

## Quantitative Aptitude for IBPS Clerk Prelims 2022- Solutions PDF

**S1. Ans.(d)**

$$\text{Sol. } \frac{48}{100} \times 525 + \frac{?}{100} \times 250 = 499$$

$$? = \frac{247 \times 100}{250} = 98.8$$

**S2. Ans.(c)**

$$\text{Sol. } \frac{5}{2} \times \frac{7}{8} \times \frac{1}{28} \times 1600 = 260 + ? - 499$$

$$? = 499 + 125 - 260$$

$$= 364$$

**S3. Ans.(a)**

$$\text{Sol. } ? = \sqrt{5125 - 289 - 75}$$

$$= \sqrt{4761} = 69$$

**S4. Ans.(b)**

$$\text{Sol. } (?)^2 = 16 \times 7 + 361 + 11$$

$$= 484$$

$$? = 22.$$

**S5. Ans.(b)**

$$\text{Sol. } 252 + 26 + 420 = 121 + ?$$

$$? = 577$$

**S6. Ans.(c)**

$$\text{Sol. } 80\% \text{ of } ? = \sqrt{250 \times 44 + \frac{40 \times 8500}{100}}$$

$$\Rightarrow \frac{80}{100} \times ? = \sqrt{11000 + 3400}$$

$$\Rightarrow ? = \sqrt{14400} \times \frac{10}{8}$$

$$\Rightarrow ? = 120 \times \frac{10}{8} = 150$$

**S7. Ans.(a)**

$$\text{Sol. } ? \times \frac{40}{24} \times 27 = \frac{594}{115} \times \frac{2300}{264}$$

$$\Rightarrow ? \times 45 = 45$$

$$\Rightarrow ? = 1$$

**S8. Ans.(d)**

$$\text{Sol. } \frac{20}{100} \times 40 \times \sqrt{?} = 32^2 + 16^2$$

$$\Rightarrow \sqrt{?} = \frac{1}{8} \times (1024 + 256)$$

$$\Rightarrow \sqrt{?} = \frac{1}{8} \times 1280 = 160$$

$$\Rightarrow ? = (160)^2 = 25600$$

**S9. Ans.(b)**

$$\text{Sol. } ? + 13 \times 50 = 420 + \frac{45}{100} \times 800 + 220$$

$$\Rightarrow ? + 650 = 420 + 360 + 220$$

$$\Rightarrow ? = 1000 - 650 = 350$$

**S10. Ans.(e)**

$$\text{Sol. } (?)^{\frac{3}{2}} = 256 \times (2)^8 \div (8)^5 \times 32$$

$$\Rightarrow (?)^{\frac{3}{2}} = \frac{2^8 \times 2^8}{2^{15}} \times 2^5$$

$$\Rightarrow (?)^{\frac{3}{2}} = (2)^6 = 64$$

$$\Rightarrow ? = (64)^{\frac{2}{3}} = 16$$

**S11. Ans.(c)**

$$\text{Sol. } \left( \frac{4^4 \text{ of } 25}{48} \right) \div \left( \frac{5}{4} \text{ of } 32 + \frac{3}{7} \text{ of } 21 \right) = ? \text{ of } \frac{1}{49}$$

$$\left( \frac{24}{5} \times \frac{25}{48} \right) \div (40 + 9) = ? \times \frac{1}{49}$$

$$? = 49 \times \frac{5}{98} = \frac{5}{2} = 2.5$$

**S12. Ans.(b)**

$$\text{Sol. } \sqrt{?} \text{ of } 6 + 20\% \text{ of } 95 = \frac{1}{2} \text{ of } 62$$

$$\sqrt{?} \text{ of } 6 = \frac{62}{2} - \frac{20}{100} \times 95 = 12$$

$$? = 2^2 = 4$$

**S13. Ans.(e)**

$$\text{Sol. } \left( \frac{5}{3} \text{ of } 6 \frac{3}{5} \text{ of } \frac{9}{11} \right) + ?^2 = 45$$

$$\left( \frac{5}{3} \times \frac{33}{5} \times \frac{9}{11} \right) + ?^2 = 45$$

$$?^2 = 36$$

$$? = \pm 6$$

**S14. Ans.(a)**

$$\text{Sol. } \left( \frac{4}{7} \times \frac{14}{5} \div 2 \right) - \left( \frac{3}{10} \text{ of } ? \right) = \frac{4}{5} - 3$$

$$\left( \frac{4}{7} \times \frac{14}{5} \times \frac{1}{2} \right) - \left( \frac{3}{10} \times ? \right) = -\frac{11}{5}$$

$$\frac{4}{5} - \frac{3}{10} ? = -\frac{11}{5}$$

$$? = 10$$

**S15. Ans.(c)**

$$\text{Sol. } 4\frac{4}{5} + 2\frac{1}{15} - \frac{27}{5} = 2\frac{1}{5} \div 3 \times ?$$

$$\frac{24}{5} + \frac{31}{15} - \frac{27}{5} = \frac{11}{5} \times \frac{1}{3} \times ?$$

$$\frac{22}{15} = \frac{11}{15} \times ?$$

$$? = 2$$

**S16. Ans.(e)**

$$\text{Sol. } \sqrt{5776} - \sqrt{1444} + \sqrt{729} = 43 + ?$$

$$76 - 38 + 27 = 43 + ?$$

$$? = 65 - 43 = 22$$

**S17. Ans.(a)**

$$\text{Sol. } 78 \times 26 \div 6 + 1262 = 1311 + (?)^2$$

$$2028 \div 6 + 1262 = 1311 + (?)^2$$

$$338 + 1262 = 1311 + (?)^2$$

$$(?)^2 = 1600 - 1311 = 289$$

$$? = \sqrt{289} = 17$$

**S18. Ans.(a)**

$$\text{Sol. } 1484 \div 28 + 1462 \div 34 - 12 \times 7 = ?$$

$$? = 53 + 43 - 84 = 12$$

**S19. Ans.(c)**

$$\text{Sol. } 42.5 \times 15 + 37.5 \times 25 = 1420 + ?$$

$$637.5 + 937.5 = 1420 + ?$$

$$? = 1575 - 1420 = 155$$

**S20. Ans.(b)**

$$\text{Sol. } 2450 + 3760 - 3830 = 6000 - ?$$

$$2380 = 6000 - ?$$

$$? = 6000 - 2380 = 3620$$

**S21. Ans.(a)**

$$\text{Sol. } \frac{125.98}{154.03} \times \frac{198.02}{17.99} - \frac{156.05}{101.98} \times \frac{51.03}{78.03} = ?$$

$$\frac{126}{154} \times \frac{198}{18} - \frac{156}{102} \times \frac{51}{78} \approx ?$$

$$? \approx 9 - 1 \approx 8$$

**S22. Ans.(d)**

$$\text{Sol. } 80.08\% \text{ of } 349.98 + 45.02\% \text{ of } 799.99 =$$

$$? \% \times 255.95$$

$$80\% \text{ of } 350 + 45\% \text{ of } 800 \approx ? \% \times 256$$

$$280 + 360 \approx ? \% \times 256$$

$$? \approx \frac{640}{256} \times 100 = 250$$

**S23. Ans.(b)**

$$\text{Sol. } \sqrt{1224.99} \div 6.99 = ? - 1799.98$$

$$\sqrt{1225} \div 7 \approx ? - 1800$$

$$5 \approx ? - 1800$$

$$? \approx 1810$$

**S24. Ans.(e)**

$$\text{Sol. } 2744.98 - 1417.99 = ? + 987.98$$

$$2745 - 1418 \approx ? + 988$$

$$? \approx 339$$

**S25. Ans.(c)**

$$\text{Sol. } ?^2 = 44.99\% \text{ of } 4500.02 - 24.99\% \text{ of } 3959.98 +$$

$$87.01 \times 2.97$$

$$?^2 \approx 45\% \text{ of } 4500 - 25\% \text{ of } 3960 + 87 \times 3$$

$$?^2 \approx 1296$$

$$? \approx 36$$

**S26. Ans.(a)**

$$\text{Sol. } 1749.98 \div 350 \times 49.79 + 111.03 = (?)^2$$

$$\frac{1750}{350} \times 50 + 111 \approx (?)^2$$

$$? = 19$$

**S27. Ans.(a)**

$$\text{Sol. } ? \times 625.04 = 15625.01 + 9999.99$$

$$? \times 625 \approx 15625 + 10000$$

$$? \approx 41$$

**S28. Ans.(c)**

$$\text{Sol. } 29.98\% \text{ of } 701 - 350.01 + 82\% \text{ of } 501 = ?$$

$$30\% \text{ of } 700 - 350 + 82\% \text{ of } 500 \approx ?$$

$$? \approx 210 - 350 + 410 \approx 270$$

**S29. Ans.(e)**

$$\text{Sol. } 5759.99 \div 45.01 + 11.99 = ? \times 10.03$$

$$5760 \div 45 + 12 \approx ? \times 10$$

$$? \approx \frac{140}{10} \approx 14$$

**S30. Ans.(c)**

$$\text{Sol. } 1395.98 + 412.04 - 2703.99 = ? - (31.02)^2$$

$$1396 + 412 - 2704 \approx ? - (31)^2$$

$$? \approx 961 - 896 \approx 65$$

**S31. Ans.(d)**

$$\text{Sol. } 41.979 \times \frac{22}{7} + 19.989\% \text{ of } 530.014 - 26.021 = ?$$

$$42 \times \frac{22}{7} + 20\% \text{ of } 530 - 26 \approx ?$$

$$? \approx 132 + 106 - 26 \approx 212$$

**S32. Ans.(c)**

$$\text{Sol. } (23.012 \times 22.989) + 20.985 \times 7.014 = ?^2$$

$$(23 \times 23) + 21 \times 7 \approx ?^2$$

$$?^2 \approx 529 + 147 \approx 676$$

$$? \approx 26$$

**S33. Ans.(a)**

$$\text{Sol. } \sqrt{1443.979} \div 18.981 + 3.5 \times \sqrt{16.017} = (?)$$

$$\sqrt{1444} \div 19 + 3.5 \times \sqrt{16} \approx ?$$

$$? \approx \frac{38}{19} + 3.5 \times 4$$

$$? \approx 2 + 14 \approx 16$$

**S34. Ans.(e)**

$$\text{Sol. } 779.98 \div 48.014 \times 15.989 = ?$$

$$\frac{780}{48} \times 16 \approx ?$$

$$? \approx \frac{780}{3} \approx 260$$

**S35. Ans.(b)**

**Sol.**  $1485.988 + 212.04 - 1703.99 = ? - (11.02)^2$   
 $1486 + 212 - 1704 \approx ? - (11)^2$   
 $? \approx 1698 - 1704 + 121 \approx 115$

**S36. Ans.(d)**

**Sol.**  $43.495 \times \frac{64.02}{31.99} \times \frac{1}{28.979} - 2.012 = ?$   
 $43.5 \times \frac{64}{32} \times \frac{1}{29} - 2 \approx ?$   
 $? \approx 1$

**S37. Ans.(b)**

**Sol.**  $(33.33 \times 80.989 \div 99.99) + 3.024 - ? = 4.012$   
 $\left(\frac{33.33}{99.99} \times 81\right) + 3 - ? \approx 4$   
 $? \approx 26$

**S38. Ans.(a)**

**Sol.**  $20.021 + 4.969 + 30.499 - 50.022 = ?$   
 $20 + 5 + 30.5 - 50 \approx ?$   
 $? \approx 5.5$

**S39. Ans.(c)**

**Sol.**  $995.013 - 39.976 \times 19.99 + 5.022 = 1.988 \times ?$   
 $995 - 40 \times 20 + 5 = 2 \times ?$   
 $? \approx 100$

**S40. Ans.(e)**

**Sol.**  $(10.011)^2 + (23.989)^2 = 275.99 + ?^2$   
 $10^2 + 24^2 = 276 + ?^2$   
 $? = 20$

**S41. Ans.(b)**

**Sol.** Pattern is  
 $0.5 \times (2 - 0) = 1$   
 $1 \times (2 - 0.5) = 1.5$   
 $1.5 \times (2 - 1) = 1.5$   
 $1.5 \times (2 - 1.5) = 0.75$   
 $0.75 \times (2 - 2) = 0$

**S42. Ans.(d)**

**Sol.** Pattern is  
 $5 \times 3 = 15$   
 $15 \times 3 = 45$   
 $45 \times 3 = 135$   
 $135 \times 3 = 405$   
 $405 \times 3 = 1215$

**S43. Ans.(e)**

**Sol.** Pattern is  
 $90 + 6 = 96; 96 + 6 = 102$   
 $102 + 6 = 108; 108 + 6 = 114$   
 $114 + 6 = 120$

**S44. Ans.(a)**

**Sol.** Pattern is  
 $389 - (9 + 0) = 380$   
 $380 - (9 + 1) = 370$   
 $370 - (9 + 2) = 359$   
 $359 - (9 + 3) = 347$   
 $347 - (9 + 4) = 334$

**S45. Ans.(b)**

**Sol.** Pattern is addition of prime no.  
 $1 + 2 = 3$   
 $3 + 3 = 6$   
 $6 + 5 = 11$   
 $11 + 7 = 18$   
 $18 + 11 = 29$

**S46. Ans.(c)**

**Sol.**

280	295	325	370	430	505
	↑	↑	↑	↑	↑
	+15	+30	+45	+60	+75
		↑	↑	↑	↑
		+15	+15	+15	+15

**S47. Ans.(e)**

**Sol.**

4	2	3	7.5	26.25	118.125
	↑	↑	↑	↑	↑
	X0.5	X1.5	X2.5	X3.5	X4.5

**S48. Ans.(a)**

**Sol.**

		+12		+12	
18	25	30	37	42	49
	↑	↑	↑	↑	↑
		+12	+12		

**S49. Ans.(d)**

**Sol.**

1	2	4	8	16	32
	↑	↑	↑	↑	↑
	X2	X2	X2	X2	X2

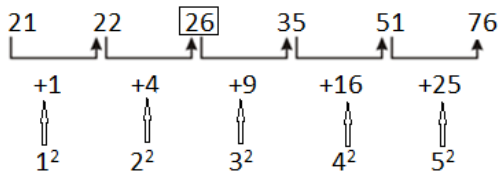
**S50. Ans.(b)**

**Sol.**

121	144	169	196	225	256
↑	↑	↑	↑	↑	↑
$11^2$	$12^2$	$13^2$	$14^2$	$15^2$	$16^2$

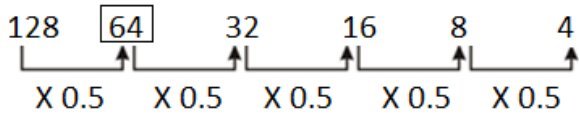
**S51. Ans.(d)**

**Sol.**



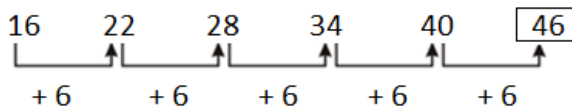
**S52. Ans.(a)**

**Sol.**



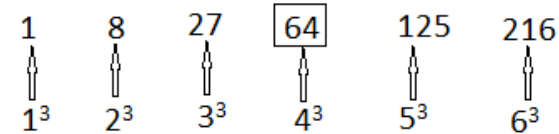
**S53. Ans.(b)**

**Sol.**



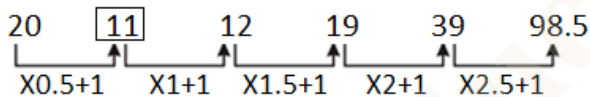
**S54. Ans.(e)**

**Sol.**



**S55. Ans.(c)**

**Sol.**



**S56. Ans.(d)**

**Sol.** addition of prime numbers

Pattern is

$$31 + 2 = 33$$

$$33 + 3 = 36$$

$$36 + 5 = 41$$

$$41 + 7 = 48$$

$$48 + 11 = 59$$

**S57. Ans.(e)**

**Sol.** Pattern is

$$6 \times 6 = 36$$

$$36 \times 5 = 180$$

$$180 \times 4 = 720$$

$$720 \times 3 = 2160$$

$$2160 \times 2 = 4320$$

**S58. Ans.(b)**

**Sol.** Pattern is

$$23 + 6 = 29$$

$$29 + 6 = 35$$

$$35 + 6 = 41$$

$$41 + 6 = 47$$

$$47 + 6 = 53$$

**S59. Ans.(d)**

**Sol.**  $1 + 2^2 = 5$

$$5 + 3^2 = 14$$

$$14 + 4^2 = 30$$

$$30 + 5^2 = 55$$

$$55 + 6^2 = 91$$

**S60. Ans.(c)**

**Sol.** Pattern is

$$5 + (5 \times 1) = 10$$

$$10 + (5 \times 2) = 20$$

$$20 + (5 \times 3) = 35$$

$$35 + (5 \times 4) = 55$$

$$55 + (5 \times 5) = 80$$

**S61. Ans.(b)**

**Sol.** Pattern is

$$10^2 + 10 = 110$$

$$12^2 + 12 = 156$$

$$14^2 + 14 = 210$$

$$16^2 + 16 = 272$$

$$18^2 + 18 = 342$$

$$20^2 + 20 = 420$$

$$22^2 + 22 = 506$$

wrong number is 282 which should be replaced with 272

**S62. Ans.(d)**

**Sol.** Pattern is

$$2000 \times 1 = 2000$$

$$2000 \div 2 = 1000$$

$$1000 \times 3 = 3000$$

$$3000 \div 4 = 750$$

$$750 \times 5 = 3750$$

$$3750 \div 6 = 625$$

wrong number is 600 which should be replaced with 750

**S63. Ans.(a)****Sol.** Pattern is

$2 \times 1 + 0 = 2$

$2 \times 2 + 1 = 5$

$5 \times 3 + 2 = 17$

$17 \times 4 + 3 = 71$

$71 \times 5 + 4 = 359$

$359 \times 6 + 5 = 2159$

wrong number is 72 which should be replaced with 71

**S64. Ans.(e)****Sol.** Pattern is

$9000 - (180 \times 6) = 7920$

$7920 - (180 \times 5) = 7020$

$7020 - (180 \times 4) = 6300$

$6300 - (180 \times 3) = 5760$

$5760 - (180 \times 2) = 5400$

$5400 - (180 \times 1) = 5220$

wrong number is 5200 which should be replaced with 5220

**S65. Ans.(d)****Sol.** Pattern is

$100 + (4 \times 5) = 120$

$120 + (5 \times 6) = 150$

$150 + (6 \times 7) = 192$

$192 + (7 \times 8) = 248$

$248 + (8 \times 9) = 320$

$320 + (9 \times 10) = 410$

wrong number is 154 which should be replaced with 150

**S66. Ans.(c)****Sol.** Pattern followed is

$7 \times 0.5 + 0.5 = 4$

$4 \times 1 + 1 = 5$

$5 \times 1.5 + 1.5 = 9$

$9 \times 2 + 2 = 20$

$20 \times 2.5 + 2.5 = 52.5$

$52.5 \times 3 + 3 = 160.5$

So, wrong number is 8.5 which should be replaced by 9

**S67. Ans.(d)****Sol.** Pattern followed is

$160 + 47 = 207$

$207 + 53 = 260$

$260 + 59 = 319$

$319 + 61 = 380$

$380 + 67 = 447$

$447 + 71 = 518$

So, wrong number is 449 which should be replaced by 447

**S68. Ans.(c)****Sol.** Pattern followed is

$12 \times 0.5 = 6$

$6 \times 1 = 6$

$6 \times 2 = 12$

$12 \times 3.5 = 42$

$42 \times 5.5 = 231$

$231 \times 8 = 1848$

So, wrong number is 36 which should be replaced by 42

**S69. Ans.(e)****Sol.** Pattern followed is

$14700 \div 7 = 2100$

$2100 \times 6 = 12600$

$12600 \div 5 = 2520$

$2520 \times 4 = 10080$

$10080 \div 3 = 3360$

$3360 \times 2 = 6720$

So, wrong number is 2500 which should be replaced by 2520

**S70. Ans.(c)****Sol.** Pattern followed is

$(4.5)^2 = 20.25$

$(4.8)^2 = 23.04$

$(5.1)^2 = 26.01$

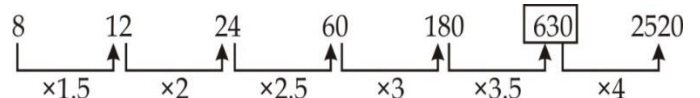
$(5.4)^2 = 29.16$

$(5.7)^2 = 32.49$

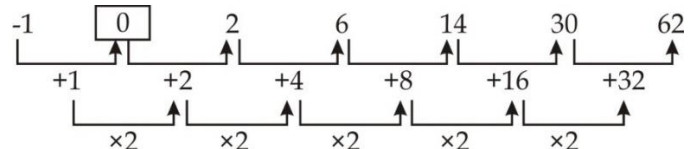
$(6.0)^2 = 36.00$

$(6.3)^2 = 39.69$

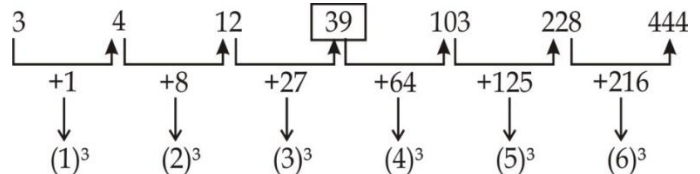
So, wrong number is 32.56 and it should be replaced by 32.49

**S71. Ans.(d)****Sol.**

So, the wrong no. in this series is 640

**S72. Ans.(a)****Sol.**

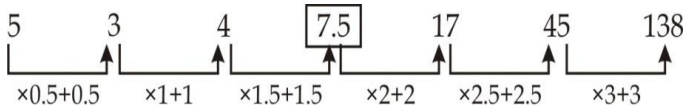
So, the wrong no. in this series is 1

**S73. Ans.(c)****Sol.**

So, the wrong no. in this series is 41.

**S74. Ans.(b)**

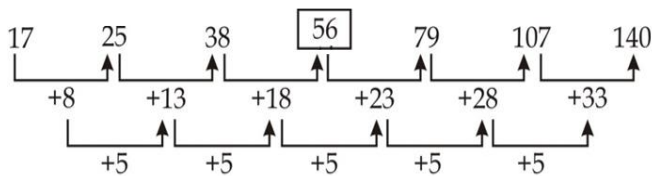
**Sol.**



So, the wrong no. in this series is 7.

**S75. Ans.(d)**

**Sol.**



So, the wrong no. in this series is 53.

**S76. Ans.(d)**

**Sol.**  $10^2 + 2 = 102$

$$9^2 + 2 = 83$$

$$8^2 + 2 = 66$$

$$7^2 + 2 = 51$$

$$6^2 + 2 = 38$$

$$5^2 + 2 = 27$$

$$4^2 + 2 = 18$$

Hence, wrong term is 50.

**S77. Ans.(c)**

**Sol.**  $1^2 + 1^3 = 2$

$$2^2 + 2^3 = 12$$

$$3^2 + 3^3 = 36$$

$$4^2 + 4^3 = 80$$

$$5^2 + 5^3 = 150$$

$$6^2 + 6^3 = 252$$

$$7^2 + 7^3 = 392$$

So, wrong number is 251

**S78. Ans.(c)**

**Sol.** All numbers in the series are prime except 15.

So, wrong term is 15.

**S79. Ans.(a)**

**Sol.**  $11 + 11 = 22$

$$22 + 12 = 34$$

$$34 + 13 = 47$$

$$47 + 14 = 61$$

$$61 + 15 = 76$$

$$76 + 16 = 92$$

So, wrong term is 77

**S80. Ans.(a)**

**Sol.**  $2 \times 2 + 1 = 5$

$$5 \times 2 + 1 = 11$$

$$11 \times 2 + 1 = 23$$

$$23 \times 2 + 1 = 47$$

$$47 \times 2 + 1 = 95$$

$$95 \times 2 + 1 = 191$$

So, wrong term is 6.

**S81. Ans.(c)**

**Sol. I.**  $x^2 - 21x + 110 = 0$

$$x^2 - 11x - 10x + 110 = 0$$

$$x(x-11) - 10(x-11) = 0$$

$$(x-11)(x-10) = 0$$

$$x = 11, 10$$

II.  $y^2 - 25y + 156 = 0$

$$y^2 - 13y - 12y + 156 = 0$$

$$y(y-13) - 12(y-13) = 0$$

$$(y-13)(y-12) = 0$$

$$y = 13, 12$$

So,  $x < y$

**S82. Ans.(a)**

**Sol. I.**  $x^2 + 29x + 208 = 0$

$$x^2 + 16x + 13x + 208 = 0$$

$$x(x+16) + 13(x+16) = 0$$

$$(x+16)(x+13) = 0$$

$$x = -16, -13$$

II.  $y^2 + 35y + 306 = 0$

$$y^2 + 17y + 18y + 306 = 0$$

$$y(y+17) + 18(y+17) = 0$$

$$(y+18)(y+17) = 0$$

$$y = -17, -18$$

So,  $x > y$

**S83. Ans.(b)**

**Sol. I.**  $x = \sqrt[3]{4096}$

$$x = 16$$

II.

$$y^2 + 121 = 377$$

$$y^2 = 256$$

$$y = \pm 16$$

So,  $x \geq y$

**S84. Ans.(e)**

**Sol. I.**  $3x^2 + 23x + 44 = 0$

$$3x^2 + 12x + 11x + 44 = 0$$

$$3x(x+4) + 11(x+4) = 0$$

$$(3x+11)(x+4) = 0$$

$$x = -4, -\frac{11}{3}$$

II.  $4y^2 + 33y + 65 = 0$

$$4y^2 + 20y + 13y + 65 = 0$$

$$4y(y+5) + 13(y+5) = 0$$

$$(y+5)(4y+13) = 0$$

$$y = -5, -\frac{13}{4}$$

So, No relation

**S85. Ans.(b)**

**Sol. I.**  $x^2 + 41x + 418 = 0$

$x^2 + 19x + 22x + 418 = 0$

$x(x+19) + 22(x+19) = 0$

$(x+19)(x+22) = 0$

$x = -19, -22$

**II.**  $y^2 + 47y + 550 = 0$

$y^2 + 22y + 25y + 550 = 0$

$y(y+22) + 25(y+22) = 0$

$(y+22)(y+25) = 0$

$y = -22, -25$

$\text{So, } x \geq y$

**S86. Ans.(b)**

**Sol. I.**  $2x^2 - 17x + 36 = 0$

$2x^2 - 8x - 9x + 36 = 0$

$2x(x-4) - 9(x-4) = 0$

$(2x-9)(x-4) = 0$

$x = \frac{9}{2}, 4$

**II.**  $3y^2 - 22y + 40 = 0$

$3y^2 - 12y - 10y + 40 = 0$

$3y(y-4) - 10(y-4) = 0$

$(y-4)(3y-10) = 0$

$y = 4, \frac{10}{3}$

$x \geq y$

**S87. Ans.(c)**

**Sol. I.**  $x^2 + 21x + 108 = 0$

$x^2 + 9x + 12x + 108 = 0$

$x(x+9) + 12(x+9) = 0$

$(x+12)(x+9) = 0$

$x = -12, -9$

**II.**  $y^2 + 14y + 48 = 0$

$y^2 + 6y + 8y + 48 = 0$

$y(y+6) + 8(y+6) = 0$

$(y+8)(y+6) = 0$

$y = -8, -6$

$y > x$

**S88. Ans.(d)**

**Sol. I.**  $2x^2 + 7x - 60 = 0$

$2x^2 + 15x - 8x - 60 = 0$

$x(2x+15) - 4(2x+15) = 0$

$(x-4)(2x+15) = 0$

$x = 4, \frac{-15}{2}$

**II.**  $3y^2 - 28y + 64 = 0$

$3y^2 - 12y - 16y + 64 = 0$

$3y(y-4) - 16(y-4) = 0$

$(3y-16)(y-4) = 0$

$y = \frac{16}{3}, 4$

$y \geq x$

**S89. Ans.(e)**

**Sol. I.**  $x^2 - 2x - 24 = 0$

$x^2 - 6x + 4x - 24 = 0$

$x(x-6) + 4(x-6) = 0$

$(x+4)(x-6) = 0$

$x = 6, -4$

**II.**  $y^2 + 3y - 40 = 0$

$y^2 + 8y - 5y - 40 = 0$

$y(y+8) - 5(y+8) = 0$

$(y-5)(y+8) = 0$

$y = 5, -8$

No relation can be established

**S90. Ans.(c)**

**Sol. I.**  $4x^2 + 27x + 45 = 0$

$4x^2 + 12x + 15x + 45 = 0$

$4x(x+3) + 15(x+3) = 0$

$(4x+15)(x+3) = 0$

$x = \frac{-15}{4}, -3$

**II.**  $5y^2 + 42y + 88 = 0$

$5y^2 + 20y + 22y + 88 = 0$

$5y(y+4) + 22(y+4) = 0$

$(5y+22)(y+4) = 0$

$y = -4, \frac{-22}{5}$

$x > y$

**S91. Ans.(e)**

**Sol. I.**  $x^2 + 5x + 6 = 0$

$x^2 + 3x + 2x + 6 = 0$

$(x+3)(x+2) = 0$

$x = -2, -3$

**II.**  $y^2 + 9y + 14 = 0$

$y^2 + 7y + 2y + 14 = 0$

$(y+2)(y+7) = 0$

$y = -2, -7$

Clearly, no relation can be established

**S92. Ans.(b)**

**Sol. I.**  $x^2 - 18x + 45 = 0$

$x^2 - 15x - 3x + 45 = 0$

$(x - 3)(x - 15) = 0$

$x = 3, 15$

**II.**  $y^2 + 12y - 45 = 0$

$y^2 + 15y - 3y - 45 = 0$

$(y - 3)(y + 15) = 0$

$y = 3, -15$

Clearly,  $x \geq y$ **S93. Ans.(e)**

**Sol. I.**  $9x^2 + 11x + 2 = 0$

$9x^2 + 9x + 2x + 2 = 0$

$(9x + 2)(x + 1) = 0$

$x = -\frac{2}{9}, -1$

**II.**  $8y^2 + 6y + 1 = 0$

$8y^2 + 4y + 2y + 1 = 0$

$(4y + 1)(2y + 1) = 0$

$y = -\frac{1}{2}, -\frac{1}{4}$

Clearly, no relation can be established

**S94. Ans.(c)**

**Sol. I.**  $6x^2 + 5x + 1 = 0$

$6x^2 + 3x + 2x + 1 = 0$

$(3x + 1)(2x + 1) = 0$

$x = -\frac{1}{3}, -\frac{1}{2}$

**II.**  $4y^2 - 15y = 4$

$4y^2 - 16y + y - 4 = 0$

$(4y + 1)(y - 4) = 0$

$y = -\frac{1}{4}, 4$

Clearly,  $x < y$ **S95. Ans.(c)**

**Sol. I.**  $x^2 + 3x = 0$

$x(x + 3) = 0$

$x = 0, -3$

**II.**  $x^2 + y = 10$

$y = 10 - x^2$

if  $x = 0, y = 10$

if  $x = -3, y = 10 - (-3)^2 = 1$

Clearly,  $x < y$ **S96. Ans.(c)**

**Sol. I.**  $x^2 - 25x + 156 = 0$

$x^2 - 12x - 13x + 156 = 0$

$x(x - 12) - 13(x - 12) = 0$

$(x - 12)(x - 13) = 0$

$x = 12, 13$

**II.**  $y^2 - 29y + 210 = 0$

$y^2 - 14y - 15y + 210 = 0$

$y(y - 14) - 15(y - 14) = 0$

$(y - 14)(y - 15) = 0$

$y = 14, 15$

So,  $x < y$ **S97. Ans.(d)**

**Sol. I.**  $x^2 = 196$

$x = \sqrt{196}$

$x = \pm 14$

**II.**  $y = \sqrt{196}$

$y = 14$

So,  $x \geq y$ **S98. Ans.(e)**

**Sol. I.**  $x^2 + 12x + 35 = 0$

$x^2 + 5x + 7x + 35 = 0$

$x(x + 5) + 7(x + 5) = 0$

$(x + 5)(x + 7) = 0$

$x = -5, -7$

**II.**  $y^2 + 14y + 48 = 0$

$y^2 + 6y + 8y + 48 = 0$

$y(y + 6) + 8(y + 6) = 0$

$(y + 8)(y + 6) = 0$

$y = -8, -6$

So, no relation.

**S99. Ans.(a)**

**Sol. I.**  $3x^2 + 23x + 30 = 0$

$3x^2 + 18x + 5x + 30 = 0$

$3x(x + 6) + 5(x + 6) = 0$

$(3x + 5)(x + 6) = 0$

$x = -6, -\frac{5}{3}$

**II.**  $y^2 + 15y + 56 = 0$

$y^2 + 8y + 7y + 56 = 0$

$y(y + 8) + 7(y + 8) = 0$

$(y + 7)(y + 8) = 0$

$y = -7, -8$

So,  $x > y$ **S100. Ans.(c)**

**Sol. I.**  $x^2 + 17x + 72 = 0$

$x^2 + 8x + 9x + 72 = 0$

$x(x + 8) + 9(x + 8) = 0$

$(x + 9)(x + 8) = 0$

$x = -8, -9$

**II.**  $y^2 + 13y + 42 = 0$

$y^2 + 6y + 7y + 42 = 0$

$y(y + 6) + 7(y + 6) = 0$

$(y + 6)(y + 7) = 0$

$y = -6, -7$

So,  $x < y$ **S101. Ans.(e)**

**Sol.** let actual SP be Rs.  $x$

New selling price = Rs.  $\frac{4x}{5}$

Let CP be Rs.  $y$

ATQ,  $\frac{\frac{4x}{5} - y}{y} = \frac{20}{100} = \frac{1}{5}$

$\frac{4x}{5} - y = \frac{y}{5}$

$\frac{y}{x} = \frac{2}{3}$

When article sold at actual selling price,

Profit % =  $\frac{x - y}{y} \times 100 = \frac{\frac{3y}{2} - y}{y} \times 100 = 50\%$



**S102. Ans.(e)****Sol.** let CP be Rs.  $x$ 

$$MP = \frac{130}{100} \times x = Rs. 1.3x$$

$$SP \text{ (given)} = \frac{90}{100} \times 1.3x = Rs. 1.17x$$

$$\text{Earlier SP (announced)} = \frac{85}{100} \times 1.3x = Rs. 1.105x$$

$$\text{Gain} = 1.17x - 1.105x = Rs. 0.065x$$

$$0.065x = 13$$

$$x = Rs. 200$$

**S103. Ans.(a)****Sol.** let CP of bags be Rs.  $4x$  & Rs.  $5x$  respectively.

$$\text{Total SP of bags} = \frac{110}{100} \times 4x + \frac{120}{100} \times 5x = 4.4x + 6x =$$

$$Rs. 10.4x$$

$$\text{Required Profit \%} = \frac{10.4x - 9x}{9x} \times 100 = 15\frac{5}{9}\%$$

**S104. Ans.(b)****Sol.** Let cost price of the item be  $100x$ 

$$\text{Marked price of the item} = 100x + 100x \times \frac{60}{100} = 160x$$

$$\text{Selling price of items after giving discounts} = 160x \times$$

$$\frac{90}{100} \times \frac{85}{100} = 122.4x$$

$$\text{Profit percentage} = \frac{122.4x - 100x}{100x} \times 100 = 22.4\%$$

**S105. Ans.(c)****Sol.** Let original cost price of the article be Rs.  $100x$ .

$$\text{So, original selling price of the article} = 100x \times \frac{110}{100}$$

$$= Rs. 110x$$

$$\text{Now, new cost price of the article} = 100x \times \frac{95}{100} = Rs. 95x$$

$$\text{And, new selling price of the article} = Rs. (110x + 120)$$

ATQ,

$$95x \times \frac{120}{100} = 110x + 120$$

$$\Rightarrow 4x = 120$$

$$x = 30$$

$$\text{So, cost price of the article} = 100x = Rs. 3000$$

**S106. Ans.(c)****Sol.** distance covered is directly proportional to speed

When they start at same time, they will cover distance in ratio of their speeds

Let distance covered by Kappu & Chandu be  $5x$  km &  $6x$  km respectively

$$\text{Required answer} = \frac{6x - 5x}{6x + 5x} \times 110 = 10 \text{ kms}$$

**S107. Ans.(c)****Sol.** Let the speed of Abhishek and Rahul be  $6x$  and  $5x$  respectively.

$$\text{Required time} = \frac{6x \times 5}{5x} = 6 \text{ hours.}$$

**S108. Ans.(a)****Sol.** let speed of Manoj & Shreya be  $x$  &  $y$  kmph respectivelyLet Manoj covers  $D$  km in  $t$  hours

$$\text{ATQ, } x = \frac{D}{t} \text{ kmph}$$

$$y = \frac{2D}{\frac{t}{2}} = \frac{4D}{t} \text{ kmph}$$

$$x : y = 1 : 4 \text{ or } a : 4a$$

Since distance travelled by both will be same (Shreya catches him)

Let time taken by Shreya to cover  $20/3$  km be  $k$  hours

$$x \left( k + \frac{30}{60} \right) = yk$$

$$ak + \frac{a}{2} = 4ak$$

$$k = \frac{1}{6} \text{ hours} = 10 \text{ min}$$

$$\text{Speed of Shreya} = \frac{20}{3} \times 6 = 40 \text{ kmph}$$

**S189. Ans.(b)****Sol.** Here, the total distance between P to Q is 594 km

$$\text{Relative Speed} = (63 + 54) \text{ km/hr}$$

$$= 117 \text{ km/hr}$$

$$\text{Distance travelled by Train A in 2 hrs} = 63 \times 2 = 126 \text{ km}$$

$$\text{Remaining distance} = 594 - 126$$

$$= 468 \text{ km}$$

$$\text{Time required to cover the remaining distance} = \frac{468}{117} = 4 \text{ hrs}$$

$$\text{Distance travelled by Train B in 4 hr} = 54 \times 4 = 216 \text{ km}$$

Both train will meet at 216 km distance from Q

**S110. Ans.(c)****Sol.** when time is same then speed is directly proportional to distance coveredLet speed of Dhoni, Rohit & Virat be  $x$  kmph,  $y$  kmph &  $z$  kmph respectively

$$x : y = 1 : 3 \text{ or } a : 3a$$

$$z = \frac{150}{100} \times 3 = 4.5a \text{ kmph}$$

$$\text{ATQ, } \frac{D}{a + 4.5a} = 2$$

$$D = 11a \text{ km}$$

$$\text{Required time} = \frac{D}{4.5a} = \frac{11a}{4.5a} = 2.44 \text{ hours}$$

**S111. Ans.(b)****Sol.** Let quantity of petrol in the vessel be  $30x$  liters

$$\text{So, quantity of diesel in the vessel} = 30x \times \frac{25}{75}$$

$$= 10x \text{ liters}$$

Now, quantity of kerosene in the vessel

$$= \left( 30x \times \frac{100}{50} \right) - (30x + 10x)$$

$$= 20x \text{ liters}$$

$$\text{Required ratio} = \frac{20x}{10x}$$

$$= 2 : 1$$

**S112. Ans.(c)**

**Sol.** Let initial quantity of the mixture in the vessel be  $x$  litre

In 20 litre mixture,

$$\text{Quantity of alcohol} = \frac{3}{10} \times 20 = 6 \text{ litre}$$

$$\text{Quantity of water} = \frac{7}{10} \times 20 = 14 \text{ litre}$$

$$\text{ATQ, } \frac{\frac{3x}{10} - 6}{\frac{7x}{10} - 14 + 2} = \frac{1}{3}$$

$$\frac{3x - 60}{7x - 120} = \frac{1}{3}$$

$$9x - 180 = 7x - 120$$

$$x = 30 \text{ litre}$$

**S113. Ans.(a)**

**Sol.** Let cost price of the mixture = Rs  $x$  per kg

$$35 \quad 50$$

$$x$$

$$3 \quad 2$$

$$(50 - x) : (x - 35) = 3 : 2$$

$$\frac{50 - x}{x - 35} = \frac{3}{2}$$

$$100 - 2x = 3x - 105$$

$$5x = 205$$

$$x = 41$$

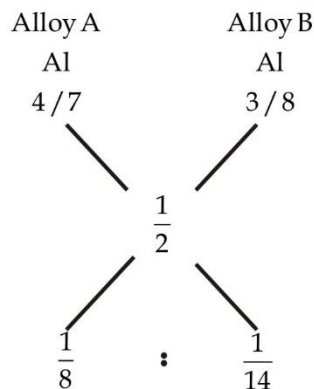
Selling price of the mixture when sold at 25% profit = 41

$$\times \frac{125}{100}$$

$$= \text{Rs } 51.25 \text{ per kg}$$

**S114. Ans.(b)**

**Sol.**



$$\Rightarrow 7 : 4$$

**S115. Ans.(a)**

**Sol.** If  $x$  litres of water is added to the mixture, the ratio of milk and water will be 14:5

$$\frac{14}{5} = \frac{\frac{7}{8} \times 64}{\frac{1}{8} \times 64 + x}$$

$$\frac{14}{5} = \frac{56}{x + 8}$$

$$14x + 112 = 280$$

$$14x = 168$$

$$x = 12 \text{ litres}$$

**S116. Ans.(c)**

**Sol.** Let son's present age =  $x$  years

Then, person's present age =  $(x + 16)$  year

After 2 yrs,  $(x + 16) + 2 = 2(x + 2)$

$$x + 18 = 2x + 4$$

$$x = 14 \text{ years}$$

Hence, son's age after 8 years =  $14 + 8 = 22$  yrs

**S117. Ans.(c)**

**Sol.** Let present ages of Karan and Arjun be  $4x$  &  $3x$  years respectively

$$4x = 3x + 5$$

$$x = 5$$

Present age of Karan =  $4x = 20$  years

Present age of Arjun =  $3x = 15$  years

Present age of Mahesh =  $\frac{20}{2} \times 5 = 50$  years

Required ratio =  $(50 - 10) : (20 - 10) : (15 - 10) = 40 : 10 : 5 = 8 : 2 : 1$

**S118. Ans.(d)**

**Sol.** Let present age of suman's son be  $x$  yr

Hence, age of suman =  $(x + 25)$  yr

According to the question,  $\frac{x + 7}{(x + 25) + 7} = \frac{1}{2}$

$$2x + 14 = x + 32$$

$$x = 32 - 14 = 18 \text{ yrs}$$

**S119. Ans.(c)**

**Sol.** Let present age of shivam and ayush be ' $p$ ' yrs and ' $q$ ' yrs respectively

$$(p + 5) = \frac{120}{100} \times p$$

$$(p + 5) = \frac{6p}{5}$$

$$p = 25$$

$$\text{Also, } (q - 6) = \left(\frac{75}{100}\right) \times q$$

$$q - 6 = \frac{3q}{4}$$

$$q = 24$$

Sum of ages of shivam and ayush, 8 yrs hence

$$= 25 + 8 + 24 + 8$$

$$= 65 \text{ yrs}$$

**S120. Ans.(b)**

**Sol.** Let present age of Father and his son be  $3x$  and  $x$  yrs respectively

$$\frac{3x + 6}{x + 6} = \frac{7}{3}$$

$$9x + 18 = 7x + 42$$

$$2x = 24$$

$$x = 12$$

Age of son 3 yrs ago =  $x - 3 = 12 - 3 = 9$  yrs

**S121. Ans.(d)****Sol.** let each invested Rs P

Let Jaddu invested for X years

$$\text{ATQ, } \frac{P \times 10 \times X}{100} = P \left(1 + \frac{10}{100}\right)^2 - P$$

$$\frac{X}{10} = \frac{21}{100}$$

$$X = 2.1 \text{ years}$$

**S122. Ans.(d)**

$$\text{Interest earned in 1st half of the year} = 30000 \times \frac{1}{2} \times \frac{20}{100}$$

$$= \text{Rs } 3000$$

Similarly, during 2nd half, interest earned = 10% of 33000 = Rs 3300

During 2nd year, interest earned

$$= (30000 + 3000 + 3300) \times \frac{20}{100} = \text{Rs } 7260$$

Total interest earned at the end of 2 yrs

$$= 3000 + 3300 + 7260 = \text{Rs } 13560$$

**S123. Ans.(a)****Sol.** Let the investment in A, B and C be 2x, x and 3x respectively.

Cumulative interest rate for A, B and C is

$$10\% \times 2, \left(5 + 5 + \frac{25}{100}\right)\%, \left(3 + 3 + \frac{9}{100}\right)\%$$

$$= 20\%, 10.25\%, 6.09\%$$

$$\text{ATQ, } 2x \times \frac{20}{100} + x \times \frac{10.25}{100} + \frac{3x \times 6.09}{100} = 6852$$

$$\Rightarrow \frac{68.52x}{100} = 6852$$

$$\Rightarrow x = 10000$$

So, Total amount invested is 60000 Rs.

**S124. Ans.(b)****Sol.** Interest received after 3 yrs is Rs 7560 at simple interest

$$\text{Interest received after 1 yrs on S.I} = \frac{7560}{3}$$

$$= \text{Rs } 2520$$

$$\text{Rate of interest}(r) = \frac{2520}{16800} \times 100$$

$$= 15\%$$

Interest received on C.I at (r+5)% after 2 yrs

$$= 16800 \left[ \left(1 + \frac{20}{100}\right)^2 - 1 \right]$$

$$= 16800 \left( \frac{36}{25} - 1 \right)$$

$$= 16800 \left( \frac{11}{25} \right)$$

$$= \text{Rs } 7392$$

**S125. Ans.(a)****Sol.** ATQ,

$$\frac{x \times 14 \times 3}{100} - \frac{x \times 10 \times 3}{100} = 120$$

$$\frac{(42-30)x}{100} = 120$$

$$x = \text{Rs. } 1000$$

$$\text{Required answer} = 5x = 5 \times 1000 = \text{Rs. } 5000$$

**S126. Ans.(c)****Sol.** Let total work be 30 units (LCM of 15, 30, 10)

$$\text{Efficiency Arshad} = \frac{30}{15} = 2 \frac{\text{units}}{\text{day}}$$

$$\text{Sanjay} = \frac{30}{30} = 1 \frac{\text{units}}{\text{day}}$$

$$\text{Arshad, Sanjay, Vidya} = \frac{30}{5} = 6 \text{ units/day}$$

**S127. Ans.(b)****Sol.** 1 day wage of 4 men & 3 children =  $\frac{600}{3} = \text{Rs. } 200$ 

Let efficiency of a man &amp; a child be M &amp; C units/day respectively

Equating total work,

$$(4M + 3C) \times 3 = M \times 15$$

$$M : C = 3 : 1 \text{ (this is also ratio of daily wage)}$$

$$\text{Daily wage of a man} = \frac{3}{15} \times 200 = \text{Rs. } 40$$

**S128. Ans.(b)****Sol.** Let efficiency of a man & a boy be M & B units/day respectively

$$5B \times 20 = 10M \times 8$$

$$\frac{M}{B} = \frac{5}{4}$$

$$\text{Total work} = (4 \times 5 + 4 \times 4) \times 3 = 108 \text{ units}$$

$$\text{Work done by 4 boys in 3 days} = 4 \times 4 \times 3 = 48 \text{ units}$$

Amount earned by boys for their contribution =

$$\frac{48}{108} \times 540 = \text{Rs. } 240$$

**S129. Ans.(d)****Sol.** Let, Abhishek can complete the work alone in 'x' days.Then, Satish can complete the work alone in  $x \times \frac{100}{75}$ 

$$= \frac{4x}{3} \text{ days}$$

$$\text{Bhavya can complete the work alone in } \frac{4x}{3} \times \frac{1}{2} \text{ days} = \frac{2x}{3}$$

days

ATQ,

$$\frac{3}{4x} + \frac{3}{2x} = \frac{3}{20}$$

$$\Rightarrow \frac{1+2}{4x} = \frac{1}{20}$$

$$\Rightarrow x = 15$$

Bhavya and Abhishek together can complete the work in

$$\frac{15 \times 10}{15+10} = \frac{150}{25} = 6 \text{ days.}$$

**S130. Ans.(d)**

Sol. P and Q together can complete  $\frac{2}{3}$ rd of the total work in 8 days

Total work can be completed in 12 days by P and Q working together

Let the time taken by Q alone to complete the work be 'b' days

$$\frac{1}{30} + \frac{1}{b} = \frac{1}{12}$$

$$\frac{1}{b} = \frac{1}{12} - \frac{1}{30}$$

$$\frac{1}{b} = \frac{5-2}{60}$$

$$\frac{1}{b} = \frac{3}{60}$$

Q alone can complete the total work in 20 days

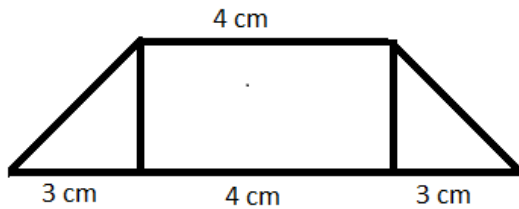
Time taken to complete  $\frac{3}{4}$ th work by Q alone

$$= \frac{3}{4} \times 20 = 15 \text{ days}$$

**S131. Ans.(d)**

Sol. side of square =  $\sqrt{25} = 5 \text{ cm}$

Since non-parallel sides are equal,



Height of trapezium =  $\sqrt{5^2 - 3^2} = 4 \text{ cm}$

Area of trapezium =  $\frac{1}{2}(\text{base1} + \text{base2}) \times \text{height}$

$$\frac{1}{2} \times (4 + 10) \times 4 = 28 \text{ cm}^2$$

**S132. Ans.(e)**

Sol. let side of square be x cm

$$\frac{x^2}{10x} = \frac{4}{5}$$

$$x = 8 \text{ cm}$$

Diagonal of square =  $\sqrt{2}x = 8\sqrt{2} \text{ cm}$

**S133. Ans.(c)**

Sol. Let r and h be radius and height of cylinder respectively.

Now,  $r + h = 23 \text{ cm}$

ATQ,

$$2\pi r(r + h) = 368\pi$$

$$\Rightarrow r = 8 \text{ and } h = 15$$

Now, radius of cone = 8 cm.

ATQ,

$$\pi r(l + r) = 200\pi$$

$$\Rightarrow l = 17 \text{ cm}$$

$$\text{Volume of cone} = \frac{1}{3}\pi \times 8 \times 8 \times 15$$

$$= 320 \pi \text{ cm}^3$$

**S134. Ans.(d)**

Sol. Let radius of smaller & larger circles be  $r_1$  &  $r_2$  respectively.

$$2\pi r_1 = 132$$

$$r_1 = 21 \text{ m}$$

$$2\pi r_2 = 176 \Rightarrow r_2 = 28 \text{ m.}$$

$\therefore$  Required difference

$$= \pi(r_2^2 - r_1^2)$$

$$= \frac{22}{7} \times 49 \times 7$$

$$= 1078 \text{ m}^2$$

**S135. Ans.(b)**

Sol. let side of 4 squares be a, b, c & d cm respectively

$$a = \frac{24}{4} = 6 \text{ cm}$$

$$b = \frac{32}{4} = 8 \text{ cm}$$

$$c = \frac{40}{4} = 10 \text{ cm}$$

$$d = \frac{48}{4} = 12 \text{ cm}$$

Perimeter of new square =  $a + b + c + d = 6 + 8 + 10 + 12 = 36 \text{ cm}$

$$4(\text{side}) = 36$$

$$\text{side} = 9 \text{ cm}$$

$$\text{Required area} = \text{side}^2 = 9^2 = 81 \text{ cm}^2$$

**S136. Ans.(d)**

Sol. Let ratio of P's investment and Q's investment be x:y  
Therefore, profit will be shared in the ratio 4x:5y

$$\text{Given, } \frac{4x}{4x+5y} \times 75000 = 15000$$

$$\frac{4x}{4x+5y} = \frac{1}{5}$$

$$20x = 4x + 5y$$

$$16x = 5y$$

$$y : x = 16 : 5$$

**S137. Ans.(d)**

Sol. A : B : C

Amount 2500 4500 2400

Time period 12 12 7

Reqd. ratio 25 : 45 : 14

Required difference in profit share of B and C =  $(45-14) \times \frac{16800}{84}$

$$= \text{Rs } 6200$$

**S138. Ans.(a)**

Sol. Ratio of investment of Arun, bhavya & Ashu

$$4 \times 3 : x \times 3 : 4 \times x$$

Ratio of profit

$$24 \times 12 : 24 \times 3x : 24 \times 4x$$

ATQ -

$$\frac{4x}{7x+12} = \frac{1850}{3700}$$

$$8x = 7x + 12$$

$$x = 12$$

**S139. Ans.(d)**

A : B : C

$$\begin{array}{r} 7000 \times 2 \quad 6000 \times 2 \quad 8500 \times 2 \\ + \quad + \quad + \\ 9000 \times 1 \quad 7500 \times 1 \quad 6500 \times 1 \\ = 46 \quad : \quad 39 \quad 47 \end{array}$$

$$\begin{aligned} \text{B's profit share} &= 26400 \times \frac{39}{132} \\ &= \text{Rs } 7800 \end{aligned}$$

**S140. Ans.(e)****Sol.** Let  $x$  = Amount invested by 'A' and  $y$  = amount invested by 'B'

$$\begin{aligned} \text{Ratio of profit of A, B \& C} &= (x \times 12) : (y \times 9) : (12000 \times 3) \\ &= 4x : 3y : 12000 \end{aligned}$$

ATQ,

$$\frac{4x}{12,000} = \frac{48}{24} \Rightarrow x = 6,000$$

$$\text{and } \frac{3y}{12,000} = \frac{48}{24} \Rightarrow y = 8,000$$

$$\text{Required sum} = 6,000 + 8,000 = \text{Rs. } 14,000$$

**S141. Ans.(b)****Sol.** Let speed of current be  $x$  kmph

ATQ,

$$\frac{10.8}{(21-x)} = \frac{36}{60}$$

$$\Rightarrow x = 3 \text{ kmph}$$

$$\text{Now, downstream speed} = 21 + 3 = 24 \text{ kmph}$$

$$\text{Total time taken} = \frac{60}{24}$$

$$= 2 \text{ hours } 30 \text{ minutes}$$

**S142. Ans.(b)**

$$\text{Sol. Downstream speed} = \frac{36}{4} = 9 \text{ km/hr}$$

$$\text{Speed of the current} = \frac{1}{3} \times 9 = 3 \text{ km/hr}$$

$$\text{Speed of the boat} = 9 - 3 = 6 \text{ km/hr}$$

$$\text{Now, Uptream speed} = 6 - 3 = 3 \text{ km/hr}$$

$$\text{Total time taken} = \frac{78}{3} = 26 \text{ hr}$$

**S143. Ans.(c)****Sol.** let speed of stream be  $x$  km/hrSpeed of boat in still water =  $4x$  km/hr

$$\frac{220}{4x+x} + \frac{108}{4x-x} = 20$$

$$\frac{220}{5x} + \frac{108}{3x} = 20$$

$$\frac{44}{x} + \frac{36}{x} = 20$$

$$\frac{80}{x} = 20$$

$$x = 4 \text{ km/hr}$$

$$\text{speed of stream} = 4 \text{ km/hr}$$

$$\text{speed of boat in still water} = 4x = 16 \text{ km/hr}$$

$$\text{Reqd. sum} = \frac{40}{20} + \frac{48}{12} = 2 + 4 = 6 \text{ hrs}$$

**S144. Ans.(e)**Let speed of stream be  $u$  km/hr

According to the question,

$$\frac{54}{15+u} + \frac{54}{15-u} = 7.5$$

$$\frac{18}{15+u} + \frac{18}{15-u} = \frac{5}{2}$$

$$\frac{18(15-u+15+u)}{(15+u)(15-u)} = \frac{5}{2}$$

$$216 = 225 - u^2$$

$$u^2 = 9$$

$$u = 3 \text{ km/hr}$$

$$\text{Time required to travel 48 km in upstream} = \frac{48}{15-3} = \frac{48}{12} = 4 \text{ hrs}$$

**S145. Ans.(d)****Sol.** In still water, the speed of boat =  $\frac{105}{6} = 17.5$  km/hr.And let the rate of stream be  $V$  km/hr

According to the question,

$$\frac{V}{(17.5-V)} = \frac{9}{26}$$

$$26V = 157.5 - 9V$$

$$35V = 157.5$$

$$V = 4.5 \text{ km/hr}$$

Total time taken to travel 364 km roundtrip

$$= \frac{364}{(17.5-4.5)} + \frac{364}{(17.5+4.5)}$$

$$= \frac{364}{13} + \frac{364}{22}$$

$$= 44.54 \text{ hrs}$$

$$= 45 \text{ hrs. (approx.)}$$

**S146. Ans.(a)****Sol.** Expenditure of A = 2400 Rs.

$$\text{Now, } 4 \rightarrow 2400$$

$$1 \rightarrow 600$$

Average expenditure of A, B and C

$$= \frac{600 \times (4+2+5)}{3} = 2200 \text{ Rs.}$$

**S147. Ans.(d)****Sol.** Let no. of questions he attempted correct be  $x$ .

$$\text{ATQ, } 3x - 0.5(250 - x) = 435$$

$$3.5x - 125 = 435$$

$$x = 160$$

**S48. Ans.(d)****Sol.** Sum of ages of all the 20 members =  $20 \times 25 = 500$ 

$$\text{Sum of ages of first 18 members} = 18 \times 24 = 432$$

$$\text{Sum of ages of last 2 members} = 500 - 432 = 68$$

$$\therefore \text{Average age} = \frac{68}{2} = 34$$

**S149. Ans.(d)****Sol.** let Sanjay spends Rs x.

Expenditure of Nawaz = x - 500 Rs

ATQ, x+x-500=8500

X= Rs 4500

Expenditure of Manoj = 9000 - (4500 - 500) = Rs 5000

Average expenditure of Sanjay & Irfan =  $\frac{100}{90} \times 4500 =$  Rs 5000

Expenditure of Irfan = 10000 - 4500 = Rs 5500

Required average =  $\frac{5000+5500}{2} =$  Rs 5250**S150. Ans.(e)****Sol.** required average cost

$$= \frac{200+2 \times 80+3 \times 95}{8} = \frac{645}{8} = \text{Rs } 80.625$$

**S151. Ans.(a)****Sol.** total students in a section = students failed in both + students passed in half yearly + students passes in annual - students passed in both

$$\text{total students in section B} = 15 + 30 + 25 - 20 = 50$$

**S152. Ans.(d)****Sol.** students failed in both exams in all sections

$$= 10 + 15 + 20 = 45$$

Students passed in both exams in all sections

$$= 20 + 20 + 25 = 65$$

$$\text{Required \%} = \frac{65-45}{45} \times 100 = 44\frac{4}{9}\%$$

**S153. Ans.(c)****Sol.** students passed in only one examination in all sections

$$= (30 + 40 - 20) + (30 + 25 - 20) + (35 + 30 - 25) = 125$$

$$\text{Required average} = \frac{125}{3} = 41.67$$

**S154. Ans.(e)****Sol.** Total students in section C = 20 + 35 + 30 - 25 = 60

$$\text{Required \%} = \frac{20}{60} \times 100 = 33.33\%$$

**S155. Ans.(b)****Sol.** students in section A = 10 + 30 + 40 - 20 = 60

Students in section B = 15 + 30 + 25 - 20 = 50

Students in section C = 20 + 35 + 30 - 25 = 60

Section A &amp; C have same no. of students

**S156. Ans.(c)****Sol.** Total marks scored by lokesh in physics, chemistry and maths together=  $150 \times \frac{80}{100} + 150 \times \frac{76}{100} + 150 \times \frac{84}{100}$ 

$$= 120 + 114 + 126 = 360$$

Total marks scored by Amit in physics, chemistry and

$$\text{maths together} = 150 \times \frac{70}{100} + 150 \times \frac{66}{100} + 150 \times \frac{58}{100}$$

$$= 105 + 99 + 87 = 291$$

$$\text{Required difference} = 360 - 291 = 69$$

**S157. Ans.(d)****Sol.** Total marks scored by Siddharth in all the

$$\text{subjects} = 150 \times \frac{48}{100} + 150 \times \frac{72}{100} + 150 \times \frac{88}{100} + 100 \times \frac{70}{100} +$$

$$100 \times \frac{86}{100}$$

$$= 72 + 108 + 132 + 70 + 86 = 468$$

$$\text{overall percentage marks scored by Siddharth} = \frac{468}{650} \times 100 = 72\%$$

**S158. Ans.(a)****Sol.** Total marks scored by Ritesh in all the subjects=  $150 \times$ 

$$\frac{76}{100} + 150 \times \frac{82}{100} + 150 \times \frac{64}{100} + 100 \times \frac{72}{100} + 100 \times \frac{94}{100}$$

$$= 114 + 123 + 96 + 72 + 94 = 499$$

Total marks scored by Aakash in all the subjects=  $150 \times \frac{50}{100}$ 

$$+ 150 \times \frac{64}{100} + 150 \times \frac{78}{100} + 100 \times \frac{65}{100} + 100 \times \frac{75}{100}$$

$$= 75 + 96 + 117 + 65 + 75 = 428$$

$$\text{Required difference} = 499 - 428 = 71$$

**S159. Ans.(c)****Sol.** marks scored in physics subject by all the given five

$$\text{students together} = 150 \times \frac{66}{100} + 150 \times \frac{64}{100} + 150 \times \frac{72}{100}$$

$$+ 150 \times \frac{76}{100} + 150 \times \frac{82}{100}$$

$$= 99 + 96 + 108 + 114 + 123 = 540$$

$$\text{Average marks scored in physics} = \frac{540}{5} = 108$$

**S160. Ans.(b)****Sol.** Total marks scored by Aakash, Siddharth and Lokesh

$$\text{in English} = 100 \times \frac{65}{100} + 100 \times \frac{70}{100} + 100 \times \frac{75}{100}$$

$$= 65 + 70 + 75 = 210$$

Total marks scored by Amit, Aakash and Lokesh in

$$\text{maths} = 150 \times \frac{70}{100} + 150 \times \frac{50}{100} + 150 \times \frac{80}{100}$$

$$= 105 + 75 + 120 = 300$$

$$\text{Required percentage} = \frac{210}{300} \times 100 = 70\%$$

**Solutions (161-165):** Let the number of pen and pencil sold by A be 7x and 5x respectively and that of by B be 3y and 2y respectively.

Total numbers of pen and pencil sold by A and B

$$= 7x + 5x + 3y + 2y$$

$$12x + 5y = 874 - 128$$

$$12x + 5y = 746$$

Now,

$$7x = 3y \times \frac{110}{100}$$

$$x = \frac{33y}{70}$$

$$12x + 5y = 746$$

$$12 \times \frac{33y}{70} + 5y = 746$$

$$396y + 350y = 746 \times 70$$

$$y = \frac{746 \times 70}{746} = 70$$

$$x = \frac{33y}{70} = \frac{33 \times 70}{70} = 33$$

	A	B	C
Pen	$7x=7 \times 33$ $=231$	$3y=3 \times 70$ $=210$	$5z=\frac{128}{8} \times 5$ $=80$
Pencil	$5x=5 \times 33$ $=165$	$2y=2 \times 70$ $=140$	$3z=\frac{128}{8} \times 3$ $=48$

**S161. Ans.(c)**

**Sol.** Total amount received by selling all pen by A =  $231 \times 20 = \text{Rs } 4620$

Total amount received by selling all pencil by A =  $165 \times 10 = \text{Rs } 1650$

Total amount earned by selling all pen & pencil by A =  $4620 + 1650 = \text{Rs } 6270$

**S162. Ans.(b)**

**Sol.** Total pens sold by A and B together =  $231 + 210 = 441$

Total pencil sold by B and C together =  $140 + 48 = 188$

Required ratio =  $\frac{441}{188} = 441:188$

**S163. Ans.(d)**

Required average =  $\frac{231+210+80}{3} = \frac{521}{3} = 173.67$

**S164. Ans.(a)**

number of pens sold by stationary B after increase of 20

$\% = 210 \times \frac{120}{100} = 252$

number of pencil sold by stationary C after increase of 25

$\% = 48 \times \frac{125}{100} = 60$

Required sum of pen and pencil =  $252 + 60 = 312$

**S165. Ans.(c)**

Total pens sold by A, B and C together =  $231 + 210 + 80 = 521$

Total pencils sold by A, B and C together =  $165 + 140 + 48 = 353$

Required difference =  $521 - 353 = 168$

**Solutions (166-170):** Person who eat only vanilla

=  $100 - (40 + 10 + 30) = 20$

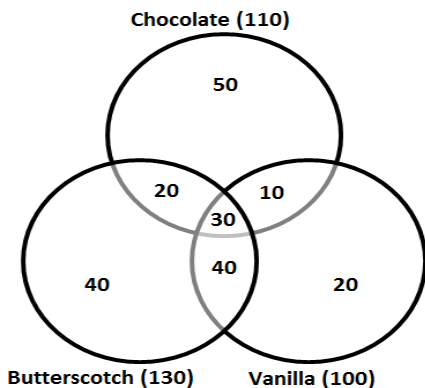
Person who eat butterscotch and chocolate only

=  $130 - (40 + 40 + 30) = 20$

Person who eat only chocolate

=  $210 - (40 + 40 + 30 + 10 + 20 + 20) = 50$

Person who eat chocolate =  $50 + 20 + 30 + 10 = 110$



**S166. Ans.(a)**

**Sol.** Number of people who eat only chocolate = 50

**S167. Ans.(a)**

**Sol.** A.T.Q

People eating chocolate and butterscotch only = 20

People eating only butterscotch = 40

$\therefore$  required percentage =  $\frac{20}{40} \times 100 = 50\%$

**S168. Ans.(d)**

**Sol.** people eating only vanilla = 20

People eating all 3 icecreams = 30

Required difference =  $30 - 20 = 10$

**S169. Ans.(c)**

**Sol.** people eating chocolate = 110

People eating vanilla = 100

$\therefore$  required percentage =  $\frac{110}{100} \times 100 = 110\%$

**S170. Ans.(b)**

**Sol.** people eating only chocolate and only butterscotch together =  $50 + 40 = 90$

People eating only vanilla = 20

$\therefore$  required ratio = 9:2

**S171. Ans.(d)**

**Sol.** required difference = average marks scored by

Student A - Average marks scored by Student B

$\therefore \frac{70+90+60+55}{4} - \frac{50+80+75+65}{4} = \frac{5}{4} = 1.25$

**S172. Ans.(c)**

**Sol.** marks obtained by student A in Math and Computer

together =  $70 + 90 = 160$

marks obtained by student B in Science and English

together =  $75 + 65 = 140$

required ratio =  $160:140 = 8:7$

**S173. Ans.(b)**

**Sol.** Overall percentage marks of Student B =

$\frac{50+80+75+65}{400} \times 100 = 67.5$

**S174. Ans.(c)**

**Sol.** Marks Scored by Student A in Math = 70

Marks Scored by Student B in Science and English

=  $75 + 65 = 140$

Required  $\% = \frac{70}{140} \times 100 = 50\%$

**S175. Ans.(b)**

**Sol.** A.T.Q, passing marks =  $\frac{40}{100} \times 120 = 48$

$\therefore$  required difference =  $80 - 48 = 32$

**S176. Ans.(c)****Sol.** amount received by Rohit

$$= 4000 + \frac{4000 \times 10 \times 2}{100} = \text{Rs. } 4800$$

**S177. Ans.(e)****Sol.** interest amount received by Karan

$$= \frac{8000 \times 10 \times 2}{100} = \text{Rs. } 1600$$

Interest amount received by Mahesh

$$= \frac{6000 \times 12 \times 4}{100} = \text{Rs. } 2880$$

$$\text{Required \%} = \frac{2880 - 1600}{1600} \times 100 = 80\%$$

**S178. Ans.(d)****Sol.** total interest amount received by Anurag & Rohit

$$\text{together} = \frac{4000 \times 16 \times 4}{100} + \frac{4000 \times 10 \times 2}{100} = \text{Rs. } 3360$$

**S179. Ans.(a)****Sol.** interest received by Karan (SI) =  $\frac{8000 \times 10 \times 2}{100} = \text{Rs. } 1600$ 

Interest received by Karan (CI)

$$= 8000 \left(1 + \frac{10}{100}\right)^2 - 8000 = \text{Rs. } 1680$$

$$\text{Required value} = 1680 - 1600 = \text{Rs. } 80$$

**S180. Ans.(e)****Sol.** Interest received by Karan =  $\frac{8000 \times 10 \times 2}{100} = \text{Rs. } 1600$ Interest received by Anurag =  $\frac{4000 \times 16 \times 4}{100} = \text{Rs. } 2560$ Interest received by Mahesh =  $\frac{6000 \times 12 \times 4}{100} = \text{Rs. } 2880$ Interest received by Rohit =  $\frac{4000 \times 10 \times 2}{100} = \text{Rs. } 800$ 

Clearly, Mahesh had received highest interest

**S181. Ans.(d)****Sol.** let his total expenditure be Rs. x in July

$$\text{Savings} = \frac{40}{100} \times x \times \frac{1}{2} = \text{Rs. } \frac{x}{5}$$

$$\text{ATQ, } x + \frac{x}{5} = 12000$$

$$x = \text{Rs. } 10000$$

$$\text{Expenditure on food} = \frac{30}{100} x = \frac{30}{100} \times 10000 = \text{Rs. } 3000$$

**S182. Ans.(a)****Sol.** let salary & savings be Rs. x & Rs. y respectively for March & June

Expenditure in March = expenditure in June = Rs. (x - y)

Expenditure on travel in March = Rs.  $\frac{35}{100} \times (x - y)$ Expenditure on food in June = Rs.  $\frac{40}{100} \times (x - y)$ 

$$\text{Required \%} = \frac{35}{40} \times 100 = 87.5\%$$

**S183. Ans.(e)****Sol.** let total expenditure in May & July is Rs. 5x & Rs. 4x respectively.

$$\text{Required ratio} = \left(\frac{35}{100}\right) \times 5x : \left(\frac{30}{100}\right) \times 4x = 35 : 24$$

**S184. Ans.(c)****Sol.** expenditure in March =  $\frac{90}{100} \times 5000 = \text{Rs. } 4500$ Expenditure on rent in March =  $\frac{40}{100} \times 4500 = \text{Rs. } 1800$ Expenditure in July =  $\frac{90}{100} \times 8000 = \text{Rs. } 7200$ Expenditure on rent in July =  $\frac{40}{100} \times 7200 = \text{Rs. } 2880$ 

$$\text{Required average} = \frac{1800 + 2880}{2} = \text{Rs. } 2340$$

**S185. Ans.(c)****Sol.** let equal expenditure be Rs. x.

$$\text{Required \%} = \frac{\frac{35}{100}x - \frac{30}{100}x}{\frac{30}{100}x} \times 100 = \frac{5}{30} \times 100 = 16.67\%$$

**S186. Ans.(c)****Sol.** total Samsung mobiles

$$= 2400 + 4400 + 1800 + 2800 = 11400$$

**S187. Ans.(e)****Sol.** required answer

$$= (2300 + 2500) - (1800 + 2800) = 200$$

**S188. Ans.(d)**

$$\text{Sol. required \%} = \frac{1800}{2700} \times 100 = 66\frac{2}{3}\%$$

**S189. Ans.(a)****Sol.** required ratio

$$= (2300 + 2500 + 3500) : (2400 + 4400 + 2800)$$

$$= 83 : 96$$

**S190. Ans.(e)**

$$\text{Sol. Nokia (2017)} = \frac{2500 - 2300}{2300} \times 100 = 8.7\%$$

$$\text{Nokia (2018)} = \frac{3500 - 2500}{2500} \times 100 = 40\%$$

$$\text{Samsung (2019)} = \frac{2800 - 1800}{1800} \times 100 = 55.55\%$$

$$\text{Nokia (2019)} = \frac{2700 - 3500}{3500} \times 100 = 23\% \text{ (decrease)}$$

$$\text{Samsung (2017)} = \frac{4400 - 2400}{2400} \times 100 = 83.33\%$$

Clearly, Samsung in 2017 shows maximum production increase

**S191. Ans.(a)****Sol.** no. of valid votes cast in village B

$$= 10000 \times \frac{25}{100} \times \frac{80}{100} \times \frac{90}{100} = 1800$$

**S192. Ans.(d)****Sol.** total valid votes cast in village C

$$= 10000 \times \frac{20}{100} \times \frac{90}{100} = 1800$$

Let winning candidate got x% of votes cast and Losing Candidate got (x-12)% of votes cast.

Now, ATQ

$$x + x - 12 = 100$$

$$x = 56\%$$

$$\text{Votes obtained by losing candidate} = \frac{44}{100} \times 1800 = 792$$



**S193. Ans.(e)****Sol.** average registered voters of B,C,D

$$= \frac{(25+20+15)}{100} \times \frac{10000}{3} = 2000$$

**S194. Ans.(c)****Sol.** votes cast -

$$A = 10000 \times \frac{20}{100} \times \frac{70}{100} = 1400$$

$$B = 10000 \times \frac{25}{100} \times \frac{65}{100} = 1625$$

$$D = 10000 \times \frac{15}{100} \times \frac{80}{100} = 1200$$

$$E = 10000 \times \frac{20}{100} \times \frac{75}{100} = 1500$$

Maximum voters cast their votes in village B.

**S195. Ans.(b)****Sol.** average number of registered voters from village A &

$$C = \frac{10000}{2} \times \frac{20+20}{100} = 2000$$

Average no. of registered voters from village B, D &amp; E

$$= \frac{10000}{3} \times \frac{(25+15+20)}{100} = 2000$$

$$\text{Required \%} = \frac{2000}{2000} \times 100 = 100\%$$

**S196. Ans.(c)****Sol.** Total number of males employees in company E

$$= 5400 \times \frac{22}{100} \times \frac{2}{3} = 792$$

Total number of female employees in company D

$$= 5400 \times \frac{20}{100} \times \frac{3}{5} = 648$$

$$\text{Required ratio} = \frac{792}{648} = 11 : 9$$

**S197. Ans.(a)****Sol.** Total number of male employees in company

$$A = 5400 \times \frac{18}{100} \times \frac{2}{3} = 648$$

Total number of female employees in company E

$$= 5400 \times \frac{22}{100} \times \frac{1}{3} = 396$$

$$\text{Required percentage} = \frac{648}{396} \times 100 = 163.63\%$$

=164% (approx.)

**S198. Ans.(b)****Sol.** total male employees in company B,C and D together

$$= 5400 \times \frac{28}{100} \times \frac{3}{4} + 5400 \times \frac{12}{100} \times \frac{1}{3} + 5400 \times \frac{20}{100} \times \frac{2}{5}$$

$$= 1134 + 216 + 432$$

$$= 1782$$

$$\text{Required percentage} = \frac{1782}{5400} \times 100 = 33\%$$

**S199. Ans.(d)****Sol.** Total female employees in all the 5 companies together

$$= 5400 \times \frac{18}{100} \times \frac{1}{3} + 5400 \times \frac{28}{100} \times \frac{1}{4} + 5400 \times \frac{12}{100} \times \frac{2}{3} +$$

$$5400 \times \frac{20}{100} \times \frac{3}{5} + 5400 \times \frac{22}{100} \times \frac{1}{3}$$

$$= 324 + 378 + 432 + 648 + 396$$

$$= 2178$$

**S200. Ans.(e)****Sol.** Central angle of total employees from company B and

$$D \text{ together} = (28+20) \times \frac{360}{100} = 172.8^\circ$$