing
 - disk caching
 - RAID
 - crashing
 - file compression
214. A means of capturing an image (drawing or photo) so that it can be stored on a computer is
- Modem
 - Software
 - Scanner
 - Keyboard
 - Mouse
215. Access control based on a person's fingerprints is an example of
- biometric identification
 - characteristic identification
 - fingerprint security
 - logistics
 - None of these
216. Codes consisting of bars or lines of varying widths or lengths that are computer-readable are known as _____.
- an ASCII code
 - a magnetic tape
 - an OCR scanner
 - a bar code
 - None of these
217. Which of the following functions is not performed by the CPU?
- Graphical display of data
 - Arithmetic calculations
 - Managing memory
 - Managing input and output
 - None of these
218. The part of the CPU that accesses and decodes program instructions, and coordinates the flow of data among various system components is the
- ALU
 - control unit
 - megahertz
 - motherboard
 - None of these
219. The name that the user gives to a document is referred to as
- document-name
 - file-name
 - name-given
 - document-identity
 - None of these
220. A disk's content that is recorded at the time of manufacture and that cannot be changed or erased by the user is _____.
- memory-only
 - write-only
 - read-only
 - run-only
 - None of these
221. Reusable optical storage will typically have the acronym _____.
- CD
 - DVD
 - ROM
 - RW
 - None of these
222. The most common type of storage devices are _____.
- persistent
 - optical
 - magnetic
 - flash
 - None of these
223. How many megabytes make a gigabyte?
- 1024
 - 128
 - 256
 - 512
 - 64
224. The time for the actual data transfer after receiving the request for data from secondary storage is referred to as the disk's
- transfer time
 - movement time
 - access time
 - data input time
 - None of these
225. What happens when we try to delete the files on the floppy?
- The files get moved to the Recycle Bin
 - Files on a floppy cannot be deleted
 - The files get deleted and can be restored again from Recycle Bin.
 - The files get deleted and cannot be restored again
 - The file gets copied on the Hard disk
226. The following computer's memory is characterised by low cost per bit stored
- Primary
 - Secondary
 - Hard Disk
 - All of these
 - None of these
227. Which of the following is not an example of hardware?
- Scanner
 - Printer
 - Monitor
 - Mouse
 - Interpreter
228. _____ is the maximum amount of data that can be stored on a storage medium.
- Magnetic storage
 - Optical storage
 - Solid-state storage
 - Storage capacity
 - None of these
229. For opening and closing of the file in Excel, you can use which bar ?
- Formatting
 - Standard
 - Title
 - Formatting or Title
 - None of these
230. _____ acts as temporary high-speed holding area between the memory and the CPU thereby improving processing capabilities
- ROM
 - RAM
 - Temporary memory
 - Cache memory
 - Flash memory
231. The background of any word document _____
- is always white colour
 - is the colour you preset under the Options menu
 - is always the same for the entire document
 - can have any colour you choose
 - None of the above

232. Which of the following memory chip is faster ?
 (a) There is no certainty
 (b) DRAM
 (c) SRAM
 (d) DRAM is faster for larger chips
 (e) None of these
233. Which of the following is the second largest measurement of RAM ?
 (a) Terabyte (b) Megabyte
 (c) Byte (d) Gigabyte
 (e) Mega Hertz
234. A group of 8 bits is known as a –
 (a) byte (b) kilobyte
 (c) binary digit (d) megabit
 (e) None of these
235. The storage element for a Static RAM is the _____.
 (a) diode (b) resistor
 (c) capacitor (d) flip-flop
 (e) None of these
236. Which of the following is the largest unit of storage?
 (a) GB (b) KB
 (c) MB (d) TB
 (e) None of these
237. _____ is the process of dividing the disk into tracks and sectors.
 (a) Tracking (b) Formatting
 (c) Crashing (d) Allotting
 (e) None of these
238. Memory, also called random access memory, or RAM, _____.
 (a) contains the electronic circuits that cause processing to occur.
 (b) makes the information resulting from processing available for use.
 (c) allots data, programs, commands, and user responses to be entered into a computer.
 (d) consists of electronic components that store data.
 (e) None of these.
239. A 32-bit-word computer can access _____ byte at a time.
 (a) 4 (b) 8
 (c) 16 (d) 32
 (e) 30
240. The main memory of a computer must be large enough to contain the active parts of _____.
 (a) the operating system
 (b) the applications
 (c) input/output storage & working storage
 (d) All of these
 (e) None of these
241. Which of the following types of memory improves processing by acting as a temporary high-speed holding area between the memory and the CPU?
 (a) RAM (b) ROM
 (c) Cache memory (d) Flash memory
 (e) EPROM
242. Thick, rigid metal platters that are capable of storing and retrieving information at a high rate of speed are known as
 (a) hard disks (b) soft disks
 (c) flash memory (d) SAN
 (e) None of these
243. A DVD is an example of a(n) _____.
 (a) hard disk
 (b) optical disk
 (c) output device
 (d) solid-state storage device
 (e) None of these
244. Decreasing the amount of space required to store data and programs is accomplished by _____.
 (a) pressing (b) disk caching
 (c) RAID (d) crashing
 (e) file compression
245. Which of the following is a secondary storage device?
 (a) Optical disks (b) RAM
 (c) Microprocessor (d) All of these
 (e) None of these
246. A tape drive offers _____ access to data.
 (a) timely (b) sporadic
 (c) random (d) sequential
 (e) disastrous
247. This is not a function category in Excel
 (a) Logical (b) Data Series
 (c) Financial (d) Text
 (e) None of these
248. What is the major disadvantage of RAM ?
 (a) Its access speed is too slow.
 (b) Its matrix size is too big.
 (c) It is volatile.
 (d) High power consumption
 (e) None of these
249. What disk is used to cold-boot a PC?
 (a) Setup disk (b) System disk
 (c) Diagnostic disk (d) Program disk
 (e) None of these
250. A disk's content that is recorded at the time of manufacture and that cannot be changed or erased by the user is _____.
 (a) memory-only (b) write-only
 (c) read-only (d) run-only
 (e) None of these
251. Even if a disk drive fails, the computer application running and using it can continue processing. This application is said to have been designed with this feature called
 (a) 100 percent up-time (b) Fault tolerance
 (c) High reliability (d) All of these
 (e) None of these
252. Which media has the ability to have data/information stored (written) on them by users more than once?
 (a) CD-R disks
 (b) CD-RW disks
 (c) Zip disks
 (d) Opti-Disks
 (e) Both CD-RW disks and Zip disks
253. Storage media such as a CD read and write information using _____.
 (a) a laser beam of red light
 (b) magnetic dots
 (c) magnetic strips
 (d) All of these
 (e) None of these
254. The main memory of a computer can also be called
 (a) Primary storage (b) Internal memory
 (c) Primary memory (d) All of these
 (e) None of these

255. The life span of a CD-ROM is
 (a) approximately one year
 (b) approximately two years
 (c) approximately five years
 (d) approximately twenty-five years
 (e) almost unlimited
256. The signal which shows that a computer is waiting for a command from the user is
 (a) prompt (b) event
 (c) time slice (d) interrupt
 (e) None of these
257. _____ increase the accuracy of a search by fine-tuning the keywords in the search.
 (a) Indexes (b) Italics
 (c) Compounds (d) Links
 (e) Operators
258. The fastest component for accessing stored data/information is/are
 (a) cache (b) DVDs
 (c) hard disks (d) main memory
 (e) tape
259. A standard CD player accesses data/information using which method?
 (a) Sequential access (b) Random access
 (c) Multivariate access (d) All of these
 (e) None of these
260. _____ is a set of keywords, symbols, and a system of rules for constructing statements by which humans can communicate the instructions to be executed by a computer.
 (a) A computer program (b) A programming language
 (c) An assemble (d) Syntax
 (e) None of these
261. This can be another word for program
 (a) software (b) disk
 (c) floppy (d) hardware
 (e) None of these
262. The secret code that restricts entry to some programs is
 (a) password (b) passport
 (c) entry-code (d) access-code
 (e) None of these
263. The person who writes and tests computer programs is called a
 (a) programmer (b) computer scientist
 (c) software engineer (d) project developer
 (e) None of these
264. _____ is the process of carrying out commands.
 (a) Fetching (b) Storing
 (c) Executing (d) Decoding
 (e) None of these
265. Processing involves
 (a) inputting data into a computer system
 (b) transforming input into output
 (c) displaying relevant answers
 (d) providing relevant answers
 (e) None of these
266. Which of the following controls the manner of interaction between the user and the operating system?
 (a) user interface (b) language translator
 (c) platform (d) screensaver
 (e) None of these
267. Computer language used on the Internet is _____
 (a) BASIC (b) COBOL
 (c) Java (d) Pascal
 (e) None of these
268. What is correcting error in a program called?
 (a) Compiling (b) Debugging
 (c) Grinding (d) Interpreting
 (e) None of these
269. The _____ of a system includes the programs or instructions.
 (a) hardware (b) icon
 (c) information (d) software
 (e) None of these
270. The primary purpose of software is to turn data into _____
 (a) Websites (b) information
 (c) programs (d) objects
 (e) None of these
271. A _____ contains specific rules and words that express the logical steps of an algorithm.
 (a) programming language (b) syntax
 (c) programming structure (d) logic chart
 (e) None of the above
272. A (n) _____ is a program that makes the computer easier to use.
 (a) utility (b) application
 (c) operating system (d) network
 (e) None of these
273. Linux is a type of _____ software.
 (a) Shareware (b) Commercial
 (c) Proprietary (d) Open Source
 (e) Hidden type
274. A data warehouse
 (a) Contains numerous naming conventions and formats
 (b) Is organized around important subject areas
 (c) Contains only current data
 (d) Can be updated by end users
 (e) Explains some observed event or condition
275. The operating system, that is self-contained in a device and resident in the ROM is
 (a) Batch Operating System
 (b) Real-time Operating System
 (c) Embedded Operating System
 (d) Mutli-Processor Operating System
 (e) None of these
276. Information that comes from an external source and fed into computer software is called
 (a) Output (b) Input
 (c) Throughput (d) Reports
 (e) None of these
277. To be able to "boot", the computer must have a(n)
 (a) Compiler (b) Loader
 (c) Operating System (d) Assembler
 (e) None of these
278. _____ is a feature for scheduling and multiprogramming to provide an economical interactive system of two or more users
 (a) Timesharing (b) Multitasking
 (c) Time tracing (d) Multiprocessing
 (e) None of these
279. A programming language having a (n) _____ is slow in execution
 (a) Interpreter (b) Compiler
 (c) Assembler (d) Linker
 (e) none of these

280. The word processor used by DOS to write the programs or instructions
 (a) WordStar (b) WordPad
 (c) Notepad (d) MS-Word
 (e) EDIT
281. Decimal equivalent of $(1111)_2$
 (a) 11 (b) 10
 (c) 1 (d) 15
 (e) 13
282. System proposal is prepared in _____ phase of SDLC
 (a) Conception (b) Initiation
 (c) Analysis (d) Design
 (e) construction
283. The errors that can be find out by a compiler are
 (a) Logical errors (b) Internal errors
 (c) Semantic errors (d) Syntax errors
 (e) Execution errors
284. The process that deals with the technical and management issues of software development is _____
 (a) Delivery process (b) Control process
 (c) Software process (d) Testing process
 (e) Monitoring process
285. Android is _____
 (a) Operating system (b) Application
 (c) Interface (d) Software
 (e) A collection of all these
286. Devices that enter information and let you communicate with the computer are called _____.
 (a) Software (b) Output devices
 (c) Hardware (d) Input devices
 (e) Input/Output devices
287. By firmware we understand _____.
 (a) physical equipment used in a computer system.
 (b) a set of instructions that causes a computer to perform one or more tasks.
 (c) the people involved in the computing process.
 (d) a set of programs that is pre-installed into the read only memory of a computer during the time of manufacturing.
 (e) None of these
288. The basic computer processing cycle consists of _____
 (a) input, processing and output
 (b) systems and application
 (c) data, information and applications
 (d) hardware, software and storage
 (e) None of these
289. Restarting a computer that is already on is referred to as
 (a) shut down (b) cold booting
 (c) warm booting (d) logging off
 (e) None of these
290. A complete electronic circuit with transistors and other electronic components on a small silicon chip is called a (n)–
 (a) workstation (b) CPU
 (c) magnetic disk (d) integrated circuit
 (e) None of these
291. Which of the following is hardware and not software ?
 (a) Excel (b) Printer driver
 (c) Operating System (d) Power Point
 (e) CPU
292. Where is the disk put in a computer?
 (a) in the modem (b) in the hard drive
 (c) into the CPU (d) in the disk drive
 (e) None of these
293. The disks stores information in
 (a) Tables (b) Rows and columns
 (c) Blocks (d) Tracks and sectors
 (e) All of these
294. What resides on the motherboard and connects the CPU to other components on the motherboard ?
 (a) Input Unit (b) System Bus
 (c) ALU (d) Primary Memory
 (e) None of these
295. The cost of a given amount of computing power has _____ dramatically with the progress of computer technology.
 (a) stayed the same
 (b) changed proportionally with the economy
 (c) increased
 (d) fluctuated
 (e) decreased
296. The indentations on CDs and DVDs are called:
 (a) pits (b) clusters
 (c) tracks (d) lands
 (e) None of these
297. The _____ directory is mandatory for every disk.
 (a) Root (b) Base
 (c) Sub (d) Case
 (e) None of these
298. Permanent instructions that the computer uses when it is turned on and that cannot be changed by other instructions are contained in _____.
 (a) ROM (b) RAM
 (c) ALU (d) REM
 (e) None of these
299. Where is the disk put to enable the computer to read it?
 (a) Disk drive (b) Memory
 (c) CPU (d) ALU
 (e) None of these
300. When you save the following the data would remain intact even after turning off computer?
 (a) RAM
 (b) Motherboard
 (c) Secondary and Storage Device
 (d) Primary Storage Device
 (e) None of these
301. The term used to define all input and output devices in a computer system is _____.
 (a) Monitor (b) Software
 (c) Shared resources (d) Hardware
 (e) None of these
302. The clock rate of a processor is measured in
 (a) milliseconds
 (b) microhertz
 (c) megabytes or gigabytes
 (d) nanoseconds
 (e) megahertz or gigahertz
303. If a processor has a word size of 32 bits, compared to a processor with a word size of 16 bits, it can process _____ at a time.
 (a) thrice as much (b) half as much
 (c) a fourth as much (d) the same amount
 (e) twice as much

304. Which of the following is an example of connectivity?
 (a) CD (b) Floppy disk
 (c) Power cord (d) Data
 (e) Internet
305. The new _____ integrates the function of a processor, memory and video on a single chip
 (a) micro processor (b) power processor
 (c) system on a chip (d) multimedia processor
 (e) chip processor
306. Fax machines and imaging systems are examples of
 (a) barcode readers (b) imaging systems
 (c) scanning devices (d) pen-based systems
 (e) None of these
307. A device that is connected to the motherboard is _____.
 (a) called an external device
 (b) called an adjunct device
 (c) called a peripheral device
 (d) must connect using ribbon cable
 (e) None of these
308. Storage and memory differ with respect to which of the following characteristics?
 (a) Price (b) Reliability
 (c) Speed (d) All of the above
 (e) None of these
309. The process of copying software programs from secondary storage media to the hard disks called
 (a) Configuration (b) Download
 (c) Storage (d) Upload
 (e) Installation
310. Which of the following will you require to hear music on your computer?
 (a) Video Card (b) Tape Recorder
 (c) Mouse (d) Joy Stick
 (e) Sound Card
311. For viewing video CDs, you would use
 (a) CD Player
 (b) Windows Media Player
 (c) Windows Video Player
 (d) Windows Movie Player
 (e) None of these
312. A CPU-chip developed by Intel for wireless laptops is called the
 (a) Celeron (b) Pentium-M
 (c) Xen (d) Itanium
 (e) None of these
313. The processor is a _____ chip plugged onto the motherboard in a computer system.
 (a) LSI (b) VLSI
 (c) ULSI (d) XLSI
 (e) WLSI
314. The other name of a motherboard is
 (a) Mouse (b) Computer Board
 (c) System Device (d) Central Board
 (e) System Board
315. When a computer is switched on, the booting process performs
 (a) Integrity Test
 (b) Power-On-Self-Test
 (c) Correct Functioning Test
 (d) Reliability Test
 (e) Shut-down
316. ROLLBACK in a database is _____ statement
 (a) TCL (b) DCL
 (c) DML (d) DDL
 (e) SDL
317. _____ provides total solutions to reduce data redundancy, inconsistency, dependence and unauthorized access of data
 (a) DBMS (b) Tables
 (c) Database (d) Protection passwords
 (e) Centralization of data
318. ROLLBACK in a database is _____ statement
 (a) TCL (b) DCL
 (c) DML (d) DDL
 (e) SDL
319. Dr. E.F. Codd represented _____ rules that a database must obey if it has to be considered truly relational
 (a) 10 (b) 8
 (c) 12 (d) 6
 (e) 5
320. A data warehouse
 (a) Contains numerous naming conventions and formats
 (b) Is organized around important subject areas
 (c) Contains only current data
 (d) Can be updated by end users
 (e) Explains some observed event or condition
321. Which of these is considered intelligent CASE tool?
 (a) Toolkit
 (b) Methodology companion
 (c) Workbench
 (d) Upper CASE
 (e) Lower CASE
322. A collection of conceptual tools for describing data, relationships, semantics and constraints is referred to as
 (a) ER model (b) Database
 (c) Data Model (d) DBMS
 (e) None of these
323. _____ search method is conducted for a specific title, domain, URL, or host
 (a) Keyword (b) Field
 (c) Boolean (d) Miscellaneous
 (e) Logical
324. A field that uniquely identifies which person, thing, or event the record describes is a _____.
 (a) file (b) data
 (c) field (d) key
 (e) None of these
325. The ability to find an individual item in a file immediately -
 (a) sequential access (b) file allocation table
 (c) direct access (d) directory
 (e) None of these
326. A collection of unprocessed items is _____.
 (a) information (b) data
 (c) memory (d) reports
 (e) None of these
327. Example of non-numeric data is
 (a) Employee address (b) Examination score
 (c) Bank balance (d) All of these
 (e) None of these
328. _____ increase the accuracy of a search by fine-tuning the keywords in the search.
 (a) Indexes (b) Italics
 (c) Compounds (d) Links
 (e) Operators

329. The DBMS that is most difficult to use is _____.
- Microsoft's SQL Server
 - Microsoft's Access
 - IBM's DB2
 - Oracle Corporation's Oracle
 - None of these
330. The simultaneous execution of two or more instructions is called
- sequential access
 - reduced instruction set computing
 - multiprocessing
 - disk mirroring
 - None of these
331. A Field is a related group of _____.
- Records
 - Files
 - Characters
 - Cables
 - None of the above
332. Meaningful filename helps in easy file _____.
- Storing
 - Accessing
 - Identification
 - Printing
 - None of the above
333. Distributed processing involves
- solving computer component problems from a different computer.
 - solving computing problems by breaking them into smaller parts that are separately processed by different computers.
 - allowing users to share files on a network.
 - allowing users to access network resources away from the office.
 - None of these.
334. When data changes in multiple lists and all lists are not updated, this causes
- data redundancy
 - information overload
 - duplicate data
 - data inconsistency
 - data repetition
335. Participants can see and hear each other in a/an
- electronic mail system
 - message system
 - teleconference
 - bulletin board
 - None of these
336. How do businesses protect their databases?
- Security guards are hired to watch the databases at all times.
 - Databases are protected by file swapping.
 - Databases are naturally protected.
 - Databases are kept physically and electronically secure.
 - The computer room is kept locked after office hours.
337. The main purpose(s) of a database management program is to
- allow users to retrieve and analyze stored records.
 - provide a way to store information about specified entities.
 - make it possible for users to store information as interrelated records.
 - translate hard-to-read data into more legible formats.
 - a, b, and c above
338. Which of the following contains permanent data and gets updated during the processing of transactions?
- Operating System File
 - Transaction file
 - Software File
 - Master file
- None of these
339. The database administrator is, in effect, the coordinator between the _____ and the _____.
- DBMS; database
 - application program; database
 - database, users
 - application programs; users
 - None of these
340. A DBMS that combines a DBMS and an application generator is _____.
- Microsoft's SQL Server
 - Microsoft's Access
 - IBM's DB2
 - Oracle Corporation's Oracle
 - None of these
341. If you want to move an icon on your desktop, this is called _____.
- double clicking
 - highlighting
 - dragging
 - pointing
 - None of these
342. A symbol or question on the screen that prompts you to take action and tells the computer what to do next _____.
- scanner
 - questionnaire
 - prompts and dialog box
 - information seeker
 - None of these
343. Data independency in DBMS is known as
- Data modeling
 - Data hiding
 - Data capturing
 - Data consistency
 - None of these
344. A data dictionary doesn't provide information about
- where data is located
 - the size of the disk storage disk
 - who owns or is responsible for the data
 - how the data is used
 - None of these
345. What does the data dictionary identify?
- Field names
 - Field types
 - Field formats
 - All of the above
 - None of these
346. Which key is used in combination with another key to perform a specific task?
- Function
 - Control
 - Arrow
 - Space bar
 - None of these
347. What is a modem connected to?
- processor
 - motherboard
 - printer
 - phone line
 - None of these
348. Computers connected to a LAN can
- run faster
 - go on line
 - share information and/or share peripheral equipment
 - E-mail
 - None of these
349. A device that connects to a network without the use of cables is said to be
- distributed
 - centralised
 - open source
 - wireless
 - None of these

350. Codec refers to
 (a) Coder-decoder (b) Co-declaration
 (c) Command declaration (d) Command decoding
 (e) None of these
351. To connect networks of similar protocols _____ are used
 (a) Routers (b) Bridges
 (c) Gateways (d) Dial-up routers
 (e) None of these
352. Telnet is a _____ based computer protocol
 (a) Sound (b) Text
 (c) Image (d) Animation
 (e) Digits
353. P2P is a _____ application architecture
 (a) Client/ server (b) Distributed
 (c) Centralized (d) 1-tier
 (e) None of these
354. Which of the following terms is just the collection of networks that can be joined together ?
 (a) virtual private network (b) LAN
 (c) intranet (d) extranet
 (e) internet
355. Which device is used to access your computer by other computer or for talk over phone?
 (a) RAM (b) CDROM Drive
 (c) Modem (d) Hard Disk
 (e) None of these
356. An example of a telecommunications device is a
 (a) keyboard (b) mouse
 (c) printer (d) modem
 (e) None of these
357. Several computers linked to a server to share programs and storage space.
 (a) Network (b) grouping
 (c) library (d) integrated system
 (e) None of the above
358. A device which can be connected to a network without using cable is called
 (a) Distributed device (b) Centralised device
 (c) Open-source device (d) Wireless device
 (e) Without code device
359. The connection between your computer at home and your local ISP is called _____.
 (a) the last mile (b) the home stretch
 (c) the home page (d) the backbone
 (e) the vital mile
360. If you wish to extend the length of the network without having the signal degrade, you would use a
 (a) resonance (b) router
 (c) gateway (d) switch
 (e) repeater
361. A term related to sending data to a satellite is
 (a) downlink (b) modulate
 (c) demodulate (d) uplink
 (e) inter-relate
362. Bluetooth is an example of _____.
 (a) Personal area network (b) Local area network
 (c) Virtual private network (d) Wide area network
 (e) None of these
363. Which of the following device is used to connect two systems, especially if the systems use different protocols?
 (a) hub (b) bridge
 (c) gateway (d) repeater
 (e) None of these
364. The slowest transmission speeds are those of
 (a) twisted-pair wire (b) coaxial cable
 (c) fiber-optic cable (d) microwaves
 (e) None of these
365. Which of the following types of channels moves data relatively slowly?
 (a) wideband channel (b) voiceband channel
 (c) narrowband channel (d) broadband channel
 (e) None of these
366. Which of the following communications modes support two-way traffic but in only one direction of a time?
 (a) simplex (b) half-duplex
 (c) three-quarters duplex (d) All of the above
 (e) None of these
367. A chat is
 (a) an internet standard that allows users to upload and download files.
 (b) a typed conversation that takes place on a computer.
 (c) an online area in which users conduct written discussions about a particular subject.
 (d) the transmission of messages and files via a computer network.
 (e) None of these.
368. Sending an e-mail is similar to
 (a) picturing an event (b) narrating a story
 (c) writing a letter (d) creating a drawing
 (e) None of these
369. The process of a computer receiving information from a server on the internet is known as
 (a) pulling (b) pushing
 (c) downloading (d) transferring
 (e) None of these
370. Digital Banking can be resorted through
 (a) Mobile phones (b) Internet
 (c) Telephones (d) All of these
 (e) None of these
371. In a web site, the 'home' page refers to-
 (a) the best page (b) the last page
 (c) the first page (d) the most recent page
 (e) the oldest page
372. Which of the following is used by the browser to connect to the location of the Internet resources?
 (a) Linkers (b) Protocol
 (c) Cable (d) URL
 (e) None of these
373. Which of the following is not a term pertaining to the Internet?
 (a) Keyboard (b) Link
 (c) Browser (d) Search Engine
 (e) Hyperlink
374. An educational institution would generally have the following in its domain name
 (a) .org (b) .edu
 (c) .inst (d) .com
 (e) .sch
375. The process of trading goods over the Internet is known as
 (a) e-selling-n-buying (b) e-trading
 (c) e-finance (d) e-salesmanship
 (e) e-commerce

376. A _____ is a software program used to view Web pages.
(a) site (b) host
(c) link (d) browser
(e) None of these
377. _____ allows voice conversations to travel over the Internet.
(a) Internet telephony (b) Instant messaging
(c) E-mail (d) E-commerce
(e) None of these
378. Which of the following is not true concerning user IDs and passwords?
(a) When you enter your user ID and password the computer knows it is you.
(b) If your computer asks for a user ID and password, you can create your own.
(c) Sometimes you are assigned a user ID and password, for security reasons.
(d) You should share your user ID and password with at least one other person.
(e) None of these.
379. Unsolicited commercial email is commonly known as
(a) spam (b) junk
(c) hoaxes (d) hypertext
(e) None of these
380. Microsoft's operating system Windows
(a) is designed for multiple concurrent users.
(b) has a graphical user interface.
(c) can perform multitasking.
(d) All of these
(e) Both (b) and (c) above
381. Most mail programs automatically complete the following two parts in an e-mail
(a) From : and Body : (b) From : and Date :
(c) From : and To : (d) From : and Subject :
(e) None of these
382. An e-mail address typically consists of a user ID followed by the _____ sign and the name of the e-mail server that manages the user's electronic post office box.
(a) @ (b) #
(c) & (d) «
(e) None of these
383. Origin of internet can be tracked from
(a) ARPA net (b) Radio networks
(c) Satellite networks (d) Indian army networks
(e) Air Force networks
384. _____ search engine sends request for information to several search engines simultaneously and compiles the results
(a) Meta (b) Individual
(c) Directory (d) Subject directory
(e) None of these
385. To access a website or web content from a web server, the client sends a(n) _____
(a) Information (b) Message
(c) Request (d) Response
(e) Interrupt
386. An http request contains _____ parts.
(a) 2 (b) 5
(c) 3 (d) 4
(e) 1
387. Through _____ an administrator or another user can access someone else's computer remotely.
(a) Administrator (b) Web server
(c) Web application (d) HTTP
(e) Telnet
388. What utility to you use to transfer files and exchange messages ?
(a) Web browsers (b) WWW
(c) Email (d) Hypertext
(e) Search engines
389. Which is the slowest internet connection service?
(a) Digital Subscriber Line
(b) TI
(c) Cable modem
(d) Leased Line
(e) Dial-up Service
390. Which of the following is not true about passwords?
(a) A password should be a combination of mixed case alphanumeric characters.
(b) Password should be maximum 6 characters in length.
(c) A password that can be memorized easily should be used, so that it need not be noted down.
(d) A password that can be typed quickly without much effort should be used.
(e) None of these.
391. A _____ shares hardware, software and data among authorized users.
(a) network (b) protocol
(c) hyperlink (d) transmitter
(e) None of these
392. What is Windows Explorer?
(a) A drive (b) A personal computer
(c) A Web browser (d) A network
(e) A file manager
393. Documents on the Web are called _____.
(a) Web pages (b) Web sites
(c) Web communities (d) Web tags
(e) Home pages
394. You can have a live conversation with another connected user via _____.
(a) e-mail (b) instant messaging
(c) e-commerce (d) distance learning
(e) Word package
395. With _____, the computer's modem uses a standard telephone line to connect to the Internet.
(a) DSL
(b) dial-up access
(c) ISDN
(d) cable television Internet services
(e) satellite
396. _____ is a procedure that requires users to enter an identification code and a matching password.
(a) Paging (b) Logging on
(c) Time-sharing (d) Multitasking
(e) None of these
397. A _____ is the term used when a search engine returns a Web page that matches the search criteria.
(a) blog (b) hit
(c) link (d) view
(e) success

398. What is e-commerce?
 (a) Buying and selling of international goods
 (b) Buying and selling of products and services over the Internet
 (c) Buying and selling of products and services not found in stores
 (d) Buying and selling of products having to do with computers
 (e) Buying and selling of electronic goods
399. To reload a Web page, one should press the _____ button.
 (a) Redo (b) Reload
 (c) Restore (d) Ctrl
 (e) Refresh
400. The _____ enables you to simultaneously keep multiple Web pages open in one browser window.
 (a) tab box (b) pop-up helper
 (c) address bar (d) Esc key
 (e) None of these

ANSWER KEY

1	(c)	41	(b)	81	(a)	121	(d)	161	(c)	201	(e)	241	(c)	281	(d)	321	(c)	361	(d)
2	(a)	42	(c)	82	(a)	122	(b)	162	(a)	202	(c)	242	(a)	282	(b)	322	(c)	362	(a)
3	(a)	43	(a)	83	(d)	123	(a)	163	(b)	203	(d)	243	(b)	283	(d)	323	(b)	363	(c)
4	(a)	44	(b)	84	(b)	124	(d)	164	(b)	204	(c)	244	(e)	284	(c)	324	(d)	364	(a)
5	(b)	45	(d)	85	(c)	125	(a)	165	(c)	205	(c)	245	(a)	285	(e)	325	(c)	365	(c)
6	(b)	46	(d)	86	(e)	126	(a)	166	(c)	206	(a)	246	(d)	286	(e)	326	(b)	366	(b)
7	(d)	47	(b)	87	(a)	127	(b)	167	(c)	207	(a)	247	(b)	287	(d)	327	(a)	367	(b)
8	(c)	48	(b)	88	(d)	128	(b)	168	(b)	208	(d)	248	(c)	288	(a)	328	(a)	368	(c)
9	(a)	49	(d)	89	(c)	129	(d)	169	(d)	209	(c)	249	(b)	289	(d)	329	(d)	369	(c)
10	(c)	50	(a)	90	(d)	130	(b)	170	(b)	210	(a)	250	(c)	290	(d)	330	(c)	370	(d)
11	(d)	51	(c)	91	(a)	131	(c)	171	(a)	211	(c)	251	(b)	291	(e)	331	(c)	371	(c)
12	(c)	52	(d)	92	(a)	132	(c)	172	(b)	212	(c)	252	(b)	292	(d)	332	(b)	372	(d)
13	(c)	53	(a)	93	(a)	133	(c)	173	(b)	213	(e)	253	(a)	293	(d)	333	(b)	373	(a)
14	(b)	54	(a)	94	(a)	134	(c)	174	(c)	214	(c)	254	(c)	294	(b)	334	(d)	374	(b)
15	(d)	55	(a)	95	(b)	135	(d)	175	(a)	215	(a)	255	(e)	295	(c)	335	(c)	375	(e)
16	(c)	56	(a)	96	(b)	136	(a)	176	(d)	216	(d)	256	(d)	296	(c)	336	(d)	376	(d)
17	(b)	57	(a)	97	(b)	137	(b)	177	(d)	217	(e)	257	(a)	297	(c)	337	(e)	377	(a)
18	(a)	58	(b)	98	(d)	138	(b)	178	(c)	218	(b)	258	(d)	298	(a)	338	(a)	378	(d)
19	(a)	59	(c)	99	(c)	139	(c)	179	(b)	219	(b)	259	(d)	299	(a)	339	(c)	379	(a)
20	(a)	60	(a)	100	(d)	140	(d)	180	(b)	220	(c)	260	(a)	300	(c)	340	(b)	380	(d)
21	(e)	61	(c)	101	(d)	141	(c)	181	(b)	221	(d)	261	(a)	301	(d)	341	(c)	381	(b)
22	(d)	62	(d)	102	(c)	142	(a)	182	(a)	222	(b)	262	(d)	302	(e)	342	(c)	382	(a)
23	(b)	63	(c)	103	(b)	143	(a)	183	(a)	223	(a)	263	(a)	303	(b)	343	(a)	383	(a)
24	(d)	64	(b)	104	(b)	144	(d)	184	(a)	224	(c)	264	(c)	304	(e)	344	(b)	384	(a)
25	(b)	65	(d)	105	(c)	145	(d)	185	(c)	225	(d)	265	(b)	305	(a)	345	(d)	385	(c)
26	(b)	66	(a)	106	(d)	146	(a)	186	(c)	226	(b)	266	(b)	306	(b)	346	(b)	386	(c)
27	(e)	67	(c)	107	(a)	147	(b)	187	(a)	227	(e)	267	(c)	307	(c)	347	(d)	387	(e)
28	(d)	68	(b)	108	(b)	148	(a)	188	(a)	228	(d)	268	(b)	308	(d)	348	(c)	388	(c)
29	(d)	69	(d)	109	(c)	149	(b)	189	(d)	229	(b)	269	(d)	309	(e)	349	(d)	389	(e)
30	(a)	70	(c)	110	(a)	150	(b)	190	(d)	230	(d)	270	(c)	310	(e)	350	(a)	390	(b)
31	(d)	71	(d)	111	(a)	151	(d)	191	(a)	231	(d)	271	(c)	311	(b)	351	(b)	391	(a)
32	(b)	72	(b)	112	(a)	152	(c)	192	(c)	232	(c)	272	(a)	312	(d)	352	(b)	392	(c)
33	(a)	73	(c)	113	(d)	153	(b)	193	(c)	233	(d)	273	(a)	313	(b)	353	(b)	393	(a)
34	(b)	74	(c)	114	(c)	154	(a)	194	(c)	234	(a)	274	(b)	314	(e)	354	(c)	394	(b)
35	(c)	75	(c)	115	(d)	155	(d)	195	(d)	235	(d)	275	(c)	315	(b)	355	(c)	395	(b)
36	(c)	76	(d)	116	(a)	156	(d)	196	(a)	236	(d)	276	(b)	316	(a)	356	(d)	396	(b)
37	(a)	77	(d)	117	(c)	157	(c)	197	(b)	237	(b)	277	(c)	317	(a)	357	(a)	397	(b)
38	(c)	78	(c)	118	(b)	158	(b)	198	(c)	238	(d)	278	(a)	318	(a)	358	(d)	398	(b)
39	(c)	79	(a)	119	(d)	159	(c)	199	(a)	239	(d)	279	(a)	319	(c)	359	(d)	399	(b)
40	(d)	80	(b)	120	(c)	160	(c)	200	(d)	240	(b)	280	(e)	320	(b)	360	(e)	400	(c)

General Knowledge & Banking Awareness

HISTORY OF BANKING

The first bank in India, though conservative, was established in 1770. From 1770 till today, the journey of the Indian Banking System has been segregated into three distinct phases. They are discussed below:

Phase I Early phase from 1786 to 1969.

Phase II Nationalisation of Indian Banks is 1969 and up to 1991, prior to Indian banking sector Reforms.

Phase III New phase of Indian Banking System with the advent of Indian Financial & Banking Sector Reforms after 1991.

Phase I

Banking in India dates back to the last decade of 18th century. Bank of Hindustan was the first to be established in 1770, but liquidated in 1829-32. General Bank of India was reestablished in 1786 but failed in 1791.

The East India Company established Bank of Bengal (1809), Bank of Bombay (1840) and Bank of Madras (1843) as independent units and were called Presidency Banks. These three banks were amalgamated in 1920 and Imperial Bank of India was established - which started as a private shareholders bank with mostly European shareholders.

In 1865 Allahabad Bank was established and for the first time exclusively by Indians, Punjab National Bank Ltd. was set up in 1894 with headquarters at Lahore. Between 1906 and 1913, Bank of India, Central Bank of India, Bank of Baroda, Canara Bank, Indian Bank, and Bank of Mysore were set up. Reserve Bank of India came in 1935. During the first phase the growth was very slow and banks also experienced periodic failures between 1913 and 1948. There were approximately 1100 banks, mostly small. To streamline the functioning and activities of commercial banks, the Government of India came up with The Banking Companies Act, 1949 which was later changed to Banking Regulation Act 1949 as per amending Act of 1965 (Act No. 23 of 1965). Reserve Bank of India was vested with extensive powers for the supervision of banking in India as the Central Banking Authority.

During those days public had lesser confidence in the banks. As an aftermath, deposit mobilisation was slow. Abreast of it, the savings bank facility provided by the Postal department was comparatively safer. Moreover, funds were largely given to established traders.

Phase II

Government took major steps to reform the Indian Banking Sector after independence. In 1955, it nationalised Imperial Bank of India with extensive banking facilities on a large scale, specially in rural and semi-urban areas. The Imperial Bank of India became the State

Bank of India in 1955. In 1960, the state Bank of India was given control of eight state-associated banks under the State Bank of India (Subsidiary Banks) Act, 1956. These are now called its associate banks. State Bank of India acts as the principal agent of RBI. On 19th July, 1969, a major process of nationalisation was carried out. It was the effort of former Prime Minister of India, late Mrs. Indira Gandhi. 14 major commercial banks in the country were nationalised.

The second phase of nationalisation of Indian Banking Sector was carried out in 1980 with seven more banks. This step brought 80% of the banking segment in India under Government ownership.

In summary, the following are the steps taken by the Government of India to Regulate Banking Institutions in the Country:

1. 1949 : Enactment of Banking Regulation Act.
2. 1955 : Nationalisation of State Bank of India.
3. 1960: Nationalisation of SBI subsidiaries.
4. 1961 : Insurance cover extended to deposits.
5. 1969: Nationalisation of 14 major banks.
6. 1975 : Creation of regional rural banks.
7. 1980 : Nationalisation of seven banks with deposits over 200 crore.

After the nationalisation of banks, the branches of the public sector banks in India rose approximately 800% in deposits and advances took a huge jump by 11,000%.

Phase III

This phase has witnessed tremendous progress in the banking sector. In 1991, under the chairmanship of M Narasimhan, a committee was set up which worked for the liberalisation of banking practices.

Now-a-days the country is flooded with foreign banks and their ATM stations. Efforts are being put to give a satisfactory service to customers. Phone banking and net banking has also been introduced. The entire system has become more convenient and swift and customer friendly.

BANK NATIONALISATION IN INDIA

Reserve Bank of India was the first bank to be nationalised on 1st January 1949 under the terms of the Reserve Bank of India (Transfer to Public Ownership) Act, 1948. The Banking Regulation Act was passed in 1949 to confer on the RBI, the right to regulate, control and inspect the banks in India. So, RBI is the apex or Central Bank of the country then, in 1955, State Bank of India was nationalised, followed by the nationalisation of the subsidiaries of SBI in 1960.

Name of the Bank	Subsidiary with effect from
1. State Bank of Hyderabad	1st October 1959
2. State Bank of Bikaner	1st January 1960
3. State Bank of Jaipur	1st January 1960
4. State Bank of Saurashtra	1st May 1960
5. State Bank of Patiala	1st April 1960
6. State Bank of Mysore	1st March 1960
7. State Bank of Indore	1st January 1968
8. State Bank of Travancore	1st January 1960

With effect from 1st January 1963, the State Bank of Bikaner and State Bank of Jaipur were amalgamated.

In 1969, The Government of India issued an ordinance and nationalised the 14 largest commercial banks with capitals exceeding 50 crores, with effect from the midnight of July 19, 1969. Within two weeks of the issue of the ordinance, the Parliament passed the Banking Companies (Acquisition and Transfer of Undertaking) Bill,

A second dose of nationalization of 6 more commercial banks followed in 1980.

The Government Nationalized six more commercial private sector banks with deposit liability of not less than ₹ 200 crores on 15th April 1980, viz.

1. Andhra Bank.
2. Corporation Bank.
3. New Bank of India.
4. Oriental Bank of Commerce.
5. Punjab and Sind Bank.
6. Vijaya Bank.

With the second dose of nationalization, the Government of India controlled around 91% of the banking business of India. Later on, in the year 1993, the government merged New Bank of India with Punjab National Bank.

It was the only merger between nationalized banks and resulted in the reduction of the number of nationalised banks from 21 to 20. After this, until the 1990s, the nationalised banks grew at a pace of around 4%, closer to the average growth rate of the Indian economy.

Consequences of Nationalisation

1. Because of liberal credit extension policy, default rate has risen.
2. Political interference has been an additional malady.
3. Poor appraisal during the loan melas conducted for credit disbursements, also increased the losses of the banks.
4. The credit facilities extended to the priority sector at concessional rates, helped in their revival.
5. The high level of low yielding SLR investments adversely affected the profitability of the banks.
6. The rapid branch expansion has reduced the profitability of banks, primarily due to the increase in the fixed costs.
7. There was downward trend in the quality of services and efficiency of the banks.

LIBERALISATION

In the early 1990s, the Narasimha Rao government embarked on a policy of liberalization, licensing a small number of private banks. These came to be known as New Generation tech savvy banks, and included Global Trust Bank (the first of such new generation banks to be set up), which later amalgamated Oriental Bank of Commerce, Axis Bank (earlier known as UTI Bank), ICICI Bank and HDFC Bank.

This move, along with the rapid growth in the economy of India, revitalized the banking sector in India, which has seen rapid growth with strong contribution from all the three sectors of banks namely government banks, private banks and foreign banks.

The next stage for the Indian banking has been set with the proposed relaxation in the norms for Foreign Direct Investment, where all Foreign Investors in banks may be given voting rights which could exceed the present cap of 10%. At present it has gone up to 74% with some restrictions.

In March 2006, the Reserve Bank of India allowed Warburg Pincus to increase its stake in Kotak Mahindra Bank (a private sector bank) to 10%.

This is the first time an investor has been allowed to hold more than 5% in a private sector bank since the RBI announced norms in 2005 that any stake exceeding 5% in the private sector banks would need to be vetted by them.

Banking History : at a glance

Creation of Reserve bank of India: 1935

Nationalisation of Reserve Bank of India : 1949 (January)

Enactment of Banking Regulation Act: 1949 (March)

Nationalisation of State Bank of India : 1955

Nationalisation of SBI Subsidiaries: 1959

Nationalisation of 14 major Banks : 1969

Creation of Credit Guarantee Corporation: 1971

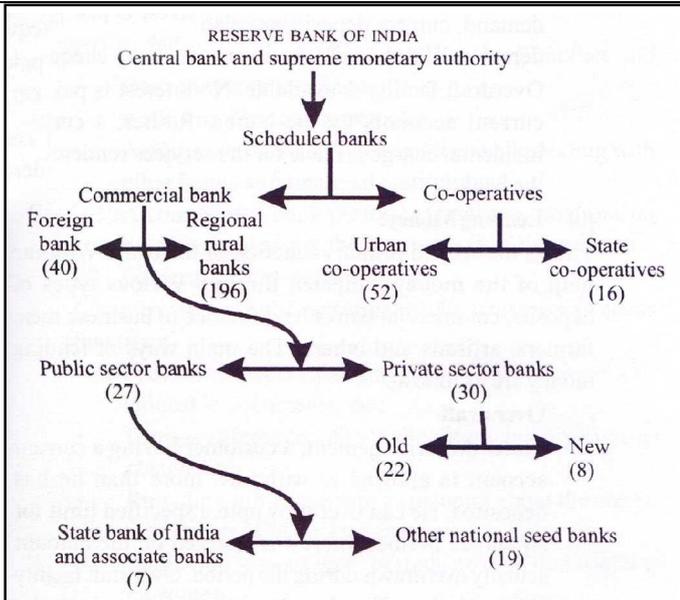
Creation of Regional Rural Banks: 1975

Nationalization of 7 more banks with deposits over ₹200 Crore: 1980

CLASSIFICATION OF BANKS

Banks which are included in the Second Schedule of the Reserve Bank of India Act, 1934 are scheduled Banks. Scheduled Banks are further classified as Scheduled Commercial Banks and Scheduled Co-operative Banks. The Scheduled Commercial Banks are further categorised into five different groups according to their ownership or nature of operation. These five bank groups are-

- (i) State Bank of India and its Associates
- (ii) Nationalised Banks
- (iii) Private Sector Banks
- (iv) Foreign Banks
- (v) Regional Rural Banks

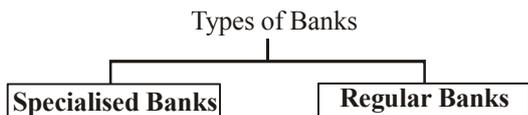


Structure of the organised banking sector in India. Number of banks are in brackets.

Growth of Banking in India the initiatives of the government has paid rich dividends and the Banking Sector has witnessed tremendous growth.

CLASSIFICATION OF BANKS ON THE BASIS OF THEIR FUNCTION

On the basis of functions, Classification of Banks may be classified into two broad categories-Specialised Banks & Regular Banks.



- | | |
|-------------------------|----------------------|
| 1. Central Banks | 1. Commercial Banks |
| 2. Industrial Banks | 2. Cooperative Banks |
| 3. Land Mortgage Banks | 3. Saving Banks |
| 4. Merchant Banks | 4. Indigenous Banks |
| 5. Exchange Banks | |
| 6. Export- Import Banks | |

A brief description of the functions of the various banks follows-

- Central Bank :** Central Bank is the apex institution which supervise and controls the entire banking system of the country. Every country has a central banks. The RBI is the central bank of our country. The main functions of a central bank are as follows-
 - It has the monopoly of issuing currency notes.
 - If acts as Banker's agent and financial advisor to the government.
 - If acts as Banker's Bank.
 - It is the controller of credit in the country.
 - It is the custodian of the country's foreign exchange reserves.
 - It provides cleaning settlement and transfer facilities to commercial banks.
- Industrial Banks:** These banks provide long-term and medium-term finance to industries. They help in the promotion of new industries. They help in the promotion of

new industrial units and in the expansion, modernisation and rehabilitation of existing units. They also give technical and managerial advice to these units. There banks are also known as Development Banks. IDBI, ICICI, Industrial Finance Corporation of India and state financial corporation are example of Industrial Banks in our country.

- Land Mortgage Banks :** These banks provide long-term finance to agriculturists to fulfill their credit needs for purchasing tractors, cattle, tube wells etc. to increase their productivity Loans are granted against mortgage of property. These banks are also known as Agricultural Banks.
- Merchant Banks :** These are specialised banks which provide financial services to business firms. They act as issuing houses, under writers etc. SBI Capital Markets is a leading example of Merchant Bank in India.
- Exchange Banks :** These banks provide financial for foreign trade. They deal in foreign exchange and assist importers and exporters.
- Export- Import Banks:** These provides insurance cover to exporters against losses from non-payment of the importers as a means to promote the country's foreign trade.
- Commercial Banks :** These banks perform all kinds of banking business. The accept deposits from the public and provide loans and advances to customers.
In India, these are three types of commercial banks:
 - Public sector commercial banks which are owned by the government, such as Bank of Baroda, Allahabad bank, etc.
 - Private sector Commercial banks which are owned by private individuals. ICICI Bank, global Trust Bank. etc. are examples of private sector commercial banks.
 - Foreign banks which have been incorporated outside India Ex- Citibank, ANZ grindlays. Standard chartered Bank, etc.
The state Bank of India is the largest commercial bank in India. These banks are also knows as joint stock banks because these are organized as joint stock companies.
- Co-operative Banks :** These banks are formed and set up on the principal of cooperation. They are registered under cooperative societies Act. They accept deposits from the members and grant loans to them at low rate of interest.
- Post office savings Banks :** These banks are formed with the aim of encouraging saving and thrift among the people. In India, Postal Saving Bank is the most popular type of savings bank. Any one can deposit Money in a Post Office Savings Bank and can withdraw the same after a fixed period or at a short notice. Both the principal amount and the interest are guaranteed by the government of India.
- Indigenous Bankers :** These are money lenders who accept deposits and grant loans. They are popular in villages and small towns. They charge a high rate of interest from the borrowers.

FUNCTIONS OF COMMERCIAL BANKS

Commercial banks perform two type of functions-

- (i) Primary functions, &
- (ii) Secondary functions.
- (i) **Primary Functions are further classified as-**

(a) Accepting Deposits:

It is the main function of commercial banks. A commercial bank accepts deposits from people who have surplus money. Banks offer the following types of deposit schemes to attract saving from the people-

- **Fixed Deposit Account-**

A fixed deposit is repayable after the expiry of the specified period. The period may vary from 6 months to 5 years. Deposits for more than one year are known as 'term deposits'. Longer the period of deposits, higher is the rate of interest. The bank issues Fixed Deposit Receipt (FDR) to the depositor, acknowledging the amount received. FDR specifies the amount deposited, the period of deposit, the rate of interest and name and address as the depositor. The amount deposited is repayable on maturity. In case the depositor needs money before the due date, he can borrow against the deposit.

- **Saving Deposit Account-**

The aim of a savings account is to mobilise the small savings of the public. A person can open a savings deposit account by depositing a small sum of money. He can withdraw money from his account and make additional deposits at will. A cheque facility is available. But, there may be some restrictions on the number of withdrawals and the amount withdrawn.

The rate of interest on savings deposits is lower than fixed deposits.

- **Recurring Deposit Account-**

The aim of recurring or cumulative deposits is to encourage regular savings by the people. A depositor can deposit a fixed amount, say ₹500 every month for a fixed period. The amount together with interest is repayable on maturity. The rate of interest is higher than that on savings account.

- **Current Deposit Account-**

These are generally opened by business men. The account-holder can deposit and withdraw money whenever desired. As the deposit is repayable on demand, current deposits are also known as demand deposits. Withdrawals are always made by cheques. Overdraft facility is available. No interest is paid on current accounts by the banks. Rather, a certain incidental charge is made for the services rendered by the bank.

(b) Lending Money:

This is the second primary function of the bank. With the help of the money collected through various types of deposits, commercial banks lend finance to business men, farmers, artisans and others. The main ways of lending money are as follows:-

- **Over draft-**

Under this arrangement, a customer having a current account is allowed to withdraw more than he has

deposited. He can overdraw upto a specified limit for an agreed period. Interest is charged on the amount actually overdrawn during the period. Overdraft facility is generally offered to businessmen against the security of some assets or on the personal security of the customer. It is a temporary arrangement.

- **Cash Credit-**

Under this arrangement, the bank advances cash loan up to a specified limit against current assets and other securities. The bank opens an account in the name of the borrower and allows him to withdraw the borrowed money from time to time subject to the sanctioned limit. Interest is charged on the amount actually withdrawn.

- **Loans & Advances-**

A loan is a lump sum advance repayable on the expiry of the specified period. It may be secured or unsecured. Generally, a loan is granted against the security of assets or the personal guarantee of the borrower. Interest is charged on the whole amount sanctioned.

- **Discounting of Bills of Exchange-**

Under this system, a customer can get the amount of bill receivable from the bank before the date of maturity. The bank pays the amount of the bill after deducting the usual discount (interest) charges. On the date of maturity, the bank presents the bill to the acceptor and gets the amount. In case the bill so discounted is dishonoured, the bank claims the full amount from the customer along with incidental charges.

(ii) Secondary Functions-

The secondary functions of commercial banks are as under-

(i) Agency Functions

As an agent of its customers, a commercial bank provides the following services-

- Collecting bills of exchange, promissory notes and cheques.
- Collecting dividends, interest, rent, etc.
- Buying and selling shares, debentures and other securities.
- Payment of interest, insurance premium, taxes, * subscriptions, etc.
- Transferring funds from one branch to another and from one place to another.
- Acting as a trustee or executor.
- Acting as an agent or representative while dealing with other banks and financial institutions.

A commercial bank performs the above functions on behalf of and as per the instructions of its customers.

(ii) General Utility Services

Commercial banks also perform the following miscellaneous functions:

- Providing lockers for the safe custody of jewellery, valuable documents, etc.

- Giving references about the financial position as customers.
- Providing information to a customer about the credit worthiness of other customers.
- Supplying various types of trade information useful to customers.
- Issuing letters of credit, pay orders, bank drafts, credit cards, traveller's cheques to customers.
- Underwriting issues of shares and debentures.
- Providing foreign exchange to importers and travellers going abroad.
- Advising customers on financial and investment matters.

FACTS ABOUT BANKING SYSTEM IN INDIA

- The first bank in India to be given an ISO Certification
–**Canara Bank**
- The first bank in Northern India to get ISO 9002 certification for their selected branches
–**Punjab and Sind Bank**
- The first Indian bank to have been started solely with Indian capital
–**Punjab National Bank**
- The first among the private sector banks in Kerala to become a scheduled bank in 1946 under the RBI Act
–**South Indian Bank**
- India's oldest, largest and most successful commercial bank, offering the widest possible range of domestic, international and NRI products and services, through its vast network in India and overseas
–**State Bank of India**
- India's second largest private sector bank and is now the largest scheduled commercial bank in India
–**The Federal Bank Limited**
- Bank which started as private shareholders banks, mostly Europeans shareholders
–**Imperial Bank of India**
- The first Indian bank to open a branch outside India in London in 1946 and the first to open a branch in continental Europe at Paris in 1974
–**Bank of India, founded in 1906 in Mumbai**
- The oldest Public Sector Bank in India having branches all over India and serving the customers for the last 132 years.
–**Allahabad Bank**
- The first Indian commercial bank which was wholly owned and managed by Indians
–**Central Bank of India**
- Bank of India was founded in 1906 in Mumbai. It became the first Indian bank to open a branch outside India in London in 1946 and the first to open a branch in continental Europe at Paris in 1974.
- First bank established in India
–**Bank of Hindustan in 1770**
- Second bank
–**General Bank of India, 1786**
- Oldest bank in India originated in the Bank of Calcutta in June 1806 which was still in existence
–**State Bank of India**
- State Bank of India merged with three banks namely Bank of Bengal, Bank of Bombay and Bank of Madras in 1921 to form the Imperial bank of India which was converted as State Bank of India
- Founder of Punjab National Bank is Lala Lajpat Rai
- Reserve bank of India (RBI) was instituted in 1935
- First governor of RBI
–**Mr. Osborne Smith**
- First Indian Governor of RBI
–**Mr. C D Deshmukh**
- First bank to introduce savings account in India
–**Presidency Bank in 1833**
- First bank to introduce cheque system in India
–**Bengal Bank in 1833**
- First bank to introduce internet banking
–**ICICI bank**
- First bank to introduce mutual fund
–**State Bank of India**
- First bank to introduce credit card in India
–**Central Bank of India**
- Which cards are known as plastic money
–**Credit Cards**
- Open market operations are carried out by
–**RBI**
- Capital market regulator is
–**SEBI**
- Largest Commercial bank in India State Bank of India
The International Bank for Reconstruction and Development (IBRD) is known as
–**World Bank**
- India's First Financial Archive has been set up at
–**Kolkata**
- CRR, SLR, Repo Rate, Reverse Repo rate are decided by RBI
Savings banks interest rates, fixed deposit interest rates, Loan Rates etc. are decided by individual banks
- The bank which has launched Mobile Bank Accounts in association with Vodafone's m-paisa
–**HDFC Bank**
- Minimum money transfer limit through RTGS
–**2 Lakhs**
- Maximum money transfer limit through RTGS
–**No Limit**
- Minimum & Maximum money transfer limit through NEFT
No Limit
- NABARD was established in
–**July, 1982**
- Largest Public sector bank in India
–**SBI**
- Largest Private sector bank in India
–**ICICI Bank**
- First Indian bank to open branch outside India i.e. London in 1946 : **Bank of India**
- First RRB named Prathama Grameen Bank was started by:
Syndicate Bank

- First Bank to introduce ATM in India: HSBC in 1987, Mumbai
The bank which approved loan of \$500mn to help India improve Rail services – **Asian Development Bank**
- FDI limit for new banks – **49%**
- FDI limit for private banks **74%**

IMPORTANT COMMITTEES IN BANKING SECTOR

Anil Kaushal committee: to examine the recommendations made by the TRAI on pricing of Spectrum.

Arvind Mayaram Committee : for giving clear definitions to Foreign Direct Investment (FDI) and Foreign Institutional Investment (FII)

Arvind Mayaram Panel: report on the alleged irregularities at the National Spot Exchange Ltd (NSE)

B. Sambamurthy: panel favours single mobile banking app on all SIMs. Panel recommended that customers should not be required to visit the bank branch for mobile number registration.

Bimal Jalan panel : to scrutinize applications for new bank licenses.

Damodran Committee: on improvement of customer services in banks

Deepak Mohanty Committee: on Data and Information Management in the Reserve Bank of India

Justice A.P. Shah committee: to head panel on road safety

K. M. Chandrasekhar committee: for rationalization of foreign investment norms

K. U.B. Rao: the idea of setting up Bullion Bank or Bullion Corporation of India

K. K. Mehrotra Committee: to inquire gas leakage in Bhilai Steel Plant.

Kirit Parikh panel: on fuel pricing has suggested that the diesel prices should be increased by Rs. 1-1.50 a litre every month as against the 45-50 paise monthly hike followed currently.

M.P. Bezbaruah: to suggest suitable remedial measures to address concerns regarding security of people from North East.

Mukul Mudgal member panel to probe IPL spot fixing

Nachiket Mor Committee: to permits NBFCs to as Business work Correspondents of banks.

P.J. Nayak: to review Governance of Boards of Banks in India
The committee was constituted under the chairmanship-of P.J. Nayak. He is a former Chairman and CEO of Axis Bank.

Parthasarathi Shome: for Tax Administration Reform commission (TARC), Suggest a system to enforce better tax compliance

K.U.B. Rao Committee: recommended aligning gold import regulations

M. Narasimham Committee: on Banking Sector Reforms

Pulak Kumar Sinha Committee: to study the feasibility Aadhaar as an additional factor for authentication of card present transactions.

Suma Verma Committee: to update, and revise the Banking Ombudsman Scheme, 2006

Urjit Patel Committee: to examine the current monetary policy framework.

Vijay Kelkar Committee : was appointed by the Petroleum and Natural Gas Ministry to prepare a road map to make India self sufficient in oil and natural gas by 2030.

Vishnu Sahay Committee: look probe into the Muzaffarnagar communal violence.

MICRO, SMALL AND MEDIUM ENTERPRISES (MSME)

In accordance with the provision of MSMED Act, 2006. the Micro, small and Medium Enterprise are classified as follows :

1. **Manufacturing Enterprises :** The enterprise engaged in the manufacturing of goods pertaining to any industry specified in the first schedule to the industries (Development and regulation Act, 1951) or employing plant and machinery in the process of value addition to the final product having a distinct name or character or use. The manufacturing Enterprise is defined in terms of investment in Plant & Machinery.
2. **Service Enterprises:** The enterprise engaged in providing or rendering of services and are defined in terms of investment in equipment.

MANUFACTURING SECTOR

Enterprises	Investment in Plant & Machinen
Micro Enterprises	Does not exceed 25 lakhs
Small	Enterprises More than 25 lakhs but less than 5 crores
Medium Enterprises	More than 5 crores but less than 10crores

SERVICE SECTOR

Enterprises	Investments in equipment's
Micro Enterprises	Less than 10 lakhs
Small Enterprises	More than 10 lakhs less than 2 crores
Medium Enterprises	More than 2 crores less than 5 crores

BANKING – LATEST TRENDS REAL TIME GROSS SETTLEMENT (RTGS)

It is a funds transfer system under which transfer of funds takes place from one bank to another on a 'Real Time' and 'Gross' basis, settlement on 'Real Time' means there is no waiting period, in payment-transaction. The transaction is settled as soon as it is processed. 'Gross' settlement means the transaction is made on one to one basis.

Features of RTGS-

- (i) The RTGS service is available to customers from 9:00 am to 3:00 pm on week days and from 9:00 am to 12:00 noon on Saturday.
- (ii) This facility is provided only by Core Banking Solution (CBS) enabled bank branches.
- (iii) The minimum amount in a RTGS transaction is ₹two lacs.
- (iv) The receiving bank must credit the customer's account within two hours of receiving the funds transfer method.

• NATIONAL ELECTRONIC FUNDS TRANSFER (NEFT)

It is an online system for transferring funds in which transfer of money takes place from one bank to another on net basis.

Important points about NEFT-

- (i) NEFT functions on net settlement basis,
- (ii) Full information regarding the receiver's name, bank account

number, account type (savings or current), bank name, city, branch name, etc. has to be furnished to the bank at the time of requesting for such transfers.

- (iii) There is no minimum or maximum limit on the transactions of NEFT. For using NEFT, an eleven digit Indian Financial System (IFS) code is used.
- (iv) Fund transfer normally takes place on the same day or at the most the next working day.
- (v) The banks generally charge some processing charges for NEFT.
- (vi) This facility is available at around 18,500 branches.

- **BANK DRAFT**

Bank draft is an order issued by a bank on any branch of the same bank to pay the specified amount to the person named in it. It is always payable on demand. It is also known as 'Demand Draft' or 'Banker's Draft'.

- **BANKER'S CHEQUE**

It refers to that bank draft which is payable within the town. It is also known as 'Pay Order'.

- **ELECTRONIC BANKING OR E-BANKING**

Electronic Banking is a service provided by many banks, in which a customer is allowed to conduct banking transactions over the internet using a personal computer, mobile telephone hand held computer e-Banking offers the following range of services:

- (i) Electronic Funds Transfer which has been discussed under RTGS & NEFT.

- (ii) **Automated Teller Machines (ATM)**

ATM is a self-service terminal that provides the customers of banks the facilities of withdrawing cash, making deposits, transferring funds, paying bills, obtaining bank statements, etc.

The customer inserts his plastic card (Debit Card) into the terminal and then enters Personal Identification Number (PIN) perform banking operations.

- (ii) **Debit Cards-**

Debit card is an electronic plastic card issued by a bank to its customers for withdrawing cash or making payment electronically.

The maximum limit of withdrawal is the bank account balance of the customer.

- (iv) **Point-of-Sale Terminals-**

A Point-of-Sale (POS) terminal is located in the shop/store. It is tied electronically to a bank computer. When a customer presents his debit card, the terminal automatically transfers money from the customer's account to the seller's account.

- (v) **Credit Cards-**

It is a plastic card issued by a bank to its customers, containing name, photo and signatures of the customer and the name of the Bank. The customer can buy goods and services at specified outlets by showing his credit card upto the credit limit fixed by the bank, which depends on the credit-worthiness of the customer.

- (vi) **Internet Banking-**

It refers to the banking services provided by the banks over the internet. The common internet banking services offered by banks are:

- **Transactional Activities** like funds transfers, bill payments, loan applications, etc.
- **Non-transactional activities** like request for cheque book, stop payment, on line statements, undating contact information, etc.

- (vii) **Mobile Banking-**

Now-a-days, we can also use internet banking on our mobile phones using a w-fi or a 3G connection. Mobile banking allows customers of banks to perform banking transactions through a mobile device.

POLICY RATES AND RESERVE RATIOS

- **Bank Rate:** RBI lends to the commercial banks through its discount window to help the banks meet depositor's demands and reserve requirements. The interest rate the RBI charges the banks for this purpose is called bank rate. If the RBI wants to increase the liquidity and money supply in the market, it will decrease the bank rate and if it wants to reduce the liquidity and money supply in the system, it will increase the bank rate.
- **Cash Reserve Ratio (CRR):** Every commercial bank has to keep certain minimum cash reserves with RBI. RBI can vary this rate between 3% and 15%. RBI uses this tool to increase or decrease the reserve requirement depending on whether it wants to affect a decrease or an increase in the money supply. An increase in Cash Reserve Ratio i CRR ? will make it mandatory on the part of the banks to hold a large proportion of their deposits in the form of deposits with the RBI. This will reduce the size of their deposits and they will lend less. This will in turn decrease the money supply.
- **Statutory Liquidity Ratio (SLR):** Apart from the CRR, banks are required to maintain liquid assets in the form of gold, cash and approved securities. Higher liquidity ratio forces commercial banks to maintain a larger proportion of their resources in liquid form and thus reduces their capacity to grant loans and advances, thus it is an anti-inflationary impact. A higher liquidity ratio diverts the bank funds from loans and advances to investment in government and approved securities.

BANKING TERM ABBREVIATIONS

ALCO	-	Asset Liability Committee
ALM	-	Asset Liability Management
ANBC	-	Adjusted Net Bank Credit
ASBA	-	Applications Supported Bank Accounts
BCSBI	-	Banking Codes and Standards Board of India
BOE	-	Bill of Exchange
CAR	-	Capital Adequacy Ratio
CARE	-	Credit Analysis and Research Limited
CASA	-	Current and Savings Accounts
CBLO	-	Collateralized Bank Lending Obligations

CCIL	-	Clearing Corporation of India Limited	NPV	-	Net Present Value
CDRS	-	Corporate Debt Restructuring	NRE	-	Non Resident External Account
CIBIL	-	Credit Information Bureau of India Limited	NRI	-	Non Resident Indian
CRISIL	-	Credit Rating Information Services of India	NSE	-	National Stock Exchange
CRR	-	Cash Reserve Ratio	OCB	-	Overseas Corporate Bodies
DPG	-	Deferred Payment Guarantee	OMO	-	Open Market Operations
DPN	-	Demand Promissory Note	OTCEI	-	Over the Counter Exchange Of India
DRAT	-	Debt Recovery Appellate Tribunal	PACS	-	Primary Agricultural Credit Societies
DRI	-	Differential Rate of Interest	PDO	-	Public Debt Office
DSCR	-	Debt Service Coverage Ratio	PIN	-	Personal Identification Number
EDI	-	Electronic Data Interchange	POA	-	Power of Attorney
EDP	-	Entrepreneurship Development Programme	OLTAS	-	Online Tax Accounting System
EMI	-	Equated Monthly Instalments	QIB	-	Qualified Institutional Bankers
EPS	-	Earning per Share	QIB	-	Qualified Institutional Buyers
ESOP	-	Employee Stock Options	RBI	-	Reserve Bank of India
EXIM bank	-	Export and Import Bank of India	RDBMS	-	Relational Database Management System
FCNR	-	Foreign Currency Non Resident Deposit Accounts	REC	-	Rural Electrification Corporation
FEDAI	-	Foreign Exchange Dealers Association of India	RFC	-	Resident Foreign Currency
FOB	-	Free On Board	RIDF	-	Rural Infrastructure Development Fund
ICRA	-	Investment Information and Credit Rating Agency of India Limited	RRB	-	Regional Rural Bank
IDRBT	-	Institute for Development and Research of Banking Technology	RTGS	-	Real Time Gross Settlement
IEPF	-	Investors Education and Protection Fund	SWA	-	Risk Weighted Assets
IPO	-	Initial Public Offer	SBI	-	State Bank of India
IRDA	-	Insurance Regulatory and Development Authority of India	SCB	-	Scheduled Commercial Bank
ISCI	-	International Standard Industrial Classification	SDR	-	Special Drawing Rights
KCC	-	Kisan Credit Card	SEBI	-	Securities and Exchange Board of India
KVIC	-	Khadi and Village Industries Corporation	SFMS	-	Structured Financial Messaging Services
KYC	-	Know Your Customer	SHG	-	Self Help Group
LAB	-	Local Area Banks	SIDBI	-	Small Industries Development Bank of India
LAMPS	-	Large Sized Adivasi Multipurpose Societies	SIDC	-	State Industrial Development Corporation
LERMS	-	Liberalized Exchange Rate Management System	SISRY	-	Swarna Jayanthi Shahari Rozgar Yojana
LIC	-	Life Insurance Corporation of India	SLR	-	Statutory' Liquidity Ratio
MCA	-	Ministry Of Company Affairs	SLRS	-	Scheme for Liberation and Rehabilitation of Scavengers
MICR	-	Magnetic Ink Character Recognition	SME	-	Small and Medium Industries
MIS	-	Management Information System	SMERA	-	SME Rating Agency of India Limited
NABARD	-	National Bank for Agriculture and Rural Development	SSI	-	Small Scale Industries
NBFC	-	Non Banking Finance Companies	SSSBE	-	Small Scale Service and Business Enterprises
NEFT	-	National Electronic Fund Transfer	UTI	-	Unit Trust of India
NPA	-	Non Performing Assets	WPI	-	Wholesale Price Index
			YTM	-	Yield To Maturity

EXERCISE-1

CONCEPTUAL BANKING

1. In which year, the first bank of India "Bank of Hindustan" was established?
 - (a) 1870
 - (b) 1770
 - (c) 1795
 - (d) 1880
 - (e) None of these
2. Which among the following are the correct locations of three presidency banks during British India?
 - (a) Calcutta, Madras, Bombay
 - (b) Surat, Calcutta, Madras
 - (c) Surat, Madras, Bombay
 - (d) Bombay, Calcutta, Surat
 - (e) None of these
3. Which of the following is the oldest Joint Stock bank of India?
 - (a) Allahabad Bank
 - (b) Bank of Baroda
 - (c) Patiala Bank
 - (d) Bank of India
 - (e) None of these
4. Which among the following was the first bank to open a branch on foreign soil?
 - (a) Bank of India
 - (b) State Bank of India
 - (c) Bank of Punjab
 - (d) Allahabad Bank
 - (e) None of these
5. What was the initial share capital of Reserve Bank of India?
 - (a) ₹ 5 Crore
 - (b) ₹ 10 Crore
 - (c) ₹ 15 Crore
 - (d) ₹ 20 Crore
 - (e) None of these
6. The Royal Commission on Indian Currency and Finance was also known as
 - (a) Hilton-Young Commission
 - (b) Hartog Commission
 - (c) Muddiman Committee
 - (d) Butfler Commission
 - (e) None of these
7. Original headquarters of RBI were located at
 - (a) Calcutta
 - (b) Bombay
 - (c) Madras
 - (d) New Delhi
 - (e) None of these
8. In which year, Paper Currency Act was enacted by British Government of India?
 - (a) 1862
 - (b) 1861
 - (c) 1852
 - (d) 1875
 - (e) None of these
9. On which date, RBI started working?
 - (a) 1 January 1934
 - (b) 1 January 1935
 - (c) 1 April 1935
 - (d) 31 March 1934
 - (e) None of these
10. In which year, Regional Rural Banks started working in India?
 - (a) 1970
 - (b) 1975
 - (c) 1978
 - (d) 1981
 - (e) None of these
11. The earliest evidence of Banking transactions in India comes from _____.
 - (a) Vedic Era
 - (b) Maurya Era
 - (c) Gupta Era
 - (d) Medieval India
 - (e) None of these
12. The liberalisation of Indian banking and regulation was done first on the basis of recommendations of which committee?
 - (a) Narasimham Committee
 - (b) A. Ashok Committee
 - (c) Saraiya Committee
 - (d) Khusro Committee
 - (e) None of these
13. In which year, the nationalization of subsidiary banks of State Bank of India (SBI) was done?
 - (a) 1955
 - (b) 1956
 - (c) 1959
 - (d) 1980
 - (e) None of these
14. What was the name of State Bank of India (SBI) before it was created by SBI Act?
 - (a) Imperial Bank of Hindustan
 - (b) Imperial Bank of Bengal
 - (c) Imperial Bank of Madras
 - (d) Imperial Bank of India
 - (e) None of these
15. Which among the following is NOT a subsidiary of RBI?
 - (a) National Housing Bank
 - (b) NABARD
 - (c) Bharatiya Reserve Bank Note Mudran Private Limited
 - (d) SIDBI
 - (e) None of these
16. The headquarters of local boards of RBI are located at
 - (a) Mumbai, Kolkata, Chennai and New Delhi
 - (b) Mumbai, Jaipur, Chennai and Mysore
 - (c) Mumbai, Ahmedabad, Chennai and New Delhi
 - (d) Mumbai, Ahmedabad, Jaipur and New Delhi
 - (e) None of these

17. Which of the following is NOT a function of Reserve Bank of India?
- (a) Controls the credit operations of banks through quantitative and qualitative tools
 (b) Lender of the last resort
 (c) Holds cash reserves of all the scheduled banks
 (d) Manages Credit Rating of Banks
 (e) None of these
18. Under which section of the Reserve Bank of India (RBI) Act 1934, the RBI has the sole right to issue bank notes of all denominations?
- (a) Section 24 of the RBI Act 1934
 (b) Section 25 of the RBI Act 1934
 (c) Section 21 of the RBI Act 1934
 (d) Section 22 of the RBI Act 1934
 (e) None of these
19. Under minimum reserve system, how much amount Reserve Bank of India (RBI) was required to keep in gold and foreign exchange reserves?
- (a) ₹200 crore (b) ₹220 crore
 (c) ₹222 crore (d) ₹280 crore
 (e) None of these
20. Which of the following is not the quantitative tool of the Reserve Bank of India (RBI)?
- (a) OMO (b) Reserve ratios
 (c) Rationing of credit (d) Statutory Pre-emptions
 (e) None of these
21. Under which of the following rates, the banks avail long term loans from Reserve Bank of India (RBI) by putting no collateral securities?
- (a) Bank rate
 (b) Repo rate
 (c) Reserve repo rate
 (d) Marginal Standing Facility
 (e) None of these
22. With reference to Commercial papers (CP), which of the following is not a correct statement?
- (a) Prior approval of RBI is needed to issue CP
 (b) Issued in the multiples of Rs. 5 lakh
 (c) Issued in the form of usance promissory note
 (d) Issued at a discount to face value
 (e) None of these
23. Which of the following terms is used in Banking Field?
- (a) Interest Rate Swap (b) Input Devices
 (c) Sedimentary (d) Zero Hour
 (e) None of these
24. On which one of the following issues can SEBI penalize any company in India?
- I. Violation of Banking Regulation Act.
 II. Violation of foreign portfolio investment guidelines.
 III. For violation of Negotiable Instrument Act.
- (a) Only (I) (b) All (I), (II) & (III)
 (c) Only (I) & (II) (d) Both (II) & (III)
 (e) Only (II)
25. Expand the term ALM as used in Banking/Finance sector?
- (a) Asset Liability Mismatch
 (b) Asset Liability Maturity
 (c) Asset Liability Management
 (d) Asset Liability Manpower
 (e) None of these
26. What is the full form of the term LIBOR as used in financial banking sectors?
- (a) Local Indian Bank Offered Rate
 (b) London-India Bureau of Regulations
 (c) Liberal International Bank Official Ratio
 (d) London inter Bank Offered Rate
 (e) None of these
27. Expand the term FSDC which is used in financial sectors?
- (a) Financial Security and Development Council
 (b) Financial Stability and Development Council
 (c) Fiscal Security and Development Council
 (d) Fiscal Stability and Development Council
 (e) None of these
28. Which of the following rates/ratios is not covered under the RBI monetary and credit policy ?
- (a) Bank rate
 (b) Exchange rate of foreign currencies
 (c) Repo rate
 (d) Reverse repo rate
 (e) Cash reserve ratio
29. When a loan is granted by a bank for purchase of white goods it is called
- (a) Consumption loan (b) White goods loan
 (c) Consumer durable loan (d) All of these
 (e) None of these
30. Which of the following methods is being adopted by Banks for calculating and applying interest on Savings Bank accounts?
- (a) On monthly products based on minimum balance between 10th and last working day.
 (b) Daily balance is counted and interest is paid accordingly
 (c) On average quarterly balance.
 (d) On average half yearly balance.
 (e) None of these
31. The main function of IMF is to
- (a) give financial investment loans to developing countries
 (b) act as a private sector lending arm of the World Bank
 (c) help of solve balance of payment problems of member countries
 (d) arrange international deposits from banks
 (e) None of these

32. Which of the following is not a part of the scheduled banking structure in India ?
- (a) Money lenders (b) Public sector banks
(c) Private sector banks (d) Regional rural banks
(e) State cooperative banks
33. The rate of interest on savings bank account is stipulated by
- (a) the concerned bank
(b) RBI
(c) Indian banks association
(d) Government of India
(e) Banking codes and standards board of India
34. Under provisions of which one of the following Act does the RBI issue directives to the Banks in India ?
- (a) RBI Act
(b) Banking Regulation Act
(c) Essential Commodities Act
(d) RBI and Banking Regulation Act
(e) None of these
35. Which one of the following tools is used by RBI for selective credit control ?
- (a) It advises banks to lend against certain commodities
(b) It advises banks to recall the loans for advances against certain commodities
(c) It advises banks to charge higher rate of interest for advance against certain commodities.
(d) It discourages certain kinds of lending by assigning higher risk weights to loans it deems undesirable.
(e) None of these
36. For which one of the following are loan products 'teaser loans' offered by banks ?
- (a) Education loans
(b) Commercial loans
(c) Loans against security of gold
(d) Retail trade loans
(e) Home loans
37. Under provisions of which one of the following Acts has the Reserve Bank of India has the power to regulate, supervise and control the banking sector?
- (a) RBI Act
(b) Banking Regulation Act
(c) Negotiable Instruments Act
(d) RBI and Banking Regulation Act
(e) None of these
38. Credit rating is
- (a) used to rate the borrowers while giving advances
(b) used to work out performance of the employees
(c) used to calculate the number of excellent audit rated branches
(d) not used in any bank
(e) necessary before giving promotion to employees
39. Insurance service provided by various banks is commonly known as....
- (a) Investment Banking (b) Portfolio Management
(c) Merchant Banking (d) Bancassurance
(e) Micro Finance
40. The rate on which banks borrow from the RBI is called
- (a) SLR (b) CRR
(c) Interest Rate (d) Bank Rate
(e) Repo Rate
41. As we know, the RBI is the apex bank of India; similarly, the apex Bank of USA is called....
- (a) Federal Reserve
(b) The Central Bank of USA
(c) Bank of America
(d) Central Bank of USA
(e) None of the above
42. Which of the following is / are included under Statutory Pre-emptions?
- I. SLR
II. CRR
III. Bank Rate
IV. Repo Rate
- Select the correct option from the codes given below:
- (a) Only I & II (b) Only I, II & III
(c) Only II, III & IV (d) Only I, II & IV
(e) None of these
43. Which among the following is most important functions being done by SLR in recent times?
- (a) Control of Inflation
(b) Cushion against bank failures
(c) Financing Government deficits
(d) Adjustment of liquidity
(e) None of these
44. How Bank Rate is different from Repo rate?
- (a) While Repo Rate is a short-term measure, Bank Rate is a long-term measure
(b) While Bank Rate is a short-term measure, Repo Rate is a long-term measure
(c) While Repo Rate is used to control money supply, Bank Rate is used to control inflation
(d) While Bank Rate is used to control money supply, Repo Rate is used to finance government debt
(e) None of these
45. If a bank ties up with a retail vendor and then both of them sponsor a credit card, then such card would be known as :
- (a) Retail Credit Card (b) Vendor Card
(c) Co-branded Card (d) Cash back Card
(e) None of these
46. Which is the first credit card facility to be recognised worldwide?
- (a) Visa Card (b) Maestro Card
(c) Master Card (d) Diner Card
(e) None of these

47. With reference to the prepaid credit cards, which among the following is / are correct statements?
- Credit facility is offered for the purchaser of the card
 - No interest charged from the purchaser of the card
 - No purchasing fee and monthly fees charged before an arbitrary time period
- Select the correct option from the codes given below:
- Only 1 & 2
 - Only 2 & 3
 - Only 1 & 3
 - 1, 2 & 3
 - None of these
48. What does the circus logo on ATM / debit cards signifies.....?
- have cash access facility anywhere in India only
 - have cash access facility outside the India only
 - have cash access facility in or outside the India
 - have cash access facility in and outside the India
 - None of these
49. What is the time period during which no interest is charged on a credit card?
- Grace period
 - Term period
 - Loan period
 - Sanction Period
 - None of these
50. With reference to the Credit Card number, which digits identify the Credit Card Network?
- Initial two
 - Initial Four
 - Last two
 - Last four
 - None of these
51. In terms of Credit Cards, what is a Hot Card?
- Newly issued Card
 - Invalid Card
 - Stolen Card
 - Unpaid Card
 - None of these
52. What is the main business of Systemically Important Core Investment Company (CIC-ND-SI) in India?
- Acquisition of shares and securities
 - Facilitate the flow of long term debt into infrastructure projects
 - Deploy its assets in infrastructure loans
 - Financing of physical assets such as automobiles, earth moving equipments etc.
 - None of these
53. What is the cap on loan amount given out by a Non-Banking Financial Company - Micro Finance Institution (NBFC-MFI)?
- ₹50000
 - ₹60000
 - ₹70000
 - ₹75000
 - None of these
54. Which of the following is are the parties in Factoring Business?
- buyer
 - seller
 - buyer and seller
 - buyer, seller and financial institution
 - None of these
55. What is the minimum tenure of deposits to be taken by NBFCs?
- 6 months
 - 12 months
 - 2 years
 - 3 years
 - None of these
56. Which of the following is NOT a money markets instrument?
- National Savings Certificates
 - A 3-month certificate of deposit
 - A treasury bill with 7 days to maturity
 - A 14-day repurchase agreement of Treasury 8% 2007
 - None of these
57. All of the following are money market instruments except
- Certificate of deposit
 - Commercial paper
 - Indian Depository Receipt
 - Commercial bill
 - None of these
58. Which is the most active Money Market Instrument in India?
- Treasury Bill
 - Commercial Papers
 - Repo
 - Notice Money
 - None of these
59. Which of the following segments of Money Markets is indicator of day to day interest rates?
- Term Money Market
 - Call Money / Notice Money Market
 - Money Market Mutual Funds
 - Commercial Bills
 - None of these
60. Which among the following can be used to channelize surplus funds from savers to institutions for short term use?
- Stocks
 - Bonds
 - Debentures
 - Commercial paper
 - None of these
61. Cross-selling is not effective for which one of the following products ?
- Debit cards
 - Savings accounts
 - Internet banking
 - Pension loans
 - Personal loans
62. What is "wholesale banking"?
- It is a bank-to-bank or B2B dealing.
 - It is a bank-to-customer dealing.
 - It is a bank-to-trustworthy customer dealing.
 - It is a bank-to-government dealing
 - None of these

63. What is hot money?
- Money which has tendency to migrate towards highprofit-oriented places.
 - Money which has tendency to migrate towards lowprofit-oriented places
 - Money, which has no interest
 - Only (a) and (b)
 - Only (a) and (c)
64. "The set of directive principles issued by the Central Bank of a country or the process adopted by it to control the supply of money, availability of money, cost of money and rate of interest, etc. in order to bring stability and growth of the economy" are commonly known as
- Monetary policy of the Central Bank of the country
 - Budget of the Govt.
 - Profit and Loss Account
 - Business Policy of the Bank
 - None of these
65. "Higher provisioning dragged down the profits of down the 4th quarter of some banks" was the news in some major newspapers. This means that the banks
- had many NPAs
 - had no NPA
 - was in great loss
 - was not able to earn any profit last year
 - None of these
66. When the Reserve Bank says that the Rupee is over-valued, it means?
- RBI has shortage of hard currency and it has to order for printing of new notes to the press concerned
 - Rupee is appreciating against other currencies whereas other currencies are weakening against US Dollar
 - Money is locked in banks and people do not have enough to make their day to day purchases. It is a strategy which brings down inflation
 - More and more people are selling their stocks. As a result stock market may crash, as there is no hard cash for such voluminous transactions
 - None of these
67. IMPS stands for
- Inter-Bank Mobile Payment Service
 - Inter-Bank Money Payment Service
 - Inter-Bank Mobile Payment System
 - Inter-Bank Money Payment System
 - None of the above
68. In which year was SIDBI established?
- 1975
 - 1998
 - 1990
 - 1978
 - 1981
69. National Rural Credit Stabilization Fund is a Institution of purpose-specific funds in which of the following?
- IDBI
 - SIDBI
 - NABARD
 - IFCI
 - AFCL
70. Which among the following statements is incorrect regarding the Regional Rural Banks ?
- They have been established as per the provisions of Regional Rural Banks Act 1976
 - Every Regional Rural Bank is sponsored by commercial banks
 - The commercial banks need to approach to the state governments to establish Regional Rural Banks
 - The Regional Rural Banks may open branches in notified area
 - All statements are correct
71. Which among the following is the correct statement?
- Cooperative Banks are fully controlled by RBI
 - Cooperative Banks are partially controlled by RBI
 - Cooperative Banks are not controlled by RBI
 - Cooperative Banks are fully controlled by Banking Regulation Act 1949
 - None of these
72. Agency Functions of the commercial Banks are?
- Primary Functions
 - Secondary Functions
 - Tertiary Functions
 - Social Functions
 - None of these
73. Which among the following is an essential feature of a commercial bank?
- providing Locker facilities
 - dealing with credit
 - providing business information and data
 - Underwriting
 - Sale of securities
74. When a person has a savings account in the bank, the bank assumes the position of _____?
- Debtor
 - Creditor
 - Agency
 - Depositor
 - Agent
75. Which among the following is the Bank rate?
- The rate at which a commercial Bank lends to its customers
 - The rate at which a commercial Bank lends to its best customers
 - The rate at which a central Bank lends to commercial Banks
 - The rate at which a Commercial Bank lends to Central bank
 - The rate at which a commercial Bank accepts deposits from its customers

76. An investor or speculator who subscribes to a new issue with the intention of selling them shares soon after allotment to realize a quick profit is called?
 (a) Bull (b) Bear
 (c) Stag (d) Short
 (e) Tall
77. The Unclaimed deposits are those deposits which haven't been operated for _____?
 (a) 5 years or more (b) 7 years or more
 (c) 10 years or more (d) 12 years or more
 (e) 15 years or more
78. On which of the following dates does a Bank publish its balance sheet ?
 (a) March 31 (b) April 1
 (c) December 31 (d) January 1
 (e) None of these
79. In which stock exchange, 'currency futures' trading was first started ?
 (a) BSE
 (b) NSE
 (c) MCX-SX
 (d) All the above had the trading simultaneously
 (e) None of these
80. What is a "Consortium"?
 (a) When more than one bank allow credit facility to one party in coordination with another under a formal arrangement.
 (b) In a consortium more than two persons together take loan from one bank.
 (c) In a consortium, banks provide loan only to the poor.
 (d) Both (a) and (b) are correct
 (e) None of these
81. The Reserve Bank of India keeps on changing various ratio rates frequently. Why is this done?
 I. To keep inflation under control.
 II. To ensure that Indian Rupee does not lose its market value.
 III. To ensure that Banks do not earn huge profits at the cost of public money.
 (a) Only I (b) Only II
 (c) Only III (d) All I, II & III
 (e) None of these
82. Deficit financing increases
 (a) Rate of money inflation
 (b) Rate of money deflation
 (c) Rate of devaluation
 (d) All of the above
 (e) None of these
83. Which is not a monetary measure to control inflation ?
 (a) Soft loan policy
 (b) Hard credit policy
 (c) Tighten the regulations of money issue
 (d) To reduce the quantity of money
 (e) None of these
84. Which is the monetary measure to control inflation ?
 (a) Increase in taxation (b) Decrease in taxation
 (c) Soft credit policy (d) Hard credit policy
 (e) None of these
85. To control inflation the central bank should –
 (a) Sell government securities and decrease bank rate
 (b) Sell government securities and increase bank rate
 (c) Purchase government securities and increase bank rate
 (d) Purchase government securities and to decrease bank rate
 (e) None of these
86. "Smart Money" is a term used for
 (a) Internet Banking (b) Credit Card
 (c) Cash with Bank (d) Cash with Public
 (e) None of these
87. If the cash reserve ratio is lowered by the RBI, its impact on credit creation will be to
 (a) increase it (b) decrease it
 (c) no impact (d) constant
 (e) None of these
88. Which of the following items would not appear in a company's balance sheet?
 (a) Value of stocks of raw materials held
 (b) Total issued capital
 (c) Revenue from sales of the company's products
 (d) Cash held at the bank
 (e) None of these
89. The currency convertibility concept in its original form originated in
 (a) Wells Agreement
 (b) Bretton Woods Agreement
 (c) Taylors Agreement
 (d) Both (a) and (b)
 (e) None of these
90. The central co-operative banks are in direct touch with
 (a) farmers
 (b) state co-operative banks
 (c) land development banks
 (d) central government
 (e) None of these
91. In pursuance of the recommendations of Narsimhan Committee, the RBI has framed new guidelines
 (a) to govern entry of new private sector banks to make the banking sector more competitive
 (b) to reduce the freedom given to banks to rationalize their existing branch network
 (c) to set up more foreign exchange banks
 (d) to lend more easily for industrial development
 (e) None of these

92. Deficit financing means that the government borrows money from the
(a) RBI (b) local bodies
(c) big businessmen (d) IMF
(e) None of these
93. The Board of Industrial and Financial Reconstruction (BIFR) came into existence in
(a) 1984 (b) 1986
(c) 1987 (d) 1989
(e) None of these
94. The banks are required to maintain a certain ratio between their cash in hand and totals assets. This is called
(a) Statutory Bank Ratio (SBR)
(b) Statutory Liquidity Ratio (SLR)
(c) Central Bank Reserve (CBR)
(d) Central Liquid Reserve (CLR)
(e) None of these
95. In terms of Banking Terminology, Affinity Card refers to :
(a) The Credit Cards that are linked to special organizations
(b) The Credit Cards with zero interest rate on repayments
(c) The Credit Cards exclusively for the Bank's employees
(d) All of above organization
(e) None of these
96. From which country, the concept of Credit Card originated?
(a) United Kingdom (b) United States
(c) France (d) Australia
(e) None of these
97. The business entity that is authorized to accept cards for the payment of goods and services is called?
(a) Issuer (b) Acquirer
(c) Merchant (d) Authorised Issuer
(e) None of these
98. The international standard which defines the shape and size of the I-Cards is
(a) ISO/IEC5200 (b) ISQ/IEC9910
(c) ISO/IEC 14000 (d) ISO/IEC 7810
(e) None of these
99. Which of the following is used by RBI for sterilization of the Capital Inflows?
(a) Base Rate System
(b) CRAR Obligations
(c) Open Market Operations
(d) Credit Authorization Scheme
(e) None of these
100. What is sold and purchased during Open Market Operations by RBI?
(a) Government Securities
(b) Commercial Papers
(c) Certificates of Deposits
(d) Global Depository Receipts
(e) None of these
101. In context with banking, a Certificate of Deposit is
(a) Money Market Instrument
(b) Negotiable Instrument
(c) Transferable instrument
(d) All of above
(e) None of these
102. Who among the following is / are eligible to issue Commercial papers in India?
(a) Corporates
(b) Primary dealers
(c) All-India Financial Institutions
(d) All of the above
(e) None of these
103. Which of the following is NOT an advantage of Unit Banking?
(a) They have fast decision making
(b) The management enjoys more autonomy
(c) They have risk diversification
(d) All of above are advantages of Unit Banking
(e) None of these
104. With reference to various types of Banking, what is "Mixed Banking"?
(a) when banks undertake the activities of commercial and investment banking together
(b) when banks undertake the activities of wholesale and retail banking together
(c) when banks undertake the activities of offline and online banking together
(d) when banks undertake the activities of commercial and cooperative banking together
(e) None of these
105. In terms with Banking Sector, Anywhere Banking refers to
(a) The customer can deposit/ withdraw cash at any branch other than the branch in which he holds the account
(b) The customer can deposit/ withdraw cash at any bank other than the bank in which he holds the account
(c) The customer can deposit/ withdraw cash in foreign countries
(d) The customer can deposit/ withdraw cash at al 1 points of sale
(e) None of these
106. Which among the following types of Banking is most helpful in cross selling?
(a) Virtual Banking (b) Relationship Banking
(c) Wholesale Banking (d) Personal Banking
(e) None of these
107. In which of the following types of banking, there is a direct execution of transactions between a bank and its consumers?
(a) Retail banking (b) Universal Banking
(c) Virtual Banking (d) Unit Banking
(e) None of these

108. A commercial bank will launch a medium term note (MTN) programme to _____:
- (a) Provide loans (b) Raise Funds
(c) Sell Equity (d) Purchase shares
(e) None of these
109. Which among the following is NOT a pillar of Basel III?
- (a) Minimum capital standards
(b) Supervisory review
(c) Market discipline
(d) Consolidation of assets
(e) None of these
110. Capital Adequacy Ratio is a thermometer of Bank's health. It is the ratio of a bank's _____:
- (a) capital to its risk (b) risk to capital
(c) capital to assets (d) capital to liabilities
(e) None of these
111. Which of the following types of risks are used in calculation of Capital to Risk (Weighted) Assets Ratio (CRAR)?
- I. Credit Risk
II. Market Risk
III. Operational Risk
- Select the correct option from the codes given below:
- (a) Only I & II (b) Only II & III
(c) Only I & III (d) I, II & III
(e) None of these
112. For the first time, in which year Basel Committee came up with Capital Accords for banks?
- (a) 1985 (b) 1988
(c) 1990 (d) 1992
(e) None of these
113. Which among the following is NOT a part of Tier-I capital?
- (a) Issued Capital (b) Fully Paid-up Capital
(c) Disclosed Reserves (d) Undisclosed Reserves
(e) None of these
114. If the RBI adopts an expansionist open market operations policy, this means that it will
- (a) buy securities from non-government holders
(b) sell securities in the open market
(c) offer commercial banks more credit in the open market
(d) openly announce to the market that it intends to expand credit
(e) None of these
115. As we all know, when we deposit a cheque issued in our name in the bank, the bank always checks if the cheque has been crossed or not. Why is this done?
- (a) It ensures that the money is deposited only in the account of the person in whose name the cheque has been drawn.
(b) It is a process by which the person who has issued the cheque comes to know whether the cheque is encashed or not.
(c) The bank insists on it only when the party wants the payment immediately and that too in cash only.
(d) This is the instruction of RBI that all the cheques of the amount of ₹10,000 should be accepted only if they are crossed.
(e) None of these
116. Which of the following terms is NOT associated with banking operations?
- (a) Repo Rate (b) Prime Lending Rate
(c) Equator (d) Corporate Finance
(e) Cash Reserve Ratio
117. A student has got admission to a foreign university. From where can he/she get the foreign currency?
- (a) From the Bank of that country only
(b) From the Ministry of Foreign Affairs
(c) From office of the Consulate General of that country
(d) From an authorised foreign exchange dealer
(e) From any big five star hotel as many foreigners come to stay there
118. Which of the following is NOT a Govt, sponsored organization?
- (a) Small Industries Development Bank of India
(b) NABARD
(c) National Housing Bank
(d) ICICI Bank
(e) All are Govt, sponsored
119. Which of the following is the apex institution which handles refinance for agriculture and rural development in India?
- (a) RBI (b) SIDBI
(c) NABARD (d) SEBI
(e) None of these
120. Which of the following is NOT a part of India's Money Market?
- (a) Bill Market (b) Call Money Market
(c) Banks (d) Mutual Funds
(e) Indian Gold Council
121. Teaser Rates are related to which of the following types of loans?
- (a) Home Loans
(b) Personal Loans
(c) Auto Loans
(d) Reverse Mortgage Loans
(e) Crop Loans
122. As we all know, the major source of income of the banks is lending money (providing credit) and earning interest on it. In normal circumstances, the demand of the credit comes mainly from which of the following sectors?
- I. Personal Loans
II. Priority Sector Lending and Bailout Packages
III. Project Finance
- (a) Only I (b) Only II
(c) Only III (d) All I, II and III
(e) None of these

123. Many banks have launched/floated their subsidiaries which are fully owned by them. Banks launch subsidiaries normally for which of the following businesses? ,
- I. Home Loan Business
 - II. To sell Insurance Policies
 - III. To control Online Operations or Internet Banking business
- (a) Only I
 - (b) Only II
 - (c) Only III
 - (d) All I, II and III
 - (e) None of these
124. "The set of directive principles issued by the Central Bank of a country or the process adopted by it to control the supply of money, availability of money, cost of money and rate of interest, etc, in order to bring stability and growth of the economy" are commonly known as
- (a) Monetary policy of the Central Bank of the country
 - (b) Budget of the Govt.
 - (c) Profit and Loss Account
 - (d) Business Policy of the Bank
 - (e) None of the above
125. Consider the following statements:
- I. In call money market, funds are borrowed and lent for one day and for a period of up to 14 days without any collateral security.
 - II. Ways and Means Advances are made the commercial banks to maintain mandatory reserves.
 - III. Treasury Bills are promissory notes issued by State Governments for fixed period extending up to one year.
- Which of the above statement/s is/are correct?
- (a) Only I
 - (b) Only I and II
 - (c) Only III
 - (d) Only I and III
 - (e) All the above
126. Consider the following statement/s about 'Open Market Operations' is/are true:
- I. 'Open Market Operation' stands for the purchase and sale of government securities by the RBI from/ to the public and banks.
 - II. The RBI buys all the unsold stock new government loans at the end of the subscription period.
 - III. Such purchases of the government securities by the RBI constitute only an internal arrangement and are not genuine market purchases.
- (a) Only I
 - (b) Only I and II
 - (c) Only II and III
 - (d) Only III
 - (e) All the above are true
127. When the Reserve-Bank says that the Rupee is over-valued, it means
- (a) RBI has shortage of hard currency and it has to order for printing of new notes to the press concerned
 - (b) Rupee is appreciating against other currencies where as other currencies are weakening against US Dollar
 - (c) Money is locked in banks and people do not have enough to make their day to day purchases. It is a strategy which brings the inflation down
 - (d) More and more people are selling their stocks. As a result stock market may crash, as there is no hard cash for such voluminous transactions
 - (e) None of the above
128. RBI's open market operation transactions are carried out with a view to regulate
- (a) liquidity in the economy
 - (b) prices of essential commodities
 - (c) inflation
 - (d) borrowing power of the banks
 - (e) All of the above
129. The bank rate means
- (a) rate of interest charged by commercial banks from borrowers
 - (b) rate of interest at which commercial banks discounted bills of their borrowers
 - (c) rate of interest allowed by commercial banks on their deposits
 - (d) rate at which RBI purchases or rediscounts bills of exchange of commercial banks
 - (e) None of the above
130. What is an Indian Depository Receipt?
- (a) A deposit account with a Public Sector Bank
 - (b) A depository account with any depositories in India
 - (c) An instrument in the form of depository receipt created by an Indian depository against underlying equity shares of the issuing company
 - (d) An instrument in the form of deposit receipt issued by Indian depositories
 - (e) None of the above
131. An instrument that derives its value from a specified underlying currency, gold, stocks etc, is known as
- (a) Derivative
 - (b) Securitisation Receipt
 - (c) Hedge Fund
 - (d) Factoring
 - (e) Venture Capital Funding
132. Reverse repo means
- (a) injecting liquidity by the Central Bank of a country through purchases of Govt, securities
 - (b) absorption of liquidity from the market by sale of Govt. securities
 - (c) balancing liquidity with a view to enhance economic growth rate
 - (d) improving the position to availability of the securities in the market
 - (e) None of the above
133. Currency Swap is an instrument to manage
- (a) currency risk
 - (b) interest rate risk
 - (c) currency and interest rate risk
 - (d) cash flows in different currencies
 - (e) All of the above

134. Euro Bond is an instrument
- issued in the European market
 - issued in Euro currency
 - issued in country other than the country of the currency of the Bond
 - All of the above
 - None of the above
135. Money Laundering normally involves
- placement of funds
 - layering of funds
 - integration of funds
 - All of (a), (b) and (c)
 - None of these
136. The IMF and the World Bank were conceived as institutions to
- strengthen international economic co-operation and to help create a more stable and prosperous global economy
 - Promote international monetary cooperation
 - Promote long term economic development and poverty reduction
 - All of (a), (b) and (c)
 - None of these
137. What is the Call Money?
- Money borrowed or lent for a day or overnight
 - Money borrowed for more than one day but upto 3 days
 - Money borrowed for more than one day but upto 7 days
 - Money borrowed for more than one day but upto 14 days
 - None of the above
138. Which of the following is the Regulator of the credit rating agencies in India ?
- RBI
 - SBI
 - SIDBI
 - SEBI
 - None of these
139. What is 'Future Trading'?
- It is nothing but a trade between any two stock exchanges where in it is decided to purchase the stocks of each other on a fixed price throughout the year
 - It is an agreement between two parties to buy or sell an underlying asset in the future at a predetermined price
 - It is an agreement between stock exchanges that they will not trade the stocks of each other under any circumstances in future or for a given period of time
- Only I
 - Only II
 - Only III
 - All I, II and III
 - None of these
140. Green Banking means
- financing of irrigation projects l banks
 - development of forestry by banks
 - financing of environment friendly projects by banks
 - Managing fishery by banks.
 - None of these
141. Free international trade leads to equalization of
- prices in both the countries
 - international price with domestic price
 - commodities of both the countries
 - Trade between two countries
 - None of the above
142. Which one of the following is not a quantitative control method of credit control?
- Cash reserve Ratio
 - Statutory Liquidity Ratio (SLR)
 - Bank – Rate
 - Selective Credit Control
 - None of these
143. The RBI has helped to finance India's foreign trade through
- IDBI
 - SBI
 - EXIM Bank
 - NABARD
 - None of these
144. When the price of a substitute of a commodity X falls, then the demand for X
- Rises
 - Falls
 - Remains unchanged
 - First rises and then falls
 - None of these
145. The provision of credit and other financial services and products of very small amount to the poor in rural semi urban and urban areas to enable them to raise their income level and living standard is known as
- Micro Credit
 - Personal Banking
 - Corporate Banking
 - Non-Banking Finance
 - None of these
146. The National Stock Exchange functions from
- New Delhi
 - Kolkata
 - Mumbai
 - Chennai
 - None of these
147. Fiscal Policy is related to
- Issue of currency
 - Credit creation
 - Public revenue and expenditure
 - All of these
 - None of these
148. Inflation implies
- Rise in budget deficit
 - Rise in general price index
 - Rise in price of consumer goods
 - Rise in money supply
 - None of these
149. Which of the following organizations is known as Market Regulator in India?
- SEBI
 - IBA
 - AMFI
 - NSDL
 - None of these

150. The terms Entry Load and Exit Load are most frequently used in context with the following?
- (a) Health Insurance (b) Real Estate
(c) Mutual Funds (d) Housing Loans
(e) None of these
151. The Federation of Indian Chambers of Commerce and Industry (FICCI) was founded in 1927 by
- (a) Birla and Tata (b) Tata and Thakurdas
(c) Thakurdas and Birla (d) Tata and Godrej
(e) None of these
152. Which of the following is not a Central Government tax?
- (a) Income tax (b) Customs
(c) Land revenue (d) Corporation tax
(e) None of these
153. Interest rates on Savings Bank Account is calculated on a basis.
- (a) Quarterly (b) Monthly
(c) Daily (d) Half-yearly
(e) None of these
154. A consumer fails to make a payment due on a mortgage loan. This is known as
- (a) Credit Risk (b) Refinancing Risk
(c) Liquidity Risk (d) Settlement Risk
(e) None of these
155. What is leverage ratio?
- (a) capital to total assets (risk-weighted).
(b) capital to total assets (not risk-weighted).
(c) capital to total liabilities
(d) Tier-I capital to Tier-II capital
(e) None of these
156. Which of the following is India's first Credit Rating Agency?
- (a) ICRA (b) CRISIL
(c) ONICRA (d) CARE
(e) None of these
157. RBI takes "Prompt Corrective Action" when a bank is faced to
- (a) Market Risk (b) Credit Risk
(c) Liquidity Risk (d) Low Capital Adequacy
(e) None of these
158. A cheque can be crossed by the
- (a) Drawer (b) Holder
(c) Collecting banker (d) Either a or b or c
(e) None of these
159. Which of the following sections of the NI Act 1881 defines "Negotiable Instrument"?
- (a) Sec 11 (b) Sec 12
(c) Sec 13 (d) Sec 14
(e) None of these
160. In which among the following accounts, no cheque book is issued?
- (a) Minor Account (b) Joint Account
(c) Illiterate Account (d) Non Resident Account
(e) None of these
161. In which year, Foreign Currency Non-Resident Account Bank or FCNR (B) was first introduced?
- (a) 1991 (b) 1993
(c) 1995 (d) 1996
(e) None of these
162. In terms of agricultural loans in India, the short term credit refers to the loans made for a period less than_____:
- (a) 1 year (b) 15 Months
(c) 18 Months (d) 24 Months
(e) None of these
163. To call a loan NPA, the interest or instalment of principal should remain overdue for a minimum period of more than_____?
- (a) 60 Days (b) 90 Days
(c) 120 Days (d) 180 Days
(e) None of these
164. Who monitors Priority Sector Lending (PSL) in commercial banks?
- (a) Reserve Bank of India (RBI)
(b) Small Industries Development Bank of India (SIDBI)
(c) National Bank for Agriculture and Rural Development (NABARD)
(d) Government of India (GOI)
(e) None of these
165. NABARD administers a fund called Rural Infrastructure Development Fund (RIDF). What is the major source of its funding?
- (a) Penalties levied on domestic commercial banks who fail to meet PSL targets
(b) Penalties levied on foreign banks (with less than 20 branches) who fail to meet PSL targets
(c) Penalties levied on Central Government who fail to meet PSL targets
(d) All of the above
(e) None of these
166. Which of the following is / are examples of Credit Creation by banks?
- (a) Advancing loans (b) Purchasing securities
(c) Selling securities (d) Only A and B
(e) None of these
167. Which of the following is also known as Contingent Liability of the banks?
- (a) Cash Credits
(b) Non-fund based lending
(c) Fund Based lending
(d) Cash Reserve Ratio
(e) None of these
168. What is the number of non-official directors in RBI?
- (a) 12 (b) 16
(c) 18 (d) 20
(e) None of these

169. Which of the following is available to banks to borrow overnight funds from RBI against the approved government securities?
- Repo Rate
 - Bank Rate
 - Base Rate
 - Marginal Standing Facility
 - None of these
170. If Repo Rate is 6%, then which among the following is correct about Reverse Repo and Marginal Standing Facility?
- Reverse Repo Rate is 7% and Marginal Standing Facility is 8%
 - Reverse Repo Rate is 5% and Marginal Standing Facility is 8%
 - Reverse Repo Rate is 5% and Marginal Standing Facility is 7%
 - Reverse Repo Rate is 8% and Marginal Standing Facility is 7%
 - None of these
171. What will be impact on money supply if RBI purchases the foreign currency in India?
- Money Supply will increase
 - Money Supply will decrease
 - Money Supply will remain constant
 - Money Supply will increase or decrease depending on exchange rates
 - None of these
172. Which among the following statements is / are true in context of noting (in case of dishonour of cheque)?
- it took place due to non acceptance or non payment of cheque
 - Must be made within reasonable time after dishonour
 - Must specify the date of dishonour
 - All of the above
 - None of these
173. Which among the following is / are types of Deposit accounts?
- CASA account
 - Salary Account
 - Recurring Account
- Select the correct option from the codes given below:
- Only 1 & 2
 - Only 2 & 3
 - Only 1 & 3
 - 1, 2 & 3
 - None of these
174. When an endorser puts his signature on the back of the instrument without writing the name of the endorsee is termed as
- blank endorsement
 - special endorsement
 - conditional endorsement
 - partial endorsement
 - None of these
175. When an endorser puts his signature on the back of the instrument to pay the amount to, or to the order of a specified person is termed as
- blank Endorsement
 - general Endorsement
 - partial Endorsement
 - special Endorsement
 - none of these
176. Deposits made in which among the following does not come under Deposit Insurance Scheme?
- Regional Rural Banks
 - Private Banks
 - Non-scheduled Commercial Banks
 - Primary Agricultural Credit Societies (PACS)
 - None of these
177. The funds set aside by the banks as fraction to the loans to cover up losses is called –?
- Provisioning Coverage Ratio (PCR)
 - Capital Adequacy Ratio (CAR)
 - Loan to Coverage Ratio
 - Cash Reserve Ratio
 - None of these
178. What is the maximum amount insured under deposit insurance?
- ₹1 Lakh
 - ₹2 Lakh
 - ₹5 Lakh
 - ₹10 Lakh
 - None of these
179. Which among the following come under Priority Sector Loans?
- Agriculture and Allied Activities
 - Education Loans
 - Retail Trade Loan
- Select the correct option from the codes given below:
- Only 1 & 2
 - Only 2 & 3
 - Only 1 & 3
 - 1, 2 & 3
 - None of these
180. "Not Negotiable" written on a cheque crossing means
- the cheque must be paid into a bank
 - the cheque is not presented by anyone other than the payee
 - the cheque cannot be paid to any one but the payee
 - the cheque can be paid to any one
 - None of these
181. For Mr. Krishan to be "Holder in due course" which among the following conditions must be satisfied?
- the negotiable instrument must be in possession of Mr. Krishan
 - He must be holder of valuable consideration
 - He must become a holder of the negotiable instrument before the date of maturity
 - He must become a holder of the instrument in good faith

- Choose the correct option:
- (a) 1 & 4 (b) 3 & 4
(c) 2, 3 & 4 (d) All follows
(e) None of these
182. Which among the following is NOT a correct feature of Promissory Note?
- (a) Promissory Note must be in writing
(b) Promissory Note must contain an undertaking or promise to pay
(c) Promissory Note must be conditional
(d) Parties to Promissory Note must be certain.
(e) None of these
183. Consider the following statements in context of 'Holder in due course':
- If Mr. Rai obtain the negotiable instrument before its maturity
 - If Mr. Rai obtains negotiable instrument by way of gift
 - If Mr. Rai obtains by some illegal method
 - If Mr. Rai doesn't obtain it bonafide
- In which among the following statements, Mr. Rai is not considered to be 'Holder in due course'?
- (a) 1 & 2 (b) 2, 3 & 4
(c) 1, 3 & 4 (d) All follows
(e) None of these
184. In which of the following types of accounts, fixed amount has to deposit over a fixed interval of time?
- (a) Saving account
(b) Current account
(c) Recurring Deposit account
(d) Term Deposit
(e) None of these
185. Which among the following is / are examples of Recurring deposit?
- Home safe account
 - Sickness deposit account
 - Home construction deposit scheme
- Select the correct option from the codes given below:
- (a) Only 1 & 2 (b) Only 2 & 3
(c) Only 1 & 3 (d) 1, 2 & 3
(e) None of these
186. Which among the following is / are correct statements about Demand Deposits?
- Money in demand deposits is liquid
 - All demand deposits earn interest
 - Ownership of demand deposits can be transferred using a cheque
- Which among the above is / are correct statements?
- (a) Only 1 & 2 (b) Only 2 & 3
(c) Only 1 & 3 (d) 1, 2 & 3
(e) None of these
187. Which among the following is not a feature of Saving Accounts?
- (a) Preferred by individuals savers
(b) Usually low scale transactions
(c) Earns interest
(d) Has overdraft facility
(e) None of these
188. Which among the following is opened in Foreign Currency Only?
- (a) NRO Account (b) NRERA Account
(c) FCNR Account (d) FARN Account
(e) None of these

ANSWER KEY

1	(b)	17	(d)	33	(d)	49	(a)	65	(a)	81	(d)	97	(c)	113	(d)	129	(d)	145	(a)	161	(b)	177	(a)
2	(a)	18	(d)	34	(d)	50	(a)	66	(b)	82	(a)	98	(d)	114	(c)	130	(c)	146	(c)	162	(b)	178	(d)
3	(a)	19	(a)	35	(b)	51	(c)	67	(a)	83	(a)	99	(c)	115	(a)	131	(a)	147	(c)	163	(b)	179	(d)
4	(a)	20	(c)	36	(e)	52	(a)	68	(c)	84	(d)	100	(a)	116	(c)	132	(a)	148	(d)	164	(a)	180	(b)
5	(a)	21	(a)	37	(b)	53	(a)	69	(c)	85	(b)	101	(d)	117	(d)	133	(d)	149	(a)	165	(a)	181	(d)
6	(a)	22	(a)	38	(a)	54	(a)	70	(c)	86	(b)	102	(d)	118	(d)	134	(c)	150	(c)	166	(d)	182	(c)
7	(a)	23	(a)	39	(d)	55	(b)	71	(b)	87	(a)	103	(c)	119	(c)	135	(d)	151	(c)	167	(b)	183	(b)
8	(b)	24	(d)	40	(d)	56	(a)	72	(d)	88	(c)	104	(a)	120	(e)	136	(d)	152	(c)	168	(d)	184	(c)
9	(c)	25	(c)	41	(a)	57	(c)	73	(b)	89	(b)	105	(a)	121	(a)	137	(a)	153	(c)	169	(d)	185	(d)
10	(b)	26	(d)	42	(a)	58	(c)	74	(a)	90	(b)	106	(b)	122	(c)	138	(d)	154	(a)	170	(a)	186	(c)
11	(a)	27	(b)	43	(c)	59	(b)	75	(c)	91	(a)	107	(a)	123	(d)	139	(b)	155	(b)	171	(d)	187	(d)
12	(a)	28	(b)	44	(a)	60	(d)	76	(c)	92	(a)	108	(b)	124	(a)	140	(c)	156	(b)	172	(d)	188	(c)
13	(c)	29	(c)	45	(c)	61	(d)	77	(c)	93	(c)	109	(d)	125	(a)	141	(d)	157	(d)	173	(a)		
14	(d)	30	(b)	46	(a)	62	(a)	78	(a)	94	(b)	110	(a)	126	(e)	142	(d)	158	(d)	174	(d)		
15	(d)	31	(c)	47	(b)	63	(a)	79	(b)	95	(a)	111	(d)	127	(e)	143	(c)	159	(c)	175	(d)		
16	(a)	32	(a)	48	(d)	64	(a)	80	(a)	96	(b)	112	(b)	128	(e)	144	(b)	160	(c)	176	(a)		

EXERCISE-2

GENERAL KNOWLEDGE

1. Which of the following books has been written by Bill Gates?
 - (a) Microsoft Secrets
 - (b) The Road Ahead
 - (c) The Elephant Paradigm
 - (d) How Nations Compete
 - (e) None of these
2. Where is the headquarter of the UNO ?
 - (a) Geneva
 - (b) The Hague
 - (c) New York
 - (d) Paris
 - (e) None of these
3. All India Music Academy established in which year?
 - (a) 1919
 - (b) 1977
 - (c) 1953
 - (d) 1926
 - (e) None of these
4. Dada Saheb Phalke Award constituted in 1969 for which field?
 - (a) Film
 - (b) Literature
 - (c) Sports
 - (d) Science
 - (e) None of these
5. The 'yoga' philosophy belongs to
 - (a) Gautam
 - (b) Kannada
 - (c) Patanjali
 - (d) Jaimini
 - (e) None of these
6. Jnanpith Award is given for which field?
 - (a) Journalism
 - (b) Music
 - (c) Science
 - (d) Literature
 - (e) None of these
7. Which of the dance forms enlisted in UNESCO?
 - (a) Mudiyeetu
 - (b) Bidesia
 - (c) Maach
 - (d) Yakshagan
 - (e) None of these
8. Thillana is a format of
 - (a) Kuchipudi
 - (b) Odissi
 - (c) Baharatanatyam
 - (d) Kathak
 - (e) None of these
9. Who was the author of Das Kapital?
 - (a) J. M. Keynes.
 - (b) Karl Marx
 - (c) James Tobin
 - (d) Adam Smith
 - (e) None of these
10. The Tropic of Cancer passes through which one of the following?
 - (a) Assam
 - (b) Manipur
 - (c) Mizoram
 - (d) Nagaland
 - (e) None of these
11. Highest award given to civilian in India is
 - (a) Bharat Ratna
 - (b) Padma Vibhushan
 - (c) Sharam Award
 - (d) Padma Bhushan
 - (e) None of these
12. Sangai Festival is celebrated in which state of India?
 - (a) Assam
 - (b) Manipur
 - (c) Bihar
 - (d) Karnataka
 - (e) None of these
13. 'No Tobacco Day' is observed on
 - (a) 20th May
 - (b) 22nd May
 - (c) 25th May
 - (d) 31 st May
 - (e) None of these
14. September 8 is observed every year as
 - (a) World Health Day
 - (b) World Peace Day
 - (c) World Literacy Day
 - (d) Friendship Day
 - (e) None of these
15. Hombill Festival is celebrated in which among the following states of India?
 - (a) Manipur
 - (b) Nagaland
 - (c) Mizoram
 - (d) Meghalaya
 - (e) None of these
16. Vishwakarma Rashtriya Puraskar is given by which ministry*
 - (a) Ministry of Culture
 - (b) Ministry of Labour
 - (c) Ministry of Minority
 - (d) Ministry of Rural Development
 - (e) None of these
17. Which state gives the Nandi Award?
 - (a) Kerala
 - (b) Tamilnadu
 - (c) Karnataka
 - (d) Andhra Pradesh
 - (e) None of these
18. Which one of the following is not included in Article 19 of the constitution of India, pertaining to the Right to Freedom?
 - (a) Right to reside and settle in any part of the territory of India
 - (b) Right to form associations or unions
 - (c) Right of minorities to establish and administer educational institutions
 - (d) Right to assemble peaceably and without arms
 - (e) None of these
19. What does the 'IAEA' stand for?
 - (a) International Atomic Energy Agency
 - (b) International Automobile Energy Agency
 - (c) India Atomic Energy Agency
 - (d) India Atomic Emergency Agency
 - (e) None of these

20. Which is the first Asian country to host commonwealth games?
 (a) South Korea (b) Japan
 (c) Malaysia (d) India
 (e) None of these
21. Which was the first Indian Company to be listed on NASDAQ?
 (a) Infosys (b) Satyam
 (c) Reliance (d) TISCO
 (e) None of these
22. The Sastra Ramanujan prize is related to
 (a) Young Physicians
 (b) Young Mathematician
 (c) Poets
 (d) Scientists
 (e) None of these
23. Saraswati Samman is given to which field?
 (a) Sanskrit Literature (b) Science
 (c) Literature (d) Social Harmony
 (e) None of these
24. Which department presents report on Economic Survey of India?
 (a) Ministry of Commerce
 (b) Ministry of Finance
 (c) Planning Commission of India
 (d) Prime Minister Office
 (e) None of these
25. The global community comes together to celebrate World Environment Day on
 (a) June 5 (b) June 4
 (c) July 6 (d) October 2
 (e) None of these
26. Sports coaches receive which of the following awards?
 (a) Rajiv Gandhi Khel Ratna Award
 (b) Dronacharya Award
 (c) Arjuna Award
 (d) Bhatnagar Award
 (e) None of these
27. The Nobel prize was instituted by which country?
 (a) USA (b) UK
 (c) Russia (d) Sweden
 (e) None of these
28. World Population Day is observed on
 (a) July 6 (b) July 7
 (c) July 11 (d) July 1
 (e) None of these
29. The World Trade Organization (WTO) was earlier known as
 (a) UNICEF (b) GATT
 (c) UNCTAD (d) FAO
 (e) None of these
30. What does SAPTA stand for:
 (a) South Asian Preferential Trade Agreement
 (b) South Asian Post Trade Agreement
 (c) SAARC Preferential Trade Agreement
 (d) SAA RC Post Trade Agreement
 (e) None of these
31. Merdeka Cup is associated with
 (a) Hockey (b) Football
 (c) Basketball (d) Badminton
 (e) None of these
32. Which of the following awards is given by UNESCO to those who popularize use of science in life?
 (a) Booker Prize (b) Magsaysay Award
 (c) Kalinga Award (d) Kalidas Samman
 (e) None of these
33. Bharat Ratna, Padma Vibhushan and Padma Shree are given on the eve of
 (a) Republic Day (b) Independence Day
 (c) Gandhi Jayanti (d) Pravasi Bhartiya Divas
 (e) None of these
34. The award is conferred to journalists aims to providing financial assistance:
 (a) Appan Menon Memorial Award
 (b) Jnanpith Award
 (c) Bhatnagar Award
 (d) Kalinga Award
 (e) None of these
35. The word 'NELP' is associated with
 (a) Discovery of Oil and Natural Gas
 (b) National Highways Extension
 (c) Communications
 (d) Space Research
 (e) None of these
36. Vachaspati Samman is given in the field of
 (a) Sanskrit Literature
 (b) Medical Science
 (c) Indian Philosophy
 (d) Hindi Literature
 (e) None of these
37. NCHER stands for
 (a) National Capital for Higher Education and Research
 (b) National Committee for Higher Education and Research
 (c) Non-Capitalisation of Higher Education and Research
 (d) National Council for Higher Education Resources
 (e) None of these
38. Which of the prize is also known as the Alternative Nobel prize?
 (a) Pulitzer prize (b) Magsaysay award
 (c) Booker prize (d) Right Livelihood award
 (e) None of these

39. Which of the following organisations gives the Kalinga Prize?
 (a) UNESCO (b) CSIR
 (c) Ministry of Welfare (d) Department of Science and Technology
 (e) None of these
40. Dhanwantari award is conferred in the field of:
 (a) Medical Science (b) Sports
 (c) Indian Philosophy (d) Agriculture
 (e) None of these
41. The National bravery award is also known as :
 (a) Bharat Puraskar (b) Hind Puraskar
 (c) Bharati Puraskar (d) Rashtriya Puraskar
 (e) None of these
42. The term 'Fourth Estate' refers to
 (a) Under-Developed State (b) Parliament
 (c) Judiciary (d) Press
 (e) None of these
43. The panchatantra was written during the
 (a) Later Vedic period (b) Mughal period
 (c) Maurya period (d) Post Gupta period
 (e) None of these
44. The three core values of the Commonwealth Games movement are:
 (a) Equality, Brotherhood and Unity
 (b) Humanity, Equality and Destiny
 (c) Humanity, Equality and Brotherhood
 (d) Unity, Humanity and Equality
 (e) None of these
45. According to the Indian Constitution, what is the minimum educational qualification required for contesting the Lok Sabha elections?
 (a) Post Graduation
 (b) Graduation
 (c) Higher Secondary
 (d) No such qualification is required
 (e) None of these
46. Tansen Samman is conferred in the field of:
 (a) Music (b) Literature
 (c) Science (d) Journalism
 (e) None of these
47. Onam festival celebrated in
 (a) Maharashtra (b) Bihar
 (c) Kerala (d) Tamil Nadu
 (e) None of these
48. Which of the following is a dance drama?
 (a) Kathak (b) Kathakali
 (c) Odissi (d) Manipuri
 (e) None of these
49. Cryogenic Engines are used in which of the areas of technology?
 (a) Atomic Energy (b) Food Technolog
 (c) Oceanography (d) Space Research
 (e) None of these
50. Who is the author of the book Patrons of the Poor : caste Politics and Policy Making in India?
 (a) Narayan Lakshman (b) Greg Lindsay
 (c) Khushwant Singh (d) Salman Rushdie
 (e) None of the above
51. Dhyanchand Puraskar conferred in the field of
 (a) Music (b) Sports
 (c) Science (d) Literature
 (e) None of these
52. International Labour Day is observed on-
 (a) May 1 (b) May 3
 (c) May 9 (d) May 12
 (e) None of these
53. Kathputli, the string puppetry belongs to
 (a) Rajasthan (b) Karnataka
 (c) Madhya Pradesh (d) Utrakhand
 (e) None of these
54. 'Ashoka Chakra' is awarded for
 (a) the most conspicuous bravery or self sacrifice on land, air or sea but not in the presence of the enemy
 (b) acts of gallantry in the presence of enemy
 (c) gallantry by children
 (d) outstanding contribution to literature
 (e) None of these
55. Golden Globe award is given by
 (a) UK (b) France
 (c) USA (d) China
 (e) None of these
56. World Day for Water is observed on which of the following days ?
 (a) 22nd May (b) 22nd April
 (c) 22nd March (d) 20th March
 (e) None of these
57. Which of the following awards is given by the Govt. of India ?
 (a) Kalinga Prize (b) Oscar Awards
 (c) Man Booker Prize (d) Pulitzer Prize
 (e) Jawaharlal Nehru Award for International Understanding
58. Which of the following award is given by World Economic Forum?
 (a) Crystal Award (b) Kalinga prize
 (c) Pulitzer Award (d) Abel prize
 (e) None of these

59. The 'Cannes Award' is given for excellence in which field?
 (a) Films (b) Journalism
 (c) Literature (d) Environment
 (e) None of these
60. Pulitzer prize is awarded for outstanding work in the field of
 (a) Science and Technology
 (b) Environmental Studies
 (c) Literature and Journalism
 (d) International Understanding
 (e) None of these
61. Larry page and Sergey Brin are well known as
 (a) Creators of Bluetooth device
 (b) Founders of Google
 (c) Stem cell researchers
 (d) Scientists
 (e) None of these
62. Booker prize is given to the field of:
 (a) Fiction (b) Poetry
 (c) Drama (d) Essay
 (e) None of these
63. FiFi awards are given in _____ industry:
 (a) Film (b) Home Appliances
 (c) Perfumes (d) Automobiles
 (e) None of these
64. The famous book 'The Daughter of the East' is written by
 (a) Taslima Nasreen
 (b) Benazir Bhutto
 (c) Aunsan Suu Kyi
 (d) Bandaranaike Sirimavo
 (e) None of these
65. Who is the author of 'Ashtadhyayi'?
 (a) Sumitranandan (b) Raj Anand
 (c) Panini (d) Gitta Piramal
 (e) None of these
66. The book 'A Bend in the River' is written by
 (a) VS Naipaul (b) Chetan Bhagat
 (c) Vikram Seth (d) Arundhati Roy
 (e) None of these
67. Who owns the cosmetic brand, Lakme?
 (a) Procter & Gamble (b) CavinKlare
 (c) Hindustan Unilever Ltd. (d) Wipro
 (e) None of these
68. Which company was the first to launch mobile phone operations in India?
 (a) Modi Telstra (b) Reliance India
 (c) Bharati (d) Tata Indicom
 (e) None of these
69. Hyundai belongs to which country?
 (a) South Korea (b) China
 (c) Italy (d) Japan
 (e) None of these
70. The book 'The White Tiger' is authored by
 (a) Arundhati Roy (b) Aravind Adiga
 (c) Kiran Desai (d) VS Naipaul
 (e) None of these
71. 'A passage to England' was written by
 (a) Nirad C Chaudhuri
 (b) Rk.Narayan
 (c) Khushwant Singh
 (d) John Western
 (e) None of these
72. Who is /are the founder/s of Microsoft?
 (a) Bill Gates
 (b) Paul Allen
 (c) Bill Gates and Paul Allen
 (d) Bill Gates and Ray Ozzie
 (e) None of these
73. The book 'The Audacity of Hope' is written by
 (a) Nayantara Sehgal (b) Aravind Adiga
 (c) Vikram Seth (d) Barrack Obama
 (e) None of these
74. The book 'Long walk to Freedom' is written by
 (a) Sonia Gandhi (b) Nelson Mandela
 (c) Benazir Bhutto (d) Nawaz Sharif
 (e) None of these
75. The National Sports Day is observed on
 (a) 28th Aug. (b) 29th Aug.
 (c) 30th Aug. (d) 31st Aug.
 (e) None of these
76. Nifty is the main share index of which stock exchange?
 (a) Calcutta Stock Exchange (CSE)
 (b) Bombay Stock Exchange (BSE)
 (c) National Stock Exchange (NSE)
 (d) NASDAQ
 (e) None of these
77. Which schedule of Indian constitution contains languages?
 (a) 6th (b) 7th
 (c) 8th (d) 9th
 (e) None of these
78. The working languages of the UNESCO is/are
 (a) French only
 (b) English only
 (c) English and French
 (d) English, French and Russian
 (e) None of these
79. 'World Disability Day' is observed annually on
 (a) 10th Dec. (b) 3rd Dec.
 (c) 29th Nov. (d) 15th Dec.
 (e) None of these

80. Champion trophy is associated with
 (a) Football (b) Hockey
 (c) Cricket (d) Chess
 (e) None of these
81. What is an ISO series?
 (a) Documentation of production processes
 (b) Engineering process flowchart
 (c) Quality management and quality assurance standards
 (d) Documentation of marketing processes
 (e) None of these
82. International Literacy Day was proclaimed by
 (a) WHO (b) Virginia Literacy
 (c) UNESCO (d) UNIDO
 (e) None of these
83. Who amongst the following is the author of the book 'Half a Life'?
 (a) Mark Tully (b) Deepak Chopra
 (c) V.S.Naipaul (d) Ved Mehta
 (e) None of these
84. Expand the term CCEA as used in administrative circles.
 (a) Cabinet Committee on External Affairs
 (b) Cabinet Committee on Economic Affairs
 (c) Cabinet Council on External Affairs
 (d) Cabinet Council on Economic Affairs
 (e) None of these
85. Who is the first indian woman to win Olympic medal?
 (a) Kunjarani Devi
 (b) Mary Kom
 (c) Karnam Malleshwari
 (d) Tania Sachdev
 (e) None of these
86. 'Grand Slam' is associated with the game of
 (a) Lawn Tennis (b) Hockey
 (c) Football (d) Swimming
 (e) None of these
87. Rangaswami Cup is associated with
 (a) Wrestling (b) Football
 (c) Hockey (d) Golf
 (e) None of these
88. Expand the term GSLV.
 (a) Geosynchronous Satellite Launch Vehicle
 (b) Global Satellite Launch Vehicle
 (c) Geosynchronous Station Launch Vehicle
 (d) Global Station Launch Vehicle
 (e) None of these
89. Which of the following terms is used in Cricket?
 (a) Centre forward (b) Goal
 (c) Love (d) LBW
 (e) None of these
90. With which one of the following activities are Golden Globe Awards associated?
 (a) Journalism (b) Social work
 (c) Peace initiatives (d) Films & Television
 (e) None of these
91. Name of first indigenously developed Super Computer of India is?
 (a) Param (b) Aryabhata
 (c) Apsara (d) Tejas
 (e) None of these
92. In which one of the following States is Sabari mala temple located?
 (a) TamilNadu (b) A.P.
 (c) Kerala (d) Karnataka
 (e) None of these
93. Which of the following services is NOT provided by the post offices in India?
 (a) Savings Bank Scheme
 (b) Retailing of Mutual Funds
 (c) Sale of stamps
 (d) Issuance of Demand Drafts
 (e) None of these
94. 'Goodbye Shahzadi' is a book written by
 (a) Shyam Bhatia (b) Ashok Mehta
 (c) Janardhan Thakur (d) Arun Gandhi
 (e) None of these
95. Which of the following awards is given only to individuals and organisations of Asian countries for excellence in their respective fields?
 (a) Booker Prize
 (b) Nobel Prize
 (c) Templeton Prize
 (d) Ramon MagsaysayAward
 (e) Oscar Awards
96. Which of the following is now a fundamental right of every child in India?
 (a) To get a unique identity card as a proof of citizenship
 (b) To get free medical aid in any hospital in India, private or govt.
 (c) To get enough food to survive even without any parental support
 (d) To get elementary education
 (e) None of these
97. Which of the following is correctly matched?
 (a) Cricket: Bogey
 (b) Boxing: Bully
 (c) Chess: Checkmate
 (d) Tennis: Daisy-cutter
 (e) None of these

98. Duleep Trophy is associated with the game of
 (a) Hockey (b) Badminton
 (c) Football (d) Cricket
 (e) None of these
99. The Right of Children to Free and Compulsory Education Bill was passed in the Lok Sabha. It falls under
 (a) The 86th Constitutional Amendment
 (b) The 94th Constitutional Amendment
 (c) The 90th Constitutional Amendment
 (d) The 89th Constitutional Amendment
 (e) None of these
100. Who amongst the following is the founder of Facebook?
 (a) Steve Jobs (b) Steve James
 (c) SabeerBhatia (d) Mark Zuckerberg
 (e) None of these
101. Book 'Devil May Care' is written by
 (a) Salman Rushdie (b) Ian Fleming
 (c) JK Rowling (d) Sebastian Faulks
 (e) None of these
102. Book 'Indian Army Vision 2020' is written by
 (a) Deepak Kapoor (b) Gurmeet Kanwal Malik
 (c) VP Malik (d) Y.V. Reddy
 (e) None of these
103. Of the following, who has authored the Book "I Too Had a Dream"?
 (a) Anita Nair (b) Kurien Verghese
 (c) Okram Ibobi Singh (d) S.S. Sidhu
 (e) None of these
104. 'Out of My comfort Zone' is the autobiography of a Cricketer in which he has written the adverse effects of drinking culture of his term. Name the Cricketer.
 (a) Imran Khan (b) Sanath Jaisurya
 (c) Allen Boarder (d) Steve Waugh
 (e) None of these
105. Who has written the book, 'Gifted'?
 (a) Anita Desai (b) Shobha De
 (c) Nikita Lalvani (d) Indira Sinha
 (e) None of these
106. "Barack Obama, the New Face of American Politics" has been written by
 (a) Erez Mandela
 (b) Henry Keith
 (c) Bill Clinton
 (d) Martin Dupuis & Keith Boeckleman
 (e) None of these
107. Who among the following is the author of the book 'The Namesake'?
 (a) Arundhati Roy (b) Kiran Desai
 (c) Amitava Ghosh (d) Jhumpa Lahiri
 (e) None of these
108. Which game is associated with Queensberry rules?
 (a) Weight lifting (b) Boxing
 (c) Golf (d) Polo
 (e) None of these
109. Who is the author of the novel Half Girlfriend?
 (a) Kavin Maurer (b) Martin Dugard
 (c) Ravinder Singh (d) Chetan Bhagat
 (e) None of these
110. Which one of the following games is associated with the Sultan Azlan Shah Cup?
 (a) Hockey (b) Football
 (c) Cricket (d) Tennis
 (e) None of these
111. Who amongst the following is the author of the book "Many Lives Many Masters" ?
 (a) Robin Cook
 (b) Dr. Brian Weiss
 (c) L. K. Advani
 (d) Admiral Vishnu Bhagwat
 (e) None of these
112. Who is the author of "A River Sutra"?
 (a) VS Naipaul (b) Nirad C Choudhari
 (c) Gita Mehta (d) Vikram Seth
 (e) None of these
113. 'The Hungry Tide' is written by
 (a) Amitav Ghosh (b) Arundhati Roy
 (c) Shashi Tharoor (d) Ved Mehta
 (e) None of these
114. Who is the author of the book 'Conquest of Self'?
 (a) Aurobindo Ghosh
 (b) Rabindra Nath Tagore
 (c) Mahatma Gandhi
 (d) S. Radhakrishnan
 (e) None of these
115. 'Golden Threshold' and 'Broken wings' are written by:
 (a) Sarojini Naidu
 (b) Indira Priyadarshani
 (c) Kalpana Datta
 (d) Lakshmi Sehgal
 (e) None of these
116. 'Playing to Win' is written by
 (a) Salman Rushdie (b) SainaNehwal
 (c) NadeemAslam (d) Harsh Mander
 (e) None of these
117. 'The Freethinker's prayer book' was written by
 (a) Khushwant Singh (b) Tavleen Singh
 (c) Salman Rushdie (d) NadeemAslam
 (e) None of these

118. 'The Last War' was written by
 (a) Sandipan Deb
 (b) Madhumita Mukherjee
 (c) Vinod Mehta
 (d) Harsh Mander
 (e) None of these
119. The book 'Jhansi Ki Rani' was written by
 (a) Devkinandan
 (b) Sharat Chand Chaudhary
 (c) Vrindavanlal Verma
 (d) Mahadevi Verma
 (e) None of these
120. The National Youth Day is celebrated on
 (a) 12th Jan. (b) 13th Jan.
 (c) 14th Jan. (d) 15th Jan.
 (e) None of these
121. The Anti-terrorism Day is observed on
 (a) 20th May (b) 21st May
 (c) 22nd May (d) 23rd May
 (e) None of these
122. Index 'Residex' is associated with
 (a) share prices (b) mutual fund prices
 (c) price inflation index (d) land prices
 (e) None of these
123. Vikram Sarabhai Space Centre (VSSC) is at
 (a) Thiruvananthapuram (b) Mumbai
 (c) Hyderabad (d) Bengaluru
 (e) None of these
124. The book 'The White Tiger' is authored
 (a) Arundhati Roy (b) Aravind Adiga
 (c) Kiran Desai (d) VS Naipaul
 (e) None of these
125. 'World Cancer Day' is observed on
 (a) 19th February (b) 4th February
 (c) 12th February (d) 17th January
 (e) None of these
126. World Environment Day run by the UNEP on
 (a) 11th Dec. (b) 20th Dec.
 (c) 15th Sept. (d) 5th June
 (e) None of these
127. WTO came into existence in the year
 (a) 1977 (b) 1985
 (c) 1995 (d) 1950
 (e) None of these
128. The first summit of SAARC was held at
 (a) Kathmandu (b) Colombo
 (c) New Delhi (d) Dhaka
 (e) None of these
129. 'India Remembered' is written by
 (a) JK Rowling
 (b) Robert Dallek
 (c) Pamela Mountbatten
 (d) Stephen Hawking
 (e) None of these

ANSWER KEY

1	(b)	16	(b)	31	(b)	46	(a)	61	(b)	76	(c)	91	(a)	106	(d)	121	(b)
2	(c)	17	(d)	32	(c)	47	(c)	62	(a)	77	(c)	92	(c)	107	(d)	122	(d)
3	(a)	18	(c)	33	(a)	48	(b)	63	(c)	78	(d)	93	(d)	108	(b)	123	(a)
4	(a)	19	(a)	34	(a)	49	(d)	64	(b)	79	(b)	94	(a)	109	(d)	124	(b)
5	(c)	20	(c)	35	(a)	50	(a)	65	(c)	80	(b)	95	(d)	110	(a)	125	(b)
6	(d)	21	(a)	36	(a)	51	(b)	66	(a)	81	(c)	96	(d)	111	(b)	126	(d)
7	(a)	22	(b)	37	(d)	52	(a)	67	(c)	82	(c)	97	(c)	112	(c)	127	(c)
8	(c)	23	(c)	38	(d)	53	(a)	68	(a)	83	(c)	98	(d)	113	(a)	128	(d)
9	(b)	24	(b)	39	(a)	54	(a)	69	(a)	84	(b)	99	(a)	114	(c)	129	(c)
10	(c)	25	(a)	40	(a)	55	(c)	70	(b)	85	(c)	100	(d)	115	(a)		
11	(a)	26	(b)	41	(a)	56	(c)	71	(d)	86	(a)	101	(d)	116	(b)		
12	(b)	27	(d)	42	(d)	57	(e)	72	(c)	87	(c)	102	(b)	117	(a)		
13	(d)	28	(c)	43	(e)	58	(a)	73	(d)	88	(b)	103	(d)	118	(a)		
14	(c)	29	(b)	44	(b)	59	(a)	74	(b)	89	(d)	104	(d)	119	(c)		
15	(b)	30	(a)	45	(d)	60	(b)	75	(b)	90	(d)	105	(c)	120	(a)		

EXERCISE-3

CURRENT BANKING

- Suvidha Prepaid Card service has been launched by which bank?
(a) Vijaya Bank (b) Dena Bank
(c) Canara Bank (d) UCO Bank
(e) None of these
- How much amount has been announced by the Reserve Bank of India to provide to Nepal Rastra Bank in Rs 100 denomination note ?
(a) Rs.75 million (b) Rs.1 billion
(c) Rs. 1.5 billion (d) Rs. 90 million
(e) None of these
- Which bank has tied up with Life Insurance Corporation of India (LIC) to boost venture capital investment in MSME Sector?
(a) Reserve Bank of India (RBI)
(b) Securities and Exchange Board of India (SEBI)
(c) National Bank for Agriculture and Rural Development (NABARD)
(d) Small Industries Development Bank of India (SIDBI)
(e) None of these
- Which state has recently launched its own e-wallet Tokapois.in to enable the residents perform digital transaction?
(a) Arunachal Pradesh (b) West Bengal
(c) Sikkim(d) Assam
(e) None of these
- Which bank has recently introduced a humanoid robot IRA for easy service to customers?
(a) Citi Bank (b) HDFC Bank
(c) ICICI Bank (d) Andhra Bank
(e) None of these
- The India Post Payment Bank has started its pilot services in which of the given cities from January 30, 2017?
(a) Raipur and Ranchi
(b) Mysore and Gandhinagar
(c) Pune and Indore
(d) Chennai and Kochi
- What is the revised GDP growth estimate for India by the World Bank for 2016-17 fiscal ending March 31, 2017?
(a) 7.4 Percent (b) 6.8 Percent
(c) 7 Percent (d) 7.6 Percent
(e) None of these
- Government Policy Think Tank NITI Aayog has estimated the GDP growth rate of India to _____ for 2016-17?
(a) 6.8 percent (b) 8 percent
(c) 7.6 percent (d) 7 percent
(e) None of these
- Which Indian bank has signed a pact with the State General Reserve Fund of Oman (SGRF) to fund \$50 million in Oman's private equity fund, Oman India Joint Investment Fund (OIJIF)?
(a) State Bank of India
(b) Asian Development bank
(c) ICICI Bank
(d) Reserve Bank of India
(e) None of these
- The International Monetary Fund (IMF) has revised the GDP growth estimate of India for the current fiscal year to _____ percent from the previous 7.6 percent on January 16, 2017.
(a) 6 percent (b) 6.6 percent
(c) 7.1 percent (d) 6.3 percent
(e) None of these
- Which state has launched the Entrepreneurship Development Scheme (EDS) on January 19, 2017 under the New Economic Development Policy (NEDP)?
(a) Uttar Pradesh (b) Mizoram
(c) Maharashtra (d) Haryana
(e) None of these
- Which bank has signed an MoU with India Post Payments Bank (IPPB) on January 17, 2017 to provide technology platform for pilot launch of IPPB?
(a) ICICI Bank (b) Punjab National Bank
(c) State Bank of India (d) HDFC Bank
(e) None of these
- Which bank has launched a contactless credit card facility Wave N Pay on January 21, 2017?
(a) ICICI Bank (b) Bank of Baroda
(c) Punjab National Bank (d) State Bank of India
(e) None of these
- The Reserve bank of India has announced the restructuring of _____ loan will not be treated as Non Performing Asset.
(a) Auto Loan (b) Home Loan
(c) Education Loan (d) Start-Up Loan
(e) None of these
- Under the Varishtha Pension Bima Yojana 2017, approved by the government on January 24, 2017, a guaranteed rate of return of _____ per annum would be provided for a period of ten years.
(a) 6 Percent (b) 5 Percent
(c) 7 Percent (d) 8 Percent
(e) None of these
- Which bank has launched a new digital transaction service named SIMsePAY, that allows customers of the bank to do money transfers, pay bills and other mobile banking services, without the need for smart phones or internet ?
(a) RBL Banl (b) ICICI Bank
(c) Yes Bank (d) HDFC Bank
(e) None of these

17. According to the Central Statistics Office (CSO) the Gross Domestic Product (GDP) of Indian economy has grown at the rate of _____ in the second quarter of FY17.
 (a) 7.1% (b) 7.3%
 (c) 7.6% (d) 7.5%
 (e) None of these
18. The Reserve Bank of India (RBI) has decided to extend the time for installment of Aadhaar-enabled PoS devices till which date?
 (a) March 29, 2017 (b) February 1, 2017
 (c) January 30, 2017 (d) June 30, 2017
 (e) None of these
19. The Women and Child Development Ministry has tied up with _____ and _____ to offer wider payment option to buyers to buy products from "Mahila E-haat".
 (a) Punjab National Bank and State Bank of India
 (b) India Post and State Bank of India
 (c) ICICI Bank and Punjab National bank
 (d) India Post and Yes Bank
 (e) None of these
20. Which bank has won the The Best MSME Bank Award 2016 by ASSOCHAM at the fourth SMEs Excellence Award function held in New Delhi ?
 (a) Corporation Bank (b) UCO Bank
 (c) Syndicate Bank (d) Vijaya Bank
 (e) None of these
21. Who has been appointed as Non-Executive Chairperson of Mumbai based IDFC Bank with effect from December 9, 2016 up to July 26, 2018?
 (a) Rajiv Lall (b) Anil Bajjal
 (c) Vinod Rai (d) Veena Mankar
 (e) None of these
22. The Reserve Bank of India is issuing a new batch of ₹ 500 notes in Mahatma Gandhi (New) series with which inset letter?
 (a) R (b) S
 (c) P (d) L
 (e) None of these
23. Who has been appointed as the new Chairman of Life Insurance Corporation (LIC), on December 14, 2016?
 (a) S K Roy (b) Sunita Sharma
 (c) D K Mehrotra (d) V K Sharma
 (e) None of these
24. The 'Aadhaar Payment App' of government of India has been developed by which bank along with UIDAI and NPCI?
 (a) HDFC Bank (b) IDFC Bank
 (c) Yes Bank (d) Axis Bank
 (e) None of these
25. ICICI Bank has launched a payments collection app for merchants and retailers which will allow customers to pay any mode of payment. Name the App.
 (a) DigiPay (b) EazyPay
 (c) PayZapp (d) CitrusPay
 (e) None of these
26. The Government of India has achieved its target of distributing _____ crore LPG connections to the BPL households in less than 8 months for the year 2016-2017 under Pradhan Mantri Ujjwala Yojana (PMUY).
 (a) 1.5 Crore (b) 2 Crore
 (c) 2.5 Crore (d) 5 Crore
 (e) None of these
27. Which bank on 14 January 2016 became the first public sector bank to launch wealth management services?
 (a) SBI (b) Allahabad Bank
 (c) UCO Bank (d) Canara Bank
 (e) None of these
28. Which private sector bank during January 2016 claimed to have become the first private sector bank in India to cross ₹ 1 lakh crore mark in mortgage disbursements?
 (a) HDFC Bank (b) Indus-Ind Bank
 (c) ICICI Bank (d) Axis Bank
 (e) None of these
29. Asian Infrastructure Investment Bank (AIIB), the new international finance institution that aims to support the building of infrastructure in the Asia-Pacific region, was formally launched during January 2016. Which Indian was elected to the 12-member board of this bank?
 (a) Ramesh Damani (b) Dinesh Sharma
 (c) Arun Jaitley (d) Prakash Hegde
 (e) None of these
30. What is the proposed tax-holiday to be provided to "Start-ups" coming into existence after 1 April 2016, as announced by Prime Minister Narendra Modi at the inaugural session of the Start-Up India programme during January 2016?
 (a) 10 years (b) 5 years
 (c) 3 years (d) 2 years
 (e) None of these
31. What is the name given to SBI's first specialized branch for catering to the financial needs of start-ups that was opened on 14 January 2016 in Bengaluru?
 (a) 'Start-up SBI' (b) 'SBI Start-up'
 (c) 'SBI Staart' (d) 'SBI InCube'
 (e) None of these
32. Life Insurance Corporation of India (LIC) launched which closed-ended single-premium plan for sale from 11 January 2016?
 (a) Jeevan Prakash (b) Jeevan Samridhi
 (c) Jeevan Shikhar (d) Jeevan Alok
 (e) None of these
33. Which private sector bank has recently partnered FINO PayTech to foray into the payments bank space, as announced on 8 January 2016?
 (a) ICICI Bank (b) HDFC Bank
 (c) Yes Bank (d) Kotak Mahindra Bank
 (e) None of these
34. What was the main reason for the 1-day bank strike observed by bank employees on 8 January 2016?
 (a) To protest against the proposed committee on monetary policy to undermine the role of the RBI
 (b) To protest against alleged upper-hand given to private banks in managing their NPAs
 (c) To protest against violation of employees service agreements by the five associate banks of the SBI
 (d) To demand better working conditions and salary structure
 (e) None of these

35. Which associate bank of SBI was imposed a fine of ₹ 1 crore by the RBI during January 2016 for violation of some of its instructions?
 (a) State Bank of Hyderabad
 (b) State Bank of Bikaner and Jaipur
 (c) State Bank of Patiala
 (d) State Bank of Travancore
 (e) None of these
36. Which PSU bank agreed to buy four premium Mumbai flats belonging to Air India in an all-cash deal of Rs. 90 crore under airline's asset monetization plan?
 (a) Bank of Baroda (b) SBI
 (c) Canara Bank (d) PNB
 (e) None of these
37. Which of the following bank partners with crownit for digital meal vouchers?
 (a) HDFC (b) ICICI
 (c) SBI (d) Axis
 (e) Yes
38. Which is the first bank in India to integrate the Masterpass QR Mobile Payment solution?
 (a) HDFC (b) DCB
 (c) RBL (d) Axis
 (e) Yes
39. Recently, Axis Bank has launched 'Buzz Credit Card' in partnership with?
 (a) Amazon (b) Snap Deal
 (c) Flipkart (d) Jabang
 (e) None of these
40. Which of the following partners with UAE India for money transfer business?
 (a) Yatra (b) Goibibo
 (c) Expedia (d) Cox & Kings
 (e) SOTC
41. Which of the following is launched by ICICI Bank UK PLC in Sweden, Norway and Denmark?
 (a) Money2India Europe
 (b) Money4India Europe
 (c) MoneytwoIndia Europe
 (d) MoneyforIndia Europe
 (e) None of these
42. Under 'ICICI Bank Home Overdraft' scheme, a salaried customer can seek loans upto?
 (a) 5 crore (b) 50 lakh
 (c) 30 lakh (d) 1 crore
 (e) 2 crore
43. Which has been conferred "Special Award for Excellence in MSME lending" for its performance in lending to the MSME sector during the year 2013-14 and 2014-15?
 (a) State Bank of Travancore
 (b) State Bank of Patiala
 (c) Karnataka Bank
 (d) Canara Bank
 (e) Vijaya Bank
44. ICICI Bank has partnered with which of the following to execute block chain based transactions?
 (a) Mashreq Bank
 (b) Arab Bank
 (c) Commercial Bank of Dubai
 (d) Emirates NBD
 (e) None of these
45. RBL Bank picked how much percentage stake in Utkarsh Micro Finance?
 (a) 26% (b) 13%
 (c) 15% (d) 10%
 (e) 11%
46. ICICI Bank acquired how much percentage stake in ABG Shipyard?
 (a) 26% (b) 13%
 (c) 15% (d) 10%
 (e) 11%
47. Which bank became the first public sector bank to launch wealth management services?
 (a) SBI (b) Allahabad Bank
 (c) UCO Bank (d) Canara Bank
 (e) None of these
48. India has recently signed loan agreement with which International financial institution for Karnataka Urban Water Supply Modernization project?
 (a) Asian Development Bank (ADB)
 (b) World Bank (WB)
 (c) New Development Bank (NDB)
 (d) Asian Infrastructure Investment Bank (AIIB)
 (e) None of these
49. The Islamic Development Bank (IDB) will open its first branch in which city of India?
 (a) Ahmedabad (b) Lucknow
 (c) Ajmer (d) Raipur
 (e) None of these
50. What is the name given to SBI's first specialized branch for catering to the financial needs of start-ups that was opened in Bengaluru?
 (a) 'Start-up SBI' (b) 'SBI Start-up'
 (c) 'SBI Staart' (d) 'SBI InCube'
 (e) None of these
51. What is the India's rank in access to electricity, as per SocialCops' analysis of World Bank data.
 (a) 189th (b) 166th
 (c) 137th (d) 98th
 (e) None of these
52. Which private sector bank has recently partnered FINO PayTech to foray into the payments bank space, as announced ?
 (a) ICICI Bank (b) HDFC Bank
 (c) Yes Bank (d) Kotak Mahindra Bank
 (e) None of these
53. Which financial institution of India has become the first to sign MoU with the BRICS promoted 'New Development Bank (NDB)'?
 (a) Small Industries Development Bank of India (SIDBI)
 (b) State Bank of India (SBI)
 (c) ICICI Bank
 (d) Exim Bank
 (e) None of these

54. Which associate bank of SBI was imposed a fine of ₹ 1 crore by the RBI for violation of some of its instructions?
- (a) State Bank of Hyderabad
(b) State Bank of Bikaner and Jaipur
(c) State Bank of Patiala
(d) State Bank of Travancore
(e) None of these
55. Which PSU bank agreed to buy four premium Mumbai flats belonging to Air India in an all-cash deal of ₹90 crore under airline's asset monetization plan?
- (a) Bank of Baroda (b) SBI
(c) Canara Bank (d) PNB
(e) None of these
56. The RBI committee on pushing Financial Inclusion submitted its report. The committee recommended a slew of measures, including a special deposit scheme for the girl child, government-to-person social cash transfer, and opening interest-free windows (Islamic banking) by banks. Who headed this committee?
- (a) Deepak Ganguly (b) Deepak Mohanty
(c) Deepak Pathak (d) Deepak Singhal
(e) None of these
57. Which entity became the first in the country to tie up with e-Mudhra, the government licensed certifying authority to introduce 'eSign'?
- (a) IDBI Bank (b) HDFC Bank
(c) ICICI Bank (d) Axis Bank
(e) None of these
58. Indian Railways tied up with which private sector bank to sell rail tickets through its applications?
- (a) ICICI Bank (b) Axis Bank
(c) HDFC Bank (d) SBI Bank
(e) None of these
59. Which IT entity launched its mobile wallet called 'MoboMoney'?
- (a) TCS (b) HCL
(c) Infosys (d) Tech Mahindra Ltd
(e) None of these
60. What was India's rank in World Bank's Ease of Doing Business global list 2016 of 189 countries that was released December last year?
- (a) 128th (b) 129th
(c) 130th (d) 131st
(e) None of these
61. The Insolvency and Bankruptcy Code 2016 was introduced in the Rajya Sabha by Union Government for insolvency resolution in a time-bound manner. What is the main objective of this Code?
- (a) It fixes a time limit of 180 days (extendable by a further 90 days) for completion of the corporate insolvency-resolution process
(b) It fixes a time limit of 90 days (extendable by a further 90 days) for completion of the corporate insolvency-resolution process
(c) It fixes a time limit of 150 days (extendable by a further 90 days) for completion of the corporate insolvency-resolution process
(d) It fixes a time limit of 200 days (extendable by a further 90 days) for completion of the corporate insolvency-resolution process
(e) None of these
62. The 10th Ministerial Conference of the World Trade Organization (WTO) concluded with some landmark agreements on a series of trade initiatives. This WTO Conference was held at -
- (a) Cancún, Mexico (b) Geneva, Switzerland
(c) Bali, Indonesia (d) Nairobi (Kenya)
(e) None of these
63. UBIN" drive has been started for start-ups to begin their new businesses without any delays. What does UBIN stands for?
- (a) Unidentified Business Identification Number
(b) Unique Business Identification Number
(c) Unified Business Identification Number
(d) Unicode Business Identification Number
(e) None of these
64. Insolvency and Bankruptcy Code Bill, 2016 passed by _____.
- (a) Manoj Sinha
(b) Mahesh Sharma
(c) Jayant Sinha
(d) Shri Upendra Kushwaha
(e) None of these
65. Which bank ties up with US based Payments Company for faster international remittances
- (a) Tamilnadu Mercantile Bank
(b) South Indian Bank
(c) City Union Bank
(d) Federal Bank
(e) None of these
66. Which Bank signs MoU with BRICS Grouping-promoted New Development Bank.
- (a) ICICI (b) HDFC
(c) IndusInd Bank (d) Yes Bank
(e) None of these
67. Which bank ties up with US based Payments Company for faster international remittances?
- (a) Tamilnad Mercantile Bank
(b) South Indian Bank
(c) City Union Bank
(d) Federal Bank
(e) None of these
68. Which public sector bank received its Board's approval to raise funds by diluting government stake to 52% from the current 65%?
- (a) SBI Bank (b) IDBI Bank
(c) Corporation Bank (d) Dena Bank
(e) None of these

69. Insurance major Sun Life will increase its stake in Birla Sun Life Insurance (BSLI) to 49% from 26% as announced by Aditya Birla Nuvo Ltd (ABNL). Sun Life is a leading insurance service provider of which country?
- (a) Canada (b) Germany
(c) Italy (d) Australia
(e) None of these
70. Who Launched Portal for Contract Labour Payment Management System?
- (a) JP Nadda (b) Kalraj Mishra
(c) Sushma Swaraj (d) Shri Piyush Goyal
(e) None of these
71. When Yuan will be officially added to the Special Drawing Rights (SDR) basket alongside the dollar, euro, pound sterling and yen to get reserve currency status?
- (a) August 2016 (b) September 2016
(c) October 2016 (d) November 2016
(e) None of these
72. Union IT & Communications Minister Ravi Shankar Prasad informed that India Posts payments bank will start functioning from which date.
- (a) March 2017 (b) April 2017
(c) January 2017 (d) October 2016
(e) None of these
73. Union Govt. extended the usage criterion of the RuPay debit cards under the Pradhan Mantri Jan Dhan Yojana (PMJDY) in order to avail of the in-built insurance cover to 90 days. What was the usage criterion till now?
- (a) 30 days (b) 45 days
(c) 50 days (d) 60 days
(e) None of these
74. Which Indian private sector entity bought a 40% stake in OakNorth Bank, a British lender to small businesses and entrepreneurs, as disclosed ?
- (a) ICICI Lombard (b) Max Bupa
(c) Religare (d) India bulls Group
(e) None of these
75. Who is the current CEO Standard Chartered of its India operations?
- (a) Zarin Daruwala (b) Sandeep Das
(c) M.K. Sharma (d) Zarin Aman
(e) None of these
76. Union Govt. is poised to issue long-term government securities (G-secs), which will be the longest tenure securities to be brought out by the government. What will be tenure of these G-secs, as announced by the Reserve Bank of India (RBI)?
- (a) 35 years (b) 38 years
(c) 40 years (d) 45 years
(e) None of these
77. Union Govt. imposed how much Swachh Bharat Cess on all services?
- (a) 0.2% (b) 0.5%
(c) 0.8% (d) 1.0%
(e) None of these
78. What will be the total corpus of the new Financial Inclusion Fund (FIF) that was announced by the Reserve Bank of India (RBI)?
- (a) ₹ 2,000 crore (b) ₹ 2,100 crore
(c) ₹ 3,000 crore (d) ₹ 3,100 crore
(e) None of these
79. Which private sector bank claimed that it has become the first bank to set up its IFSC banking operations at the highly-ambitious Gujarat International Finance Tec City (GIFT City)?
- (a) HDFC Bank (b) Yes Bank
(c) Axis Bank (d) ABN-Amro Bank
(e) None of these
80. Reliance Capital Asset Management (RCAM) takeover of which global financial giant's mutual fund business in India with which it becomes the exclusive fund manager for the government's ambitious Central Public Sector Enterprises (CPSE) Exchange Traded Fund?
- (a) Goldman Sachs (b) Subrin Map.
(c) Motilal Oswal (d) Kotak Mutual Fund
(e) None of these
81. Indian Railways received ₹ 2,000 crore from Life Insurance Corporation (LIC) as part of long-term funding tied-up with the state-run insurer to restart the investment cycle. LIC is altogether providing how much amount of long-term fund to Railways for capacity augmentation?
- (a) ₹ 1.0 lakh crore (b) ₹ 1.25 lakh crore
(c) ₹ 1.5 lakh crore (d) ₹ 2.0 lakh crore
(e) None of these
82. Which company became the first corporate to sign the revised listing agreement with the BSE as mandated under SEBI's newly introduced Listing Regulation?
- (a) Reliance Industries Limited (RIL)
(b) Kotak Mahindra
(c) UTI
(d) Aditya Birla Group
(e) None of these
83. The Reserve Bank of India (RBI) initiated corrective action at which public sector bank on the grounds that its management is unable to revive it?
- (a) Allahabad Bank
(b) Indian Overseas Bank (IOB)
(c) Corporation Bank
(d) Andhra Bank
(e) None of these
84. Sleuths from the Central Bureau of Investigation (CBI), Enforcement Directorate (ED) and Serious Fraud Investigation Office (SFIO) raided a Delhi branch of which public-sector bank to investigate a case associated with illegal foreign transfers?
- (a) Bank of Baroda (b) Allahabad Bank
(c) Corporation Bank (d) Andhra Bank
(e) None of these
85. Which private bank recently received the approval of the Reserve Bank of India (RBI) to set up a mutual fund, asset management company (AMC) and a trustee company?
- (a) City Union Bank (b) Yes Bank
(c) Federal Bank (d) IndusInd Bank
(e) None of these

86. Which bank was listed as the worst performer among the public sector banks (PSU banks) for registering the highest increase in gross non-performing assets (NPAs) in percentage terms against total loans for last fiscal year, as disclosed in recently released data by the RBI?
- Oriental Bank of Commerce
 - Indian Bank
 - Indian Overseas Bank
 - UCO Bank
 - None of these
87. Government signed the Loan and Project Agreements with World Bank (IBRD) for assistance of US\$ 100 million for which state Urban Water Supply Modernization project?
- Kerala
 - Karnataka
 - Amilnadu
 - Andhra Pradesh
 - None of these
88. China launched the much anticipated international payment system that seeks to provide global dimensions to its currency Yuan. What is the name of this payment system?
- China International System
 - Cross Border Inter-Bank Payments Systems
 - China Interbank Payment Systems
 - Both (b) and (c)
 - None of these
89. Which private bank claimed that it has become the first bank globally to launch a mobile app-based on 'mVisa', a new mobile payment solution from Visa?
- HDFC Bank
 - ICICI Bank
 - Axis Bank
 - Yes Bank
 - None of these
90. Which bank has won the first ever Green Bond Pioneer Award 2016?
- State Bank of India
 - Bank of Baroda
 - Punjab National Bank
 - Yes Bank
 - None of these
91. U K Sinha has been reappointed as the Chairman of which of the following organisation?
- IRDA
 - PFRDA
 - SEBI
 - CCI
 - None of these
92. Which bank has launched 'Japan Desk' to facilitate Japanese corporates investing in India?
- State Bank of India
 - Punjab National Bank
 - Bank of Baroda
 - Dena Bank Hide
 - None of these
93. Which of the following agreement is signed between Reserve Bank of India (RBI) and UAE Central Bank?
- Monetary Exchange Agreement
 - Currency Swap Agreement
 - Anti- Money Laundering Agreement
 - Rupee Exchange Agreement
 - None of these
94. Who is the chairman of the recently created Tax Policy Council (TPC) in India?
- Union Finance Minister
 - Secretary of Department of Financial Services
 - Secretary of Department of Economic Affairs
 - Chairman of Central Board of Direct Taxes (CBDT)
 - None of these
95. Who has been appointed as Vice-President of Asian Infrastructure Investment Bank (AIIB)?
- Kamal Vatta
 - D J Pandian
 - Mitali Saran
 - Sreenivasan Kumar
 - None of these
96. Who has been appointed from India as Senior Director in the World Bank?
- Amitabh Singh
 - Saroj Kumar Jha
 - Suvarna Kumar
 - Nikhil Srivastav
 - None of these
97. Who has been appointed as the first Chairman of the Banks Board Bureau (BBB)?
- Rupa Kudwa
 - Anil K Khandelwal
 - Vinod Rai
 - H N Sinor
 - None of these
98. The 2016 World Economic Forum (WEF) annual conference has been started in which city?
- Berlin
 - New York
 - Davos
 - Paris
 - None of these
99. What is the India's economic growth forecast for current fiscal as per International Monetary Fund (IMF)?
- 7%
 - 7.3%
 - 7.8%
 - 8.1%
 - None of these
100. Who has been elected from India to the board of directors of the Asian Infrastructure Investment Bank (AIIB)?
- Rahul Mishra
 - Dinesh Sharma
 - VK Singh
 - Arun Jaitley
 - None of these
101. The NITI Aayog has collaborated with which organisation for conducting a survey of manufacturing firms?
- State Bank of India
 - Punjab National Bank
 - IDFC Bank
 - ICICI bank
 - None of these
102. Which bank has launched India's first start-up focussed bank branch?
- Punjab National Bank
 - Canara Bank
 - State Bank of India
 - Bank of Baroda
 - None of these
103. Which of the following organisations has published the 2016 World Development Report?
- UNCTAD
 - World Bank
 - IMF
 - WTO
 - None of these

104. What is the name of the new crop insurance scheme approved by the union cabinet?
- Mahatma Gandhi Fasal Bima Yojana
 - Atal Fasal Bima Yojana
 - Pradhan Mantri Fasal Bima Yojana
 - Deen Dayal Upadhyaya Fasal Bima Yojana
 - None of these
105. Which of the following organisations has won the National Award on e-Governance 2015-16 for launching the Universal Account Number (UAN)?
- Exim Bank
 - SIDBI
 - Employees' Provident Fund Organisation
 - NABARD
 - None of these
106. Which one of the following stock exchanges will get its own postage stamp?
- Bombay Stock Exchange (BSE)
 - National Stock Exchange of India Ltd
 - MCX Stock Exchange
 - Bangalore Stock Exchange
 - None of these
107. The IFSC Banking Units (IBUs) are allowed to open which of the following types of bank accounts?
- Savings accounts
 - Current accounts
 - Foreign currency current accounts
 - All the above
 - None of these
108. Who has been conferred with the 2016 Global and Asia-Pacific Central Bank Governor of the Year?
- Janet Yellen
 - Mark Carney
 - Raghuram Rajan
 - Haruhiko Kuroda
 - None of these
109. The NABARD has signed a Memorandum of Understanding (MoU) with which of the following organisations for web-based monitoring of watershed projects?
- National Remote Sensing Center (NRSC)
 - Geological Survey of India (GSI)
 - ISRO
 - DRDO
 - None of these
110. Which of the following companies publishes Purchasing Managers' Index (PMI)?
- National Stock Exchange of India Limited
 - BSE Institute Limited
 - Markit
 - HSBC Analytics
 - None of these
111. Which of the following organisations has launched Jeevan Labh scheme?
- New India Insurance Ltd
 - National Insurance Company Ltd
 - State Bank of India
 - Life Insurance Corporation of India
 - None of these
112. Which of the following organisation has launched its first Uridashi Masala bonds?
- International Monetary Fund (IMF)
 - International Finance Corporation (IFC)
 - Asian Development Bank (ADB)
 - BRICS Bank
 - None of these
113. Which of the following foreign borrowings are considered under External Commercial Borrowings (ECBs) in India?
- Buyer's credit
 - Supplier's credit
 - Bank loans
 - All the above
 - None of these
114. Which of the following countries has imposed economic sanctions against Turkey, recently?
- United States (US)
 - France
 - Russia
 - Germany
 - None of these
115. Which of the following banks is the world's largest bank by assets?
- Bank of America
 - Industrial & Commercial Bank of China (ICBC)
 - BNP Paribas
 - Bank of China
 - None of these
116. Which of the following banks is the first Indian bank to introduce Display Debit cards?
- HDFC Bank
 - Axis Bank
 - ICICI Bank
 - State Bank of India
 - None of these
117. Which of the following organisations has launched the Transformative Carbon Asset Facility (TCAF)?
- WTO
 - World Bank
 - BRICS
 - SCO
 - None of these
118. As per the latest report of NITI Aayog, which of the following states has emerged as the "fastest growing economy" in India in 2014-15?
- Bihar
 - Madhya Pradesh
 - Maharashtra
 - Goa
 - None of these
119. What is the revised Priority Sector Lending (PSL) target for Regional Rural Banks (RRBs) from January 1, 2016?
- 60% of outstanding advances
 - 70% of outstanding advances
 - 75% of outstanding advances
 - 80% of outstanding advances
 - None of these
120. Which of the following organisations is the first from India to join the World Bank's Zero Routine Flaring by 2030 Initiative?
- ONGC
 - IOCL
 - NTPC
 - Essar Oil Ltd
 - None of these

121. What is the name of the first official stock exchange launched by Myanmar?
- Myanmar stock Exchange (MSX)
 - Naypyidaw Stock Exchange (NSX)
 - Yangon Stock Exchange (YSX)
 - Mandalay Stock Exchange (MnSX)
 - None of these
122. Which of the following stock exchange companies of India has launched the CSR platform 'Sammaan'?
- National Stock Exchange of India Ltd.
 - Bombay Stock Exchange (BSE)
 - MCX Stock Exchange
 - Bangalore Stock Exchange
 - None of these
123. Which of the following organisations has sanctioned \$1.5 billion loan to support the Swachh Bharat Mission (SBM)?
- World Bank
 - IMF
 - ADB
 - Japan Bank for International Cooperation
 - None of these
124. Which of the following new method is introduced by the RBI to calculate banks lending rate to borrowers?
- OCLR
 - MCLR
 - IMLR
 - PSLR
 - None of these
125. Which of the following organisations has released the report - Migration and Remittances Factbook 2016?
- IMF
 - World Bank
 - OECD
 - Asian Development Bank
 - None of these
126. Which of the following is the first bank to tie up with Indian railways to sell rail tickets through its website?
- State Bank of India
 - ICICI Bank
 - Axis Bank Ltd
 - Punjab National Bank
 - None of these
127. Which of the following organisations has released the report - Migration and Remittances Factbook 2016?
- IMF
 - World Bank
 - OECD
 - Asian Development Bank
 - None of these
128. Consider the following statements.
- The United States Chamber of Commerce (USCC) announced its fourth annual International IP Index 'Infinite Possibilities', which measures the state of intellectual property (IP) environments around the world.
 - Pakistan ranked below India with 6.42 points on the index.
 - The top 10 countries with their indexes are UK (28.6 score), US (27.5), Germany (27.4), France (27.2), Sweden (27.1), Singapore (25.6), Switzerland (24.9), Australia (24.8), Japan (23.3) and South Korea (23.3).
- Which of the above statements is/are correct?
- Code:**
- 1 only
 - 2 and 3
 - 1 and 3
 - All of the above
 - None of these
129. Consider the following statements.
- Alphabet Inc. has replaced its Silicon Valley rival Apple Inc. to become the world's most valuable company.
 - The rise in Alphabet's shares by 1.7 percent has pushed its market capitalization to \$531 billion.
 - Google parent Alphabet Inc. CEO Sundar Pichai has put the focus on the company's main Web business while giving more insight into investments in new areas such as artificial intelligence, self-driving cars, health technology and fast Internet access.
 - Apple had surpassed oil giant Royal Dutch Shell to become the world's most valuable company in 2011.
- Which of the above statements is/are correct?
- Codes:**
- 1 and 2
 - 2, 3 and 4
 - 3 and 4
 - All of the above
 - None of these
130. Consider the following statements.
- Saroj Kumar Jha has been appointed to a key position in the World Bank with President Robert Zoellick and has been assigned a role to provide strategic leadership to address the challenge of fragility, conflict and violence.
 - Jha is an alumnus of Indian Institute of Technology Kanpur and until last week was World Bank's Regional Director for Central Asia based in Almaty since February 2012.
 - He has also worked as the World Bank's Global Manager for Disaster Risk Management Practice and also served as head of the Global Facility for Disaster Reduction and Recovery.
- Which of the above statements is/are correct?
- Codes:**
- 1 and 3
 - 2 and 3
 - 2 and 1
 - All of the above
 - None of these
131. Consider the following statements.
- India's Dinesh Sharma has been elected to the board of directors of the China-sponsored Asian Infrastructure Investment Bank (AIIB).
 - The election of India to board of directors of the AIIB will not provide any help to India as it does not approve loans for projects.
 - Union Finance Minister Arun Jaitley is the designated governor of the AIIB from India.
 - It will provide financial support for infrastructure development and regional connectivity in Asia in sectors including energy, transportation, urban construction and logistics as well as education and healthcare.
- Which of the above statements is/are correct?
- Codes:**
- 1 and 2 only
 - 2 and 3 only
 - 1, 3 and 4 only
 - 2 only
 - None of these

144. India and which country have agreed to clear US \$6.4 billion via European banks to process pending oil payments?
 (a) Saudi Arabia (b) Iran
 (c) Iraq (d) UAE
 (e) None of these
145. China has chosen a Pakistan based highway construction program for funding through AIIB. Which firm is the co-financer?
 (a) ADB (b) IDB
 (c) IDBI (d) WB
 (e) None of the above

ANSWER KEY																			
1	(d)	17	(a)	33	(a)	49	(a)	65	(b)	81	(c)	97	(c)	113	(d)	129	(a)	145	(a)
2	(b)	18	(d)	34	(c)	50	(d)	66	(a)	82	(a)	98	(c)	114	(c)	130	(b)		
3	(d)	19	(b)	35	(d)	51	(c)	67	(d)	83	(b)	99	(b)	115	(b)	131	(c)		
4	(d)	20	(a)	36	(b)	52	(a)	68	(d)	84	(a)	100	(b)	116	(b)	132	(a)		
5	(b)	21	(d)	37	(e)	53	(c)	69	(a)	85	(b)	101	(c)	117	(b)	133	(b)		
6	(a)	22	(a)	38	(c)	54	(d)	70	(d)	86	(d)	102	(c)	118	(a)	134	(b)		
7	(d)	23	(d)	39	(c)	55	(b)	71	(c)	87	(b)	103	(b)	119	(c)	135	(b)		
8	(b)	24	(b)	40	(d)	56	(b)	72	(a)	88	(c)	104	(c)	120	(a)	136	(b)		
9	(a)	25	(b)	41	()	57	(d)	73	(b)	89	(b)	105	(c)	121	(c)	137	(a)		
10	(b)	26	(a)	42	(d)	58	(a)	74	(d)	90	(d)	106	(a)	122	(b)	138	(b)		
11	(b)	27	(a)	43	(b)	59	(d)	75	(a)	91	(c)	107	(c)	123	(a)	139	(d)		
12	(b)	28	(c)	44	(d)	60	(c)	76	(c)	92	(a)	108	(c)	124	(b)	140	(b)		
13	(c)	29	(b)	45	(d)	61	(a)	77	(b)	93	(b)	109	(a)	125	(b)	141	(d)		
14	(c)	30	(c)	46	(e)	62	(d)	78	(a)	94	(a)	110	(c)	126	(b)	142	(b)		
15	(d)	31	(d)	47	(a)	63	(b)	79	(b)	95	(a)	111	(d)	127	(b)	143	(a)		
16	(c)	32	(c)	48	(b)	64	(b)	80	(a)	96	(b)	112	(b)	128	(a)	144	(b)		

EXERCISE-4

CURRENT AFFAIRS

- Name the two new Hindi writers who have been conferred with the 2016 Bharatiya Jnanpith Navlekhan Award ?
 - Tasneem Khan and Upasana
 - Vishnu Nagar and Govind Prasad
 - Shraddha and Ghyansham Devansh
 - Madhusudan Anan and Om Nischal
- Petronet, India's largest LNG importer, has signed an agreement with which country on December 30 to set up \$950 million Liquefied Natural Gas import project in that country?
 - Kyrgyzstan
 - Afghanistan
 - Pakistan
 - Bangladesh
- How much financial benefit would be provided to the pregnant women in rural areas as announced by PM Modi?
 - ₹ 2500
 - ₹ 4000
 - ₹ 5500
 - ₹ 6000
- Name the new health scheme launched by Andhra Pradesh Government for the Above Poverty Line families of the state on January 1, 2017?
 - Arogya Swasthiya Bima Yojana
 - Suraksha Bima Yojana
 - Arogya Raksha Scheme
 - State Government Health Scheme
- Who has been appointed as the new Chairman of Union Public Service Commission with effect from January 4, 2017?
 - R. M. Bathew
 - David R. Syiemlieh
 - F. W. Robertson
 - D P Agrawal
- In which state is the world's largest 11-day Gala Festival "Bargarh Dhanua Jatra" organized?
 - Odisha
 - Karnataka
 - Tamil Nadu
 - Andhra Pradesh
- Sports Ministry constituted a committee on January 2, 2017 to suggest improvements in the National Sports Development Code. Who will be the head of the Committee?
 - Mani Shankar Aiyar
 - Ajay Maken
 - Injeti Srinivas
 - Mr Vijay Goel
- India's first 700 MW Pressurized Heavy Water Reactor (PHWR) will have its trial run in which state?
 - Haryana
 - Gujarat
 - Punjab
 - Rajasthan
- Who has been appointed as the 9th UN Secretary General ?
 - Antonio Guterres
 - Kurt Waldheim
 - Javier Perez de Cuellar
 - Boutros Boutros-Ghali
- Which state has launched first of its kind 24 X 7 call-center facility for the forest department of the state?
 - Maharashtra
 - Tamil Nadu
 - Kerala
 - West Bengal
- Who has been elected as the new president of Haiti?
 - Jovenel Moise
 - Jean-Bertrand
 - Jacques Rousseau
 - Robert Labrousse
- Which States/UT Government has recently launched Good Samaritan Policy for encouraging people to help accident victims ?
 - Puducherry
 - New Delhi
 - Gujarat
 - Andhra Pradesh
- Which country has decided to switch off its FM radio network and completely convert to digital signals ?
 - Sweden
 - Finland
 - Norway
 - Germany
- Who won the winner of 2017 Qatar Open title ?
 - Rafael Nadal
 - Roger Federer
 - Andy Murray
 - Novak Djokovic
- Name the App launched by IRCTC to book tickets faster.
 - IRCTC Fast Book
 - IRCTC Rail Connect
 - IRCTC Rail Ticket
 - IRCTC Fast Ticket
- Where was 350th Prakash Utsav organized to mark the birth anniversary of Guru Gobind Singh?
 - Patna
 - Bhopal
 - Mumbai
 - Amritsar
- Who has been nominated for the 4th Yash Chopra Memorial Award ?
 - Akshay Kumar
 - Salman Khan
 - Kapil Sharma
 - Shah Rukh Khan
- What was the theme of the 14th Pravasi Bhartiya Divas (PBD) Convention 2017?
 - Connecting For a Shared Future
 - Know India, Understand India
 - Engaging Diaspora: Connecting Across Generations
 - Redefining Engagement with the Indian Diaspora
- Pakistan successfully test fired its first Submarine-Launched Cruise Missile (SLCM) on January 9. Name the missile.
 - Aurangzeb-2
 - Abdali-I
 - Babur-3
 - Babur-2
- Name the newly appointed Chairman of Tata Power Co Ltd in place of Cyrus Mistry.
 - Vikram Desai
 - Aditya Choudhari
 - Mohan Sekhar
 - S Padmanabhan
- Where is the World's Largest Street Light Replacement Programme been launched by the Power Ministry?
 - Uttar Pradesh
 - Haryana
 - New Delhi
 - Chandigarh

22. Who has been appointed as the new Chief Executive Officer of Flipkart on January 9, 2017?
 (a) Sanjeev Mohanty (b) Kalyan Krishnamurthy
 (c) Kunal Bahl (d) Sanjeev Agarwal
23. The Ministry of Defence has planned to set up its Defence Unit in which of the following state at a cost of Rs. 1500 crore?
 (a) Goa (b) Jammu & Kashmir
 (c) Himachal Pradesh (d) Madhya Pradesh
24. Who has been named as the new brand ambassador of Smartphone brand Gionee?
 (a) MS Dhoni (b) Ranbir Kapoor
 (c) Virat Kohli (d) Kapil Sharma
25. Name the eminent personality honoured by the US Embassy for contribution towards the India-US Partnership on Tuberculosis.
 (a) Vidya Balan (b) Irfan Khan
 (c) Amir Khan (d) Amitabh Bachchan
26. Akbar Hashemi Rafsanjani who passed away recently was the former President of which country?
 (a) Afghanistan (b) Saudi Arabia
 (c) Iran (d) Israel
27. Which state has recently launched India's first Student Startup and Innovation Policy?
 (a) Goa (b) Gujarat
 (c) Himachal Pradesh (d) Kerala
28. India's largest public wi-fi service has been launched recently in which Indian state?
 (a) Karnataka (b) Haryana
 (c) New Delhi (d) Maharashtra
29. The Indian space agency ISRO has signed a partnership pact with which country's space agency for satellite launch technology?
 (a) NASA, USA (b) JAXA, Japan
 (c) CNES, France (d) CNSA, China
30. Who has been crowned as the Miss Universe 2017?
 (a) Andrea Tovar (b) Raquel Pelissier
 (c) Iris Mittenaere (d) Roshmitha Harimurthy
31. The Biography "Akhada" is based on the life of which Indian Wrestler?
 (a) Mohammad Ali (b) Hawa Singh
 (c) Dara Singh (d) Mahavir Singh Phogat
32. Yana Kudryavtseva of Russia who recently announced her retirement was associated to which sports?
 (a) Gymnastics (b) Tennis
 (c) Badminton (d) Shooting
33. Who has been sworn in as the President of Nicaragua on January 10, 2017?
 (a) Trey Parker (b) Daniel Ortega
 (c) Danny Faure (d) Luis Guillermo Solís
34. Who is the author of the new cyber vocabulary book Cyber Pathshala that was released by the HRD Minister Prakash Javadekar on January 10, 2017?
 (a) Amitabh Sinha (b) Ravikant Garg
 (c) Amit Shah (d) Tarun Vijay
35. When is the National Youth Day observed?
 (a) January 12 (b) January 13
 (c) January 11 (d) January 10
36. The Supreme Court on January 10, 2017 directed which state to pay Rs.500 crore as compensation to 5,000 victims of Endosulfan poisoning in the state?
 (a) Kerala (b) West Bengal
 (c) Andhra Pradesh (d) Assam
37. With which country India has signed an MoU on January 11, 2017 to provide Line of Credit for USD 100 million for agricultural mechanism?
 (a) Kenya (b) Portugal
 (c) Russia (d) Vietnam
38. In which city was the 2017 International Conference on Disability Communication (ICDC) held?
 (a) New Delhi (b) Indore
 (c) Chennai (d) Mumbai
39. Which state has introduced electoral roll printed in Urdu for the upcoming elections in February 2017 in its constituencies for the benefit of the Muslim community?
 (a) Goa (b) Uttarakhand
 (c) Uttar Pradesh (d) Punjab
40. Kerala has launched its first solar-powered boat on January 12, 2017. What is the name of that boat?
 (a) Dhruv (b) Bhim
 (c) Arjun (d) Aditya
41. Where is the Katasraj Hindu Temple situated?
 (a) Malaysia (b) Bangladesh
 (c) Pakistan (d) Nepal
42. Name the guided rocket system that was successfully test-fired by India on January 12, 2017 off Odisha coast?
 (a) Dhruv II (b) Shiva I
 (c) Pinaka II (d) Pinaka I
43. India's first multi-sports museum, Fanatic Sports Museum (FSM), has been inaugurated in which place on January 29, 2017?
 (a) Chennai (b) Pune
 (c) New Delhi (d) Kolkata
44. Who has been conferred with the highest US civilian honour, Presidential Medal of Freedom, on January 12, 2017 by President Barak Obama?
 (a) Paul Ryan (b) Joe Biden
 (c) Jacob Lew (d) John Kerry
45. Which Indian boxer has become the first female boxer to enter into professional boxing?
 (a) Pinki Rani (b) Kavita Goyat
 (c) Mary Kom (d) Sarita Devi
46. On January 13, 2017, which country has been appointed to chair the United Nations Group of 77 that looks after the interests of the 134 developing countries?
 (a) Norway (b) Thailand
 (c) Ecuador (d) Egypt
47. Gujarat defeated which state to win the Ranji Trophy 2017?
 (a) Chennai (b) Mumbai
 (c) Kolkata (d) Lucknow

48. Surjit Singh Barnala who died on January 14, 2017 at the age of 91 was the former Chief Minister of which state?
 (a) Madhya Pradesh (b) Punjab
 (c) Haryana (d) Uttar Pradesh
49. What was the theme of the 2017 Vibrant Gujarat Global Investors Summit?
 (a) Economic Development with Vibrant Gujarat
 (b) Discovering New Gujarat
 (c) Vibrant Gujarat: Connecting India to the World
 (d) Transforming Gujarat to Global Business Hub
50. Prime Minister Narendra Modi inaugurated India's first international exchange _____ at the IFSC of GIFT City in Gandhinagar on January 9, 2017.
 (a) IND-EX (b) Exchange IND
 (c) India VNX (d) India INX
51. Who headed the committee formed by the Ministry of Rural Development to study the Socio Economic and Caste Census (SECC) data that presented its report on January 13, 2017?
 (a) Manoranjan Kumar (b) Rinku Murgai
 (c) Sumit Bose (d) Amarjeet Sinha
52. In which city was the first ABU International Television Dance Festival (AIDF) organized on January 13, 2017?
 (a) Chennai (b) Mumbai
 (c) Hyderabad (d) Guwahati
53. The United States has on January 13, 2017 lifted two decade economic embargo against which country?
 (a) Kenya (b) Libya
 (c) Egypt (d) Sudan
54. Who has been conferred with The Hindu Prize 2016 at the 7th edition of the Hindu Lit for Life festival 2017?
 (a) Pradeep Sebastian (b) Manjula Padmanabhan
 (c) Kiran Doshi (d) Anil Menon
55. Which city in Kerala has been declared as the first Elderly-Friendly City of the state on January 14, 2017?
 (a) Kanpur (b) Kochi
 (c) Kozhikode (d) Kollam
56. What is the rank of India in the Global Talent Competitiveness Index (GTCI) 2017?
 (a) 89 (b) 92
 (c) 54 (d) 98
57. IRDAI on January 16 2017 formed an eight member panel to review life insurance product norms. Who will be the head of the committee?
 (a) Amitabh Chaudhry (b) Sai Srinivas
 (c) Sandeep Bakshi (d) K S Gopalakrishnan
58. Who is the winner of the 2017 Parsvnath Delhi International Chess tournament?
 (a) Farrukh Amonatov (b) RA Pradeep Kumar
 (c) Dzhumayev Marat (d) Diptayan Ghosh
59. An ultra-light weight high-performance watch, RM 50-03, which was inaugurated on January 16, 2017 has been developed using which lightweight element?
 (a) Graphite (b) Beryllium
 (c) Graphene (d) Stainless Steel
60. Which country has topped the 2017 Inclusive Development Index among advanced economies?
 (a) Luxembourg (b) Singapore
 (c) Switzerland (d) Norway
61. Who has been signed by the Mercedes as the replacement for recently retired Formula One world champion Nico Rosberg on January 17, 2017?
 (a) Kimi Raikkonen (b) Valtteri Bottas
 (c) Mark Ellis (d) Andy Cowell
62. In which country, the world's first baby was born using the new three-person IVF technology called pronuclear transfer?
 (a) Mexico (b) France
 (c) Ukraine (d) Ireland
63. What is the name of the Chinese Robot Journalist who made its debut reporting on January 18, 2017 by writing an article in a second?
 (a) Xiao Nan (b) Clank
 (c) Changchang (d) Tachikomas
64. Mawlynnong village which was named as the Cleanest Village in Asia' in 2003 is located in which state of India ?
 (a) Assam (b) Meghalaya
 (c) Manipur (d) Arunachal Pradesh
65. Which scheme has been launched by the Union Human Resource Development Ministry on January 18, 2017 for monitoring the elementary education initiative Sarva Shiksha Abhiyan (SSA)?
 (a) ShaGun (b) ShakSham
 (c) SuVidha (d) SamaDhan
66. Which technology giant has partnered with the International Olympic Committee (IOC) to become the worldwide sponsor of the Olympic Games through 2028?
 (a) Microsoft (b) TCS
 (c) Wipro (d) Alibaba
67. Which public sector bank has signed MoU with the Ministry of Human Resource Development to start higher education financing agency.
 (a) Canara Bank (b) ICICI Bank
 (c) SBI (d) HDFC Bank
68. Which city of Himachal Pradesh has been declared as the second capital of the state on January 19, 2017 by the Chief Minister Virbhadra Singh?
 (a) Manali (b) Dharamsala
 (c) Palampur (d) Kangra
69. Who has been appointed as the new director of Central Bureau of Investigation (CBI) on January 19, 2017?
 (a) Alok Kumar Verma (b) V.K.Sharma
 (c) Rakesh Asthana (d) Pulkit Trivedi
70. Who is the winner of the 2017 Malaysia Masters Grand Prix Gold women's single title?
 (a) Saina Nehwal (b) PV Sindhu
 (c) Jwala Gutta (d) Ashwini Ponnappa
71. Which country has launched a 10-year-plan on January 22, 2017 to reduce its dependence on India for vegetable imports?
 (a) Sri Lanka (b) Myanmar
 (c) Bangladesh (d) Nepal

72. A special stamp cover titled "Golden girls of India - Pride of Nation" released by the Indian Postal Department on January 21, 2017 features which Indian sports players?
 (a) Mary Kom (b) Sania Mirza
 (c) Dipa Karmakar (d) Saina Nehwal
73. Which state has introduced the first of its kind initiative on January 22, 2017 to electronically transmit postal ballot to service voters for the assembly elections 2017?
 (a) Himachal Pradesh (b) Punjab
 (c) Uttar Pradesh (d) Goa
74. When is the National Girl Child day celebrated?
 (a) January 24 (b) January 22
 (c) January 25 (d) January 23
75. With which country, India signed a White Shipping Agreement on January 19, 2017 in New Delhi on sharing maritime information in Indian Ocean Region (IOR)?
 (a) Bangladesh (b) United Kingdom
 (c) Italy (d) France
76. Which country issued its first Green Bonds with a record sale of USD 7.5 billion on January 24, 2017?
 (a) Britain (b) France
 (c) Germany (d) Mauritius
77. Who has been named for the 2017 Padma Vibhushan award in the field of Art and Music?
 (a) Sadhguru Jaggi Vasudev (b) K J Yesudas
 (c) Sharad Pawar (d) Murlidhar Joshi
78. Who has been appointed as the new governor of Meghalaya (additional charge) on January 27, 2017?
 (a) Najma A. Heptulla (b) Mridula Sinha
 (c) Banwarilal Purohit (d) Kaptan Singh Solanki
79. The India Meteorological Department has planned to set up Weather Stations in how many districts by the end of 2019?
 (a) 710 Districts (b) 660 Districts
 (c) 520 Districts (d) 400 Districts
80. Deshpande Foundations is set to launch India's largest startup incubation centre in which city of Karnataka by the end of September 2017?
 (a) Bengaluru (b) Hubballi
 (c) Mangalore (d) Mysore
81. How many Grand Slam Singles Title have been won by tennis player Serena Williams?
 (a) 24 (b) 23
 (c) 14 (d) 17
82. Which country has become the first in the world to pass a bill to completely stop investment in fossil fuel?
 (a) Singapore (b) Ireland
 (c) Norway (d) Switzerland
83. Regarded as the Father of Pac-Man, which famous Japanese business tycoon passed away on January 22, 2017 at the age of 91?
 (a) Hiroshi Mikitani (b) Masayoshi Son
 (c) Yamada Nagamasa (d) Masaya Nakamura
84. The General Anti-Avoidance Rule (GAAR) has been scheduled to come into effect from _____
 (a) March 31, 2017 (b) April 1, 2017
 (c) February 1, 2017 (d) March 1, 2017
85. Name the eminent poet who has been felicitated with the 52nd Jnanpith Award for 2016?
 (a) Rehman Rahi (b) Kedarnath Singh
 (c) Shankha Ghosh (d) Raghuvir Chowdhary
86. Which country has become the first in the world to officially authorize the use of "three-parent baby" fertility treatments on December 1, 2016 to enable women with mitochondrial disease to have a healthy child?
 (a) Mexico (b) Britain
 (c) USA (d) Russia
87. Which Indian City has been honored with the Best Cities of 2016 Award at the C40 Mayors Summit held in Mexico City from November 30 to December 2, 2016?
 (a) New Delhi (b) Kolkata
 (c) Chennai (d) Mumbai
88. In order to mop up extra liquidity from the system in view of demonetisation, the Government and the Reserve Bank on December 2, 2016 has sharply raised the Market Stabilisation Scheme (MSS) from Rs 30,000 crore to Rs. _____?
 (a) ₹ 6 lakh crore (b) ₹ 10 lakh crore
 (c) ₹ 1 lakh crore (d) ₹ 5 lakh crore
89. What is the projected economic growth prospect for India for the FY17 as estimated by United Nations report, Economic and Social Survey for Asia and the Pacific 2016?
 (a) 7.1% (b) 7.2%
 (c) 7.6% (d) 7.5%
90. Name the Managing Director (MD) and chief executive of the National Stock Exchange of India (NSE) who recently resigned from the post owing to personal reasons.
 (a) Chitra Ramkrishna (b) Renuka Ramnath
 (c) Shyam Srinivasan (d) Vijayalakshmi Iyer
91. Which country has topped the list to be named as the FIFA's Team of the Year 2016?
 (a) Germany (b) Brazil
 (c) Argentina (d) India
92. According to the 2016 Jane's Defence Budgets Report, released by IHS Markit on December 12, 2016, what is India's position among the global defence spender?
 (a) Third (b) Fourth
 (c) Seventh (d) Tenth
93. The 6th Heart of Asia Ministerial Conference 2016 was held in which Indian city?
 (a) New Delhi (b) Jaipur
 (c) Amritsar (d) Kolkata
94. Which country's Scientists have become the first to discover a method of mapping the human thought by using fast functional magnetic resonance imaging (fMRI)?
 (a) United Kingdom (b) China
 (c) United States of America (d) Norway

95. Scientists from Canada have developed the first biological pacemaker, sinoatrial node (SAN) cardiomyocytes, using which human stem cells?
 (a) Parafollicular cell (b) Theca lutein cells
 (c) Corticotropes (d) Pluripotent cells
96. Which state government on December 25 launched a health insurance scheme 'Atal-Amrit Abhiyan' to provide insurance coverage against several critical illnesses?
 (a) Odisha (b) Maharashtra
 (c) Assam (d) Punjab
97. What is the name of 12 day annual bilateral maritime exercise between the Indian Navy and the Royal Navy of UK, that will be conducted in two phase at Mumbai and Goa between December 5 to December 16?
 (a) VARUNA 16 (b) INDRA 16
 (c) KONKAN 16 (d) UKINDA 16
98. Name the Inter-Continental Ballistic Missile (ICBM) which was successfully test-fired by India on December 26, from Dr Abdul Kalam island off the coast of Odisha.
 (a) Agni V (b) Agni III
 (c) Agni I (d) Agni IV
99. Which among the following sports has been derecognized as a sport by the center due to its wide dimensions, making it difficult to conduct competitions?
 (a) Cheerleading (b) Aerobics
 (c) Yoga (d) Gymnastics
100. Cabinet minister for water resources, river development and Ganga rejuvenation Uma Bharti has announced to celebrate the birth anniversary of Dr. Bhim Rao Ambedkar held on 14th April as which day?
 (a) Health Day (b) Water Day
 (c) Conservation Day (d) Food Day
101. Biju Sishu Surakshya Yojana, a scheme for the care and protection of HIV positive orphan children has been launched by which state?
 (a) Karanataka (b) Maharashtra
 (c) Odisha (d) West Bengal
102. ICRA has forecasted India's gross value added (GVA) growth likely to be at _____ per cent in 2016-17.
 (a) 7.0 (b) 6.6
 (c) 6.7 (d) 7.1
103. Name the famous co-artist, in the team that sketched the national emblem 'Lion Capital of Ashoka', who die at the age of 89 in Indore on December 24?
 (a) Nicola Benedetti (b) Nandlal Bose
 (c) Dinanath Bhargava (d) Sapekshi Bhargava
104. Which Indian Company has emerged as the first National Supporter to sponsor the FIFA U-17 World Cup India 2017 to be held from 6 to 28 October 2017?
 (a) Bank of Baroda (b) Hero MotorCorp
 (c) Videocon D2H (d) Paytm
105. Name the remote sensing satellite launched by ISRO on December 7, 2016 on PSLV-C36 from Satish Dhawan Space Centre in Sriharikota.
 (a) RESOURCESAT-1 (b) RESOURCESAT-2A
 (c) RESOURCESAT-2 (d) RESOURCESAT-1B
106. How much amount has been pledged by India to contribute to the UN Central Emergency Response Fund (CERF) for the year 2016-17?
 (a) \$500,000 (b) \$1,000,000
 (c) \$750,000 (d) \$470,000
107. Name the mobile App launched by Chandrababu Naidu in Vijayawada on December 6, 2016 to promote digital transaction among people.
 (a) Mobile Wallet (b) Pay Purse
 (c) AP Purse (d) AP Wallet
108. Which Technology Giant has launched its first full-scale Cybersecurity Engagement Centre (CSEC) in India?
 (a) Microsoft (b) SAP
 (c) Google (d) Accenture
109. Hindi has emerged as the 10th most powerful language on the planet according to the World Economic Forum's Power Language Index Ranking. Which language has been ranked as the most powerful?
 (a) English (b) French
 (c) Mandarin (d) Korean
110. Who has been named as the 44th Chief Justice of India succeeding Chief Justice TS Thakur who will retire on January 3, 2017?
 (a) Justice Madan Lokur
 (b) Justice Anil R Dave
 (c) Justice Jagdish Singh Khehar
 (d) Justice Ranjan Gogoi
111. Which High Court on December 7, 2016, declared Triple Talaq as "unconstitutional" and against the rights of Muslim Women?
 (a) Delhi High Court (b) Allahabad High Court
 (c) Patna High Court (d) Mumbai High Court
112. Who has been named as the TIME's Person of the Year 2016 on December 7, 2016?
 (a) Hillary Clinton (b) Narendra Modi
 (c) Donald Trump (d) Mark Zuckerberg
113. When is the International Anti-Corruption Day observed?
 (a) December 7 (b) December 9
 (c) December 10 (d) December 6
114. Name the cricketer who scored the record breaking score of 359 not out, the highest unbeaten score by an opening batsman, in the First-Class Cricket.
 (a) Mukund Parmar (b) Samit Gohel
 (c) Cheteshwar Pujara (d) Axar Patel
115. What is the rank of India in the Global Terrorism Index (GTI), 2016?
 (a) 7 (b) 9
 (c) 4 (d) 10
116. The world's longest rail tunnel, Gotthard Base Tunnel (GBT) is built in which country?
 (a) Japan (b) France
 (c) Switzerland (d) China

117. Name the TV Channel launched by the Ministry of Electronics and Information Technology (MeitY), on December 9, 2016 to educate and digitally empower millions of Indians in rural areas about cashless transactions.
- (a) DigiClass (b) DigiShala
(c) DigKnow (d) OnlineEdu
118. Who has been appointed as brand ambassador for Tata Motor's commercial vehicle (CV) business unit on December 27?
- (a) Lionel Messi (b) Virat Kohli
(c) Akshay Kumar (d) Kapil Sharma
119. Rajasthan Government has initiated a project for the conservation of the state bird which is becoming critically endangered. Name the state bird of Rajasthan?
- (a) Sarus Crane (b) Pigeon
(c) Himalayan Monal (d) Godawn
120. India's first Caterpillar Train, an innovative concept that would fly over city's traffic would be launched by which Indian state?
- (a) Gujarat (b) Himachal Pradesh
(c) Haryana (d) Uttar Pradesh
121. With which country India has signed a Civil Nuclear Cooperation Agreement (N-Pact) on December 9, 2016, in New Delhi?
- (a) Russia (b) US
(c) Japan (d) Vietnam
122. Who has won the 2016 Ghana's National Election to become president election?
- (a) John Dramani Mahama (b) John Atta Mills
(c) Nana Akufo-Addo (d) Samuel Atta Akyea
123. Which space agency successfully launched a Kounotori 6 (HTV-6) spacecraft on December 9, 2016, to deliver a space junk collector technology into orbit?
- (a) National Aeronautics and Space Administration (NASA)
(b) Indian Space Research Organisation (ISRO)
(c) Japan Aerospace Exploration Agency (JAXA)
(d) Russian Federal Space Agency (RFSA or Roscosmos)
124. Name the committee constituted by the Internet and Mobile Association of India (IAMAI) to fight against online piracy.
- (a) Uday Sodhi Committee (b) Salil Kapoor Committee
(c) Ajit Mohan Committee (d) Ratan Watal Committee
125. Which sport has been granted provisional recognition by the International Olympic Committee on December 6, 2016?
- (a) Chess (b) Cheerleading
(c) Cricket (d) Squash
126. Name the severe cyclonic storm that made landfall in Chennai on December 12, 2016, causing severe destruction in the city and neighboring states?
- (a) Vardah (b) Victor
(c) Vivian (d) Walaka
127. German scientists have detected ammonia in which layer of the atmosphere for the first time?
- (a) Troposphere (b) Hydrosphere
(c) Stratosphere (d) Lithosphere
128. India's first amphibious bus project "Harike Cruise" was launched in which state on December 12, 2016?
- (a) Maharashtra (b) Assam
(c) Jammu & Kashmir (d) Punjab
129. Who has been appointed as the Global Goodwill Ambassador of UNICEF for the campaign "For Every Child"?
- (a) Priyanaka Chopra (b) Katrina Kaif
(c) Vidya Balan (d) Anuska Sharma
130. Who has been appointed as the fourth deputy governor of RBI on December 28?
- (a) Vishwavir Ahuja (b) Viral V. Acharya
(c) MD Patra (d) Vimal Bhandari
131. Which Indian State will host the 2022 National Games?
- (a) Assam (b) Manipur
(c) Mizoram (d) Meghalaya
132. Name the winner of the 1st Elite Senior Men's National Boxing Championships under lightweight 60 Kg category held on 13 December 2016 in Guwahati.
- (a) Vijender Singh (b) Shiva Thapa
(c) Ankush Dahiya (d) Manoj Kumar
133. Which state has initiated a project to make India's first island district, Majuli, first Carbon Neutral District by 2020?
- (a) Assam (b) Bihar
(c) Odisha (d) Sikkim
134. The fifth edition of the Global Conference on Cyber Space (GCSS) is scheduled to be hosted in which country 2017?
- (a) Netherland (b) U.K
(c) South Korea (d) India
135. Name the former professional World No 1 tennis player who announced her retirement on December 28.
- (a) Serena Williams (b) Ana Ivanovic
(c) Dinara Safina (d) Caroline Wozniacki
136. Who has been appointed as the new Lieutenant Governor of Delhi?
- (a) Banwari Lal Joshi (b) Anil Bajjal
(c) Tejendra Khanna (d) Pradeep Kumar Singh
137. Nepal and China is going to hold its first ever joint military exercise on February 10, 2017 which would focus on training Nepali forces in dealing with hostage scenarios involving international terror groups. What is the name of the Nepal-China military exercise?
- (a) Pratihar-1 (b) Simbex-II
(c) Blue-Water (d) Surya-Kiran
138. Which instant messaging service has launched the world's first chat operating system which allows developers to build customised apps, bots and integrations on the messenger?
- (a) Google+Hangouts(Gtalk) (b) Jabber
(c) Spark (d) Flock
139. Which country on December 13, 2016, formally announced the end of its controversial "kafala" system?
- (a) Oman (b) UAE
(c) Qatar (d) Iraq

140. Name the Hollywood sensation whose biopic, *Blond Ambition*, was named the most admired unproduced film script of 2016 in the Hollywood system by Black List.
- (a) Nicolas Cage (b) Madonna
(c) Bruce Wills (d) John Travolta
141. India's first transgender school, Sahaj International School to be set up in which Indian city on December 30, 2016?
- (a) Bangalore (b) Hyderabad
(c) Kochi (d) Chennai
142. Who has been honored with the Global Agriculture Leadership Award 2016 by ICFA on December 15, 2016?
- (a) Mukesh Ambani
(b) Natarajan Chandrasekaran
(c) Ratan Tata
(d) Anil Ambani
143. India's first 2G (Second Generation) ethanol bio-refinery is being set up by Hindustan Petroleum Corporation Limited (HPCL) in which of the given states?
- (a) Haryana (b) Gujarat
(c) Rajasthan (d) Punjab
144. China on December 22 launched a global carbon dioxide monitoring satellite to understand the effect of climate change in the country. Name the satellite.
- (a) TanSat (b) GoSat
(c) OCO-2Sat (d) GHGSat
145. India defeated which country to win the bronze medal at the 4th Women's U18 Asia Cup 2016 hockey tournament?
- (a) Japan (b) Bangladesh
(c) Brazil (d) South Korea
146. Which Indian state has emerged as the first state to adopt the Mahila Police Volunteer initiative on December 14, 2016?
- (a) Punjab (b) Rajasthan
(c) Haryana (d) Gujarat
147. Who is the winner of Miss World Beauty Pageant 2016?
- (a) Priyadarshini (b) Natasha Mannuela
(c) Yaritza Miguelina Reyes (d) Stephanie Del Valle
148. US President Barack Obama has signed \$ ____ billion defence policy bill for 2017 in Honolulu, Hawaii, to enhance security cooperation with India.
- (a) \$ 515 billion (b) \$ 629 billion
(c) \$ 710 billion (d) \$ 618 billion
149. DRDO successfully test fired smart anti-airfield weapon SAAW from Chandipur in Odisha. What does SAAW stands for?
- (a) Superior Anti Airfield Weapon
(b) Synchronous Anti Airfield Weapon
(c) Systematic Anti Airfield Weapon
(d) Smart Anti-Airfield Weapon
150. Government on December 17, formed an inter-ministerial task force committee to look into all the strategic aspects of Indus Water Treaty (IWT) with Pakistan. Who will be the head of the committee?
- (a) Rahul Shivshankar (b) Ajit Doval
(c) Nripendra Mishra (d) S Jaishankar
151. Union Government has planned to launch a Cash Mukta Bharat Abhiyan Helpline number _____ which is a nationwide toll-free number to educate people and provide support related to cashless mode of transactions.
- (a) 14444 (b) 14144
(c) 14441 (d) 11444
152. Name the newly appointed Chief of Indian Air Force.
- (a) S K Sinha (b) A.S Vaidya
(c) P M Hariz. (d) B.S Dhanoa
153. Name the famous American surgeon and the inventor of Heimlich maneuver who died of massive heart attack complications at 96 in Cincinnati on December 17.
- (a) Edward patrick (b) Henry Heimlich
(c) William Heimlich (d) George Peterson
154. Defence Project worth over Rs. _____ has been approved by the Defence Ministry on December 23.
- (a) ₹ 7100 crore (b) ₹ 7000 crore
(c) ₹ 6200 crore (d) ₹ 5500 crore
155. Prime Minister Narendra Modi laid down the foundation stone of the country's first ever "Indian Institute of Skills" in which of the following Indian state on December 19?
- (a) Madhya Pradesh (b) Uttar Pradesh
(c) Bihar (d) Gujarat
156. Which High Court on December 19, 2016, declared a ban on all unauthorised 'Sharia' courts functioning in the state?
- (a) Mumbai High Court (b) Kolkata High Court
(c) Madras High Court (d) Delhi High Court
157. Which country has recently signed a multi-billion dollar deal with Airbus to acquire 100 jetliners?
- (a) Afghanistan (b) Iran
(c) Bhutan (d) Dubai
158. Who has won the 2016 Sahitya Akademi Award for the Hindi novel Paarijat?
- (a) Bulaki Sharma (b) Papini Svasankar
(c) Gita Upadhyay (d) Nasira Sharma
159. Which State on December 25 launched India's first Bio-Diesel Buses?
- (a) Karantaka (b) Punjab
(c) Haryana (d) Gujarat
160. President Pranab Mukherjee gave fifth assent to amend Enemy Property Ordinance. The ordinance aims to amend which act?
- (a) Enemy Property Act 1952
(b) Enemy Property Act 1955
(c) Enemy Property Act 1960
(d) Enemy Property Act 1968
161. Which state launched India's first cashless bazaar in the state on December 19?
- (a) Maharashtra (b) Chhattisgarh
(c) Telangana (d) Punjab

162. Social Networking Service Twitter has recently partnered with which bank to provide an advanced customer service in real time?
 (a) HDFC Bank (b) ICICI Bank
 (c) Yes Bank (d) RBL Bank
163. Who has been named as the Best Player of the Year at the seventh edition of the 2016 Globe Soccer Awards held in Dubai?
 (a) Cristiano Ronaldo (b) Franck Ribéry
 (c) Radamel Falcao (d) Lionel Messi
164. Name the universe's biggest super-clusters of galaxies discovered by the Astronomers near the Milky Way.
 (a) Laniakea Supercluster (b) Virgo SuperCluster
 (c) Hydra Supercluster (d) Vela supercluster
165. Name the committee which has recommended the Union Government to set up a Financial Data Management Centre (FDMC) to help the financial sector in managing the data efficiently.
 (a) Ajay Tyagi Committee
 (b) Amitabh Kant Committee
 (c) Ratan P Watal Committee
 (d) V Shanmuganthan Committee
166. Name the Indian Origin British Professor who has been felicitated with Knighthood at the 2017 New Year Honours by Queen Elizabeth II .
 (a) Hardip Singh Begol
 (b) Ravindra Pragji Govindia
 (c) Shankar Balasubramanian
 (d) Kamaldeep Singh Bhui
167. India has signed a Third Protocol DTAA amendment Bill with which country on December 30, 2016?
 (a) Germany (b) Austria
 (c) Singapore (d) France
168. Which Indian state has been declared as the Country's first Organic State in 2016 ?
 (a) Assam (b) Sikkim
 (c) Arunachal Pradesh (d) Mizoram
169. Which village in Andhra Pradesh has achieved the status of first 100 per cent Smart Digital Village?
 (a) Nagari (b) Yerpedu
 (c) Mori (d) Pileru
170. Who has been appointed as the new Prime minister of Italy on December 11, 2016?
 (a) Paolo Gentiloni (b) Matteo Renzi
 (c) Sergio Mattarella (d) Romano Prodi
171. Former Planning Commission member Saumitra Chaudhuri, who passed away on December 18 at 63 was a noted?
 (a) Writer (b) Scientist
 (c) Economist (d) Journalist
172. Which state launched the International Birds Festival on December 4, 2016 to promote eco-tourism in the state and declare it as an international bird-watching destination?
 (a) Bihar (b) Uttar Pradesh
 (c) Haryana (d) Delhi
173. The Union Ministry of Urban Development has started the Swachh Survekshan 2017 from January 4, 2017 to encourage competition for improving sanitation standards. How many cities would be covered under the Survey?
 (a) 250 Cities (b) 300 Cities
 (c) 450 Cities (d) 500 Cities
174. What is the theme of the 2017 New Delhi World Book Fair (NDWBF)?
 (a) Vivid Bharat – Diverse India
 (b) Manushi – Books Written on and by Women
 (c) Kathasagara: Celebrating Children's Literature
 (d) Suryodaya: Emerging voices from North East India
175. India and Kazakhstan signed a protocol to amend Double Taxation Avoidance Convention (DTAC) recently. In this context, consider the following provisions of amended DTAC.
 I. It is in line with India's commitment under Base Erosion and Profit Shifting (BEPS) Action Plan.
 II. Limitation of Benefits Article has been inserted to provide a main purpose test to prevent misuse of the DTAC.
 Choose the correct option
 (a) Only I (b) Only II
 (c) Both I and II (d) Neither I nor II
176. What is Mercosur? In this context, consider the following statements.
 I. Mercosur is an economic and political bloc comprising Argentina, Brazil, Paraguay and Uruguay.
 II. Its purpose is to promote free trade and the fluid movement of goods, people, and currency.
 III. Bolivia, Chile, Colombia, Ecuador, Guyana, Peru, and Suriname are not associate members.
 Choose the correct option
 (a) Only I (b) Only II
 (c) All are correct (d) I and II
177. PM Narendra Modi announces Pravasi Kaushal Vikas Yojana. Which of the following statement(s) is/are correct in this context?
 I. It is a skill development program targeted at Indian youth seeking overseas employment.
 II. It was launched after inauguration of 14th Pravasi Bhartiya Divas convention held in India's IT hub Delhi.
 III. Portuguese Prime Minister Antonio Costa was the Chief Guest of the event.
 (a) Only I (b) Only III
 (c) I & II (d) I & III
178. Veteran actor Om Puri Passed away at the age of 66. With reference to him, consider the following statements and choose the correct option-
 I. He was awarded Padma Shri, the fourth highest civilian award of India, in 1990.
 II. He made his film debut in the 1970 Marathi film Ghashiram Kotwal.
 III. His last film was the Jungle Book in 2016.
 (a) Both I and II (b) Only I
 (c) Only III (d) None of these

179. Mahendra Singh Dhoni resigned as the captain of ODIs and T20 format of cricket. With reference to it consider the following statements:
- After Ricky Ponting, Dhoni has played the second highest number of ODIs as skipper.
 - He is the only captain to have won all three ICC trophies - ODI World Cup, World Twenty20 and Champions Trophy.
- Choose the correct option
- Only I
 - Only II
 - Both I and II
 - Neither I nor II
180. Who was the Chief Guest of the 14th edition of Pravasi Bhartiya Divas (PBD) convention that began in Bengaluru?
- Mauritius President Ameenah Gurib
 - Surinam President Desi Bouterse
 - Fiji President George Konrote
 - Portugal President Dr. Antonio Costa
181. Prof. David R. Syiemlieh was appointed as the chairman of the Union Public Service Commission (UPSC) by the President Pranab Mukherjee. Whom has he replaced?
- Alka Sirohi
 - Rose Rathew Kharbuli
 - Prof. D.P. Agrawal
 - Gurbachan Jagat
182. Nana Akufo-Addo was sworn in as the fifth president of Republic of Ghana. Whom has he replaced?
- Mahamudu Bawumia
 - John Dramani Mahama
 - Muhammadu Buhari
 - None of these
183. Which of the following cities of India are decided by Japan to develop into Smart Cities?
- Pune, Amaravati, Indore
 - Chennai, Ahmedabad and Varanasi
 - Visakhapatnam, Ajmer and Allahabad
 - Bhubaneswar, Coimbatore and Kochi
- Codes:
- 1 and 2
 - 1 and 4
 - 2 only
 - 2, 3 and 4
184. Which of the following is/are the key factors in promoting Sustainable Tourism?
- Mutual understanding, peace and security
 - Social inclusiveness
 - Environmental protection
 - Industrial and Economic growth
- Codes:
- 1, 2 and 3
 - 4 only
 - 2 and 3
 - 1 and 4
185. Which of the following countries get the anti-dumping duty imposed on jute products recently?
- Sri Lanka, Nepal
 - Nepal, Bhutan
 - Nepal, Bangladesh
 - Bangladesh, Sri Lanka
- Codes:
- 1 and 4
 - 1 and 2
 - 1, 2 and 3
 - 3 only
186. Why did India stop the meeting of Permanent Indus Commission in 2016?
- Pathankot Attack
 - Surgical Strike
 - Uri Terrorist Attack
 - Kashmir Unrest
187. The Paragraph 15 of the Election Symbol Reservation and Allotment order, 1968 allows ECI to decide disputes among rival groups or factions of a recognized political party staking claim to its name and symbol.
- Which of the following can be deduced from this?
- ECI primarily ascertains support enjoyed by a claimant within a political party in its organizational wing and legislative wing.
 - ECI is not the only authority to decide issue over claims of Party symbol in case of split.
 - In case of splits in registered but unrecognized parties, the ECI usually advice to solve their differences internally or to approach to courts.
- 1 and 3
 - 1, 2 and 3
 - 3 only
 - 2 only
188. Consider the following statements:
- Daniel Ortega sworn in for second time as Nicaragua's president.
 - He was Nicaraguan guerrilla leader.
 - His wife, Rosario Murillo, became the new vice president, giving a married couple the reins of power for the first time in the West American country's history.
- Which of the following statement/s is/are false?
- Only I
 - Both I and II
 - Only III
 - Both I and III
189. Who has been appointed as the new chairman of Tata Sons in January 2017?
- Natarajan Chandrasekaran
 - Noel Tata
 - Indra Krishnamurthy
 - Nowroji Saklatwala
190. Which of the following statement/s is/are not correct about Cristiano Ronaldo?
- He is a Portuguese professional footballer.
 - He is the only player to win four European Golden Shoe awards.
 - He plays for Spanish club Real Madrid and the Portugal national team.
- Only I is incorrect.
 - Only II is incorrect.
 - None is correct.
 - All are correct.
191. Recently a 8 years old boy Abbu Ammaz becomes national boxing champion, he belongs to _____ state.
- Himachal Pradesh
 - Jammu & Kashmir
 - Punjab
 - Gujarat
192. Who is recently appointed as President of BMW group India?
- Rahul Yadav
 - Kunal Bahl
 - Binny Bansal
 - Vikram Bawah
193. Air India launched a 'Fly For Sure' scheme on January 11, 2017 to ensure confirmed travel to passengers? It is similar to the scheme of which airline in 2016.
- SpiceJet
 - IndiGo
 - JetLite
 - Jet Airways
- Codes :
- (i) only
 - (i), (ii)
 - (iv) only
 - None of the above

194. Researchers predict formation of a new plate boundary on the floor of the Indian Ocean due to the largest earthquake of 2012 that hit Andaman-Sumatra region and may lead to future quakes. What was the name of that earthquake?
 (a) Valdivia Quake (b) Prince William Sound
 (c) Slip-Strike Quake (d) Bio-Bio Quake
195. Which revised GDP growth estimate for India 2016-17 fiscal ending March 31, 2017 are correct by different credit rating agencies?
 1. World Bank's 7% from 7.6%
 2. Fitch Rating Inc.'s 7.1% from 7.7%
 3. Morgan Stanley's 7.3% from 7.6%
 4. Asian Development Bank's 7.2% from 7.8%
 Codes :
 (a) 1 only (b) 1 & 3
 (c) 1, 2, 3 (d) all
196. Which of the following statements is/are correct in the context of India INX?
 1. It will be fastest international exchange in the world in terms of order response time, with a median trade speed of four microseconds.
 2. The exchange will open for trading activity daily when exchange in Japan opens and closes when exchanges in the US close.
 3. The second fastest international exchange is situated at Moscow has an order response time of 60 microseconds.
 Codes :
 (a) 3 only (b) 1, 2 and 3
 (c) 1 & 2 (d) 2 only
197. Which of the following statement(s) is/are correct regarding right to education act?
 1. The Act makes compulsory for every child between 6 and 14
 2. U.N. Charter states clearly that free education should be made compulsory to children of 0-16 years old
 3. On reservations, the act talks about 25% seat reservation in private/public unaided school for lesser privileged children.
 Codes :
 (a) 3 only (b) 1, 2 and 3
 (c) 2 and 3 only (d) 1 and 3
198. All of the following statements are true about Rubella except:
 (a) This disease infects humans as well as animals.
 (b) This viral disease infects pregnant women who give birth babies with defects
 (c) Most common defects are deafness, cardiac malformations and cataract
 (d) Rubella virus spreads through air via cough
199. Which of the following statement(s) is/are correct in the context of Vote Verifier Paper Audit Trail?
 (i) It will ensure complete transparency in elections.
 (ii) The system would not help the voters to verify that their votes are casted correctly.
 (iii) It can detect possible election fraud
 (iv) It wouldn't help to audit the stored electronic results.
 Codes :
 (a) i, ii, iv (b) i, & iii
 (c) iv only (d) ii & iii
200. Recently who filed a PIL regarding postponement of Union Budget before assembly elections in five states?
 (a) Subramaniam Swamy (b) Manohar Lal Sharma
 (c) Arvind Kejriwal (d) Akhilesh Yadv
201. Which one of the following statement is not correct in the context of Olive Ridley's Turtles?
 (i) It derives its name from Olive leaf.
 (ii) It is found in warm waters of Pacific and Indian Oceans.
 (iii) It migrates thousands kilometers.
 (iv) A single female lays more than 100 eggs.
 Codes :
 (a) i only (b) iii & iv
 (c) i and ii (d) iv only
202. Pakistan test fired its first submarine launched cruise missile Babur-III on 9th January, 2017 has the range of:
 (1) 250 to 500 km (2) 550 to 700 km
 (3) 450 km (4) 500 km
 Codes:
 (a) 3 and 4 (b) 4 only
 (c) 1 and 4 (d) 3 only
203. Which one of the following statements are not correct in the context of Hilsa Fish?
 I. Buying or selling of Hilsa fish weighing less than 1kg. is illegal.
 II. Indian Shad will become the first fish variety in India to get legal protection.
 III. It is a popular food fish in East Asia
 IV. Hilsa known as Ilish, Tenulosa ilisha is a species of fish in the herring family.
 Codes:
 (a) I only (b) I & II
 (c) I & III (d) II & III
204. In the context of a PIL filed by Clarence Pais former President of a Karnataka Catholic Association in the apex Court, which statement(s) is/are true?
 I. The Supreme Court gives supremacy to parliamentary laws over personal laws of religious groups.
 II. Divorce decrees of religious institutions can't override law enacted by the state.
 III. Canon laws are personal laws of Parsis
 IV. Binding nature of the Indian Divorce Act, 1869 governs divorce among Christians.
 Codes:
 (a) I, II & IV (b) II & III
 (c) I & II (d) I, III & IV

205. The Securities and Exchange Board of India (SEBI) has tightened rules for mergers and amalgamations by Indian companies:
- I. To secure the interest of corporates
 - II. To make listing process more transparent
 - III. To safeguard the interests of the public shareholders
- Codes:
- (a) I, II & III (b) II & III
(c) None of the above (d) III only
206. Which of the following is/are true regarding National Small Savings Fund (NSSF)?
- I. Once states are excluded from NSSF investments, the investible funds of NSSF with Government of India (GoI) will decrease.
 - II. NSSF loans to the State Government were cheaper as the market rates are considerably higher.
- Codes:
- (a) Only I (b) Only II
(c) Both I and II (d) Neither I nor II
207. The Indian Institute of Mass Communication (IIMC) now offers PG Diploma in:
- (a) English & Hindi
(b) English, Hindi, Oriya and Urdu
(c) Hindi & Urdu
(d) Hindi, Bengli, English
208. Consider the correct basis on which Akhilesh Yadav group retained the party symbol.
- I. He is the Chief Minister of Uttar Pradesh
 - II. He is the newly elected Party President
 - III. He enjoys popular support
 - IV. Akhilesh group enjoys overwhelming majority support both among the legislative and organizational wing of the party.
- Codes:
- (a) I & IV (b) II only
(c) I, II & III (d) IV
209. According to Global Talent Index, India slipped from its position mainly because of:
- (a) It does not have a large talent pool
(b) It has tightened VISA policy
(c) Due to its failure in retaining and attracting talent
(d) India boosts performance in its regulatory and market area
210. The CEPI has officially launched at 2017 World Economic Forum (WEF) to create new vaccines for emerging infectious diseases. What does "CEPI" stand for?
- (a) Coalition for Epidemic Preacher Innovations
(b) Coalition for Epidemic Preparative Innovations
(c) Coalition for Epidemic Practicable Innovations
(d) Coalition for Epidemic Preparedness Innovations
211. Inclusive Development Index (IDI) released in:
- (a) World Economic Forum's (WEF)
- (b) Global Economic Outlook
(c) Global Competitiveness Report
(d) Geneva Reports on the World Economy
212. Oxfam focuses on:
- (a) Alleviation of global poverty
(b) Gender disparity
(c) Educational equality
(d) Skill building
213. Who is the winner of the 2017 Parsvnath Delhi International Chess tournament?
- (a) Farrukh Amonatov (b) R A Pradeep Kumar
(c) Dzhumayev Marat (d) Diptayan Ghosh
214. Who has been appointed as the new President of the European Parliament on January 17, 2017?
- (a) Sergio Mattarella (b) Petro Poroshenko
(c) François Hollande (d) Antonio Tajani
215. Donald John Trump has been sworn in as the _____ President of United States of America.
- (a) 42 (b) 47
(c) 45 (d) 49
216. Alok Kumar Verma was appointed as the Director of Central Bureau of Investigation (CBI). With reference to it, consider the following statements.
- I. Alok Verma is currently the Police Commissioner of Delhi.
 - II. He succeeded Rakesh Asthana and will have a term of three years.
 - III. Alok will be the 27th Director (including two acting chief) of CBI.
- Choose the correct option
- (a) Only II (b) Only III
(c) I and III (d) I and II
217. Consider the following statements regarding Poet Jacob Polley:
- I. Jacob Polley was born in Carlisle, Cumbria, in 1975.
 - II. He is the author of four collections of poetry, The Brink (2003), Little Gods(2006), The Havocs (2012), and Jackself(2016).
 - III. Jacob Polley's The Havocs wins 2016 T.S. Eliot prize
- Choose the correct option
- (a) Only 1 (b) Only 2
(c) 1 and 2 (d) 1 and 3
218. Recently, which country withdrew its visa-free facility for Indians?
- (a) Hong Kong (b) China
(c) Sri Lanka (d) Thailand
219. Which of the following warships has become the India's first-ever warship to have ATM on board?
- (a) INS Vikramaditya (b) INS Sindhughosh
(c) INS Arihant (d) INS Viraat
220. Who is the newly appointed director of the CBI?
- (a) Jagdish Singh Khehar (b) Anil Sinha
(c) Rakesh Asthana (d) Alok Verma

221. Consider the following statements in context of the annual conference "Raisina Dialogue".
- The 3rd edition of Ministry of External Affairs' annual conference "Raisina Dialogue" has been held at Taj Palace in New Delhi from 17-19 January, 2017 with the theme "The New Normal: Multilateralism in a multipolar world".
 - Prime Minister Narendra Modi inaugurated and addressed the opening session of the Dialogue, which is India's flagship geo-political conference.
 - The conference was attended by delegates from 75 countries.
- Which of the above statements is/are correct?
- A & B
 - B only
 - B & C
 - None of them
222. Consider the following statements.
- Indian Space Research Organisation (ISRO) will set a record when it launches 203 satellites in one go on a single rocket in the first week of March.
 - In June last year, ISRO launched 20 satellites in one go.
 - The satellites will be launched from the Satish Dhawan Space Centre in Sriharikota in Andhra Pradesh.
- Which of the above statements is/are correct?
- A & B
 - B only
 - B & C
 - None of them
223. Which state government has launched e-health program "Jeevan Rekha" to provide a centralised database of healthcare information?
- Chhattisgarh
 - Tamil Nadu
 - Kerala
 - Assam
224. Who has been bestowed with the highest peace time gallantry decoration "Ashok Chakra" on the 68th Republic Day of India?
- Nirbhay Singh
 - Harpreet Sandhu
 - Hangpan Dada
 - Kapil Yadav
225. What is the India's rank in the 2016 Corruption Perception Index (CPI)?
- 66th
 - 82nd
 - 112th
 - 79th
226. Consider the following statements.
- India celebrated its 68th Republic Day with Abu Dhabi Crown Prince Mohammed bin Zayed Al Nahyan as the chief guest at the annual parade.
 - The marching contingent of the UAE military is the second foreign military to ever participate in the Republic Day parade. Last year, an American Army contingent joined the parade becoming the first-ever foreign military to do so.
 - Uttar Pradesh's tableau is dedicated to the Beti Bachao, Beti Padhao campaign.
- Which of the above statements is/are correct?
- A only
 - A & B only
 - B only
 - All of the above
227. Consider the following statements.
- Seven new countries Lithuania, Gabon, Hungary, Indonesia, Malta, Mauritius and Russia – have signed Multilateral Competent Authority Agreement for Country-by-Country Reporting (CbC MCAA).
 - With this, the total number of signatories has increased to 59 including India (signed in May 2015). CbC MCAA is a tax co-operation agreement to enable automatic sharing of country-by-country information.
 - The base erosion and profit shifting (BEPS) Action Plan adopted by the OECD and G20 countries in 2013.
- Which of the above statements is/are correct?
- A only
 - A & C only
 - B only
 - All of the above
228. Sheikh Mohammed is the crown prince of
- UAE
 - Dubai
 - Abu Dhabi
 - Ajman
229. PV Sindhu defeated _____ to win Syed Modi Grand Prix Gold badminton tournament.
- P. V. Ramana
 - Saina Nehwal
 - Carolina Marin
 - Gregoria Mariska
230. With reference to Trump's Immigration Ban, which of the following statements is/are incorrect?
- Ban has targeted Muslim dominant countries.
 - Democrats and civil right groups are supporting the ban keeping national security in mind.
 - The ban has stopped the entry of refugees from Syria indefinitely.
- I only
 - I, II and III
 - II only
 - II and III
231. With regard to the match between Federer and Nadal, which of the following statement/s holds true?
- Roger Federer won his 18th Grand slam
 - Federer won the toss and decided to serve first.
 - Tennis legend Rod Laver presented the trophy to the winner.
 - Federer became World no.1 after winning the match.
- I and III
 - II and IV
 - I and II
 - II and III
232. Which of the following statement stands true about Anil Ambani's RDEL contract?
- RDEL became the first private sector company to build vessels for Indian Coast Guard.
 - RDEL was the only bidder.
 - RDEL will build 15 ships as per the contract.
- I, II and III
 - I only
 - II only
 - I and III
233. The I-League is officially known as the Hero I League due to
- Sponsorship reasons
 - Change of name
 - New guidelines
 - To encourage corporate participation

234. Which of the following statement(s) is not correct in the context of ISRO's launching of 103 satellites in one go.
- In the year 2016 ISRO has launched record 20 satellites at one go.
 - Satish Dhawan Space Centre in Sriharikota is situated in Telangana.
 - In 2014 Russia launched 37 satellites in a single go.
 - PSLV is a launch system
- Codes:
- I & IV only
 - II & IV
 - II only
 - II, III & IV
235. ASTROSAT's life span ends in the year:
- 2025
 - 2020
 - 2015
 - 2030
236. Which one of the followings is India's first producer of steel rails?
- Bhilai Steel Plant, Chhattisgarh
 - Rourkela Steel Plant, Odisha
 - Durgapur Steel Plant, West Bengal
 - Bokaro Steel Plant, Jharkhand
237. The BCSBI has launched an initiative to organise "Know Your Rights" programme across the nation to create awareness on Banking Codes at the grassroot level among the people. Expand BCSBI.
- Banking Credit and Standards Board of India
 - Business Corporate and Service Board of India
 - Banking Codes and Standards Board of India
 - Business Codes and Security Board of India
238. In the context of functions of Payment Banks which statement is/are true?
- They offer only current account and savings account in which deposit only up to Rs 1 lakh per customer is permitted.
 - It allows mobile firms, supermarket chains and others to cater to banking requirements of individuals and small businesses.
- Internet banking is not a part of its function.
 - It commenced its operations by rolling out pilot services in Raipur and Chhattisgarh.
- Codes:
- I & IV
 - II & IV
 - I & II
 - III & IV
239. Who among the followings is the chairperson of the Central Board of Direct Taxes (CBDT), the apex policy making body for the Income Tax department?
- Upendra Kumar Sinha
 - Dr. Y. V Reddy
 - Mr. Kishor Kharat
 - Sushil Chandra
240. Mobile App Mission FINFIT has been launched by which bank in collaboration with Bangaluru startup Fisdom to provide its customers an online platform to manage their personal wealth?
- ICICI Bank
 - Yes Bank
 - Lakshmi Vilas Bank
 - Kotak Mahindra Bank
241. India's first Post Office Passport Seva Kendra (POPSK) has been inaugurated in which city?
- Mysuru
 - Chennai
 - Kochi
 - Guwahati
242. Which of the following statement(s) is/are correct?
- Delhi was rated the most polluted city in the world for ambient air pollution by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2014.
 - ASAP-Delhi will perform detailed physical and chemical characterization of PM present in Delhi
 - India has partnered with the experts from USA for the project ASAP-Delhi
 - The project ASAP-Delhi is an Integrated Study of Air Pollutant Sources in the Delhi National Capital Region
- I & III
 - II & IV
 - I & IV
 - IV only

ANSWER KEY

1	(c)	28	(d)	55	(c)	82	(b)	109	(a)	136	(b)	163	(a)	190	(d)	217	(c)
2	(d)	29	(c)	56	(b)	83	(d)	110	(c)	137	(a)	164	(d)	191	(b)	218	(a)
3	(d)	30	(c)	57	(a)	84	(b)	111	(b)	138	(d)	165	(a)	192	(d)	219	(a)
4	(c)	31	(d)	58	(a)	85	(c)	112	(c)	139	(c)	166	(c)	193	(a)	220	(d)
5	(b)	32	(a)	59	(c)	86	()	113	(b)	140	(c)	167	(c)	194	(c)	221	(b)
6	(a)	33	(b)	60	(d)	87	(b)	114	(b)	141	(c)	168	(b)	195	(b)	222	(c)
7	(d)	34	(d)	61	(b)	88	(a)	115	(a)	142	(c)	169	(c)	196	(c)	223	(c)
8	(d)	35	(a)	62	(c)	89	(c)	116	(c)	143	(d)	170	(a)	197	(d)	224	(c)
9	(a)	36	(a)	63	(a)	90	(a)	117	(b)	144	(a)	171	(c)	198	(a)	225	(d)
10	(a)	37	(a)	64	(b)	91	(c)	118	(c)	145	(d)	172	(b)	199	(b)	226	(a)
11	(a)	38	(d)	65	(a)	92	(a)	119	(d)	146	(c)	173	(d)	200	(b)	227	(b)
12	(b)	39	(c)	66	(d)	93	(c)	120	(c)	147	(d)	174	(b)	201	(a)	228	(c)
13	(c)	40	(d)	67	(a)	94	(c)	121	(d)	148	(d)	175	(c)	202	(d)	229	(d)
14	(d)	41	(c)	68	(b)	95	(d)	122	(a)	149	(d)	176	(d)	203	(c)	230	(c)
15	(b)	42	(c)	69	(a)	96	(c)	123	(c)	150	(d)	177	(d)	204	(a)	231	(a)
16	(a)	43	(d)	70	(a)	97	(c)	124	(c)	151	(a)	178	(d)	205	(b)	232	(b)
17	(d)	44	(b)	71	(d)	98	(a)	125	(b)	152	(d)	179	(b)	206	(d)	233	(a)
18	(d)	45	(d)	72	(c)	99	(c)	126	(a)	153	(b)	180	(d)	207	(b)	234	(c)
19	(c)	46	(c)	73	(d)	100	(b)	127	(a)	154	(b)	181	(a)	208	(d)	235	(b)
20	(d)	47	(b)	74	(a)	101	(c)	128	(d)	155	(b)	182	(b)	209	(c)	236	(a)
21	(c)	48	(b)	75	(d)	102	(b)	129	(a)	156	(c)	183	(c)	210	(d)	237	(c)
22	(b)	49	(c)	76	b)	103	(c)	130	(a)	157	(b)	184	(a)	211	(a)	238	(c)
23	(d)	50	(d)	77	(b)	104	(a)	131	(d)	158	(d)	185	(d)	212	(a)	239	(d)
24	(c)	51	(c)	78	(c)	105	(b)	132	(c)	159	(a)	186	(c)	213	(c)	240	(c)
25	(d)	52	(c)	79	(b)	106	(a)	133	(a)	160	(d)	187	(a)	214	(d)	241	(a)
26	(c)	53	(d)	80	(b)	107	(c)	134	(a)	161	(b)	188	(d)	215	(c)	242	(b)
27	(b)	54	(c)	81	(b)	108	(a)	135	(b)	162	(b)	189	(b)	216	(c)		