Quantitative Aptitude for IBPS Clerk Prelims 2022- Solutions PDF

S1. Ans.(d)
Sol. $\frac{48}{100} \times 525 + \frac{?}{100} \times 250 = 499$
$? = \frac{247 \times 100}{250} = 98.8$

S2. Ans.(c)
Sol. $\frac{5}{2} \times \frac{7}{8} \times \frac{1}{28} \times 1600 = 260 + ? - 499$
$? = 499 + 125 - 260$
$= 364$

S3. Ans.(a)
Sol. $? = \sqrt{5125 - 289 - 75}$
$= \sqrt{4761} = 69$

S4. Ans.(b)
Sol. $(?)^2 = 16 \times 7 + 361 + 11$
$= 484$
$? = 22.$

S5. Ans.(b)
Sol. $252 + 26 + 420 = 121 + ?$
$? = 577$

S6. Ans.(c)
Sol. $80\% \ of \ ? = \sqrt{250 \times 44 + \frac{40 \times 8500}{100}}$
$\Rightarrow \frac{80}{100} \times ? = \sqrt{11000 + 3400}$
$\Rightarrow ? = \sqrt{14400} \times \frac{10}{8}$
$\Rightarrow ? = 120 \times \frac{10}{8} = 150$

S7. Ans.(a)
Sol. $? \times \frac{40}{24} \times 27 = \frac{594}{115} \times \frac{2300}{264}$
$\Rightarrow ? \times 45 = 45$
$\Rightarrow ? = 1$

S8. Ans.(d)
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)
Sol. $? + 13 \times 50 = 420 + \frac{45}{100} \times 800 + 220$
$\Rightarrow ? + 650 = 420 + 360 + 220$
$\Rightarrow ? = 1000 - 650 = 350$

S10. Ans.(e)
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)
Sol. $\left(\frac{4\frac{4}{5} of 25}{48}\right) \div \left(\frac{5}{4} of 32 + \frac{3}{7} of \ 21\right) = ? \ of \ \frac{1}{49}$
$\left(\frac{24}{5} \times \frac{25}{48}\right) \div (40 + 9) = ? \times \frac{1}{49}$
$? = 49 \times \frac{5}{98} = \frac{5}{2} = 2.5$

S12. Ans.(b)
Sol. $\sqrt{?} \ of \ 6 + 20\% \ of \ 95 = \frac{1}{2} \ of \ 62$
$\sqrt{?} \ of \ 6 = \frac{62}{2} - \frac{20}{100} \times 95 = 12$
$? = 2^2 = 4$

S13. Ans.(e)
Sol. $\left(\frac{5}{3} of \ 6\frac{3}{5} of \ \frac{9}{11}\right) + ?^2 = 45$
$\left(\frac{5}{3} \times \frac{33}{5} \times \frac{9}{11}\right) + ?^2 = 45$
$?^2 = 36$
$? = \pm 6$

S14. Ans.(a)
Sol. $\left(\frac{4}{7} \times \frac{14}{5} \div 2\right) - \left(\frac{3}{10} of \ ?\right) = \frac{4}{5} - 3$
$\left(\frac{4}{7} \times \frac{14}{5} \times \frac{1}{2}\right) - \left(\frac{3}{10} \times ?\right) = -\frac{11}{5}$
$\frac{4}{5} - \frac{3}{10}? = -\frac{11}{5}$
$? = 10$

S15. Ans.(c)
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)
Sol. $\sqrt{5776} - \sqrt{1444} + \sqrt{729} = 43 + ?$
$76 - 38 + 27 = 43 + ?$
$? = 65 - 43 = 22$

S17. Ans.(a)
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)
Sol. $1484 \div 28 + 1462 \div 34 - 12 \times 7 = ?$
$? = 53 + 43 - 84 = 12$

S19. Ans.(c)
Sol. $42.5 \times 15 + 37.5 \times 25 = 1420 + ?$
$637.5 + 937.5 = 1420 + ?$
$? = 1575 - 1420 = 155$

S20. Ans.(b)
Sol. $2450 + 3760 - 3830 = 6000 - ?$
$2380 = 6000 - ?$
$? = 6000 - 2380 = 3620$

S21. Ans.(a)
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)
Sol. 80.08% of $349.98 + 45.02\%$ of $799.99 = ?\% \times 255.95$
80% of $350 + 45\%$ of $800 \approx ?\% \times 256$
$280 + 360 \approx ?\% \times 256$
$? \approx \frac{640}{256} \times 100 = 250$

S23. Ans.(b)
Sol. $\sqrt{1224.99} \div 6.99 = ? - 1799.98$
$\sqrt{1225} \div 7 \approx ? - 1800$
$5 \approx ? - 1800$
$? \approx 1810$

S24. Ans.(e)
Sol. $2744.98 - 1417.99 = ? + 987.98$
$2745 - 1418 \approx ? + 988$
$? \approx 339$

S25. Ans.(c)
Sol. $?^2 = 44.99\%$ of $4500.02 - 24.99\%$ of $3959.98 + 87.01 \times 2.97$
$?^2 \approx 45\%$ of $4500 - 25\%$ of $3960 + 87 \times 3$
$?^2 \approx 1296$
$? \approx 36$

S26. Ans.(a)
Sol. $1749.98 \div 350 \times 49.79 + 111.03 = (?)^2$
$\frac{1750}{350} \times 50 + 111 \approx (?)^2$
$? = 19$

S27. Ans.(a)
Sol. $? \times 625.04 = 15625.01 + 9999.99$
$? \times 625 \approx 15625 + 10000$
$? \approx 41$

S28. Ans.(c)
Sol. 29.98% of $701 - 350.01 + 82\%$ of $501 = ?$
30% of $700 - 350 + 82\%$ of $500 \approx?$
$? \approx 210 - 350 + 410 \approx 270$

S29. Ans.(e)
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)
Sol. $1395.98 + 412.04 - 2703.99 = ? - (31.02)^2$
$1396 + 412 - 2704 \approx ? - (31)^2$
$? \approx 961 - 896 \approx 65$

S31. Ans.(d)
Sol. $41.979 \times \frac{22}{7} + 19.989\%$ of $530.014 - 26.021 = ?$
$42 \times \frac{22}{7} + 20\%$ of $530 - 26 \approx?$
$? \approx 132 + 106 - 26 \approx 212$

S32. Ans.(c)
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)
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)
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.

21   22   [26]   35   51   76

+1   +4   +9   +16   +25

1^2 2^2 3^2 4^2 5^2

S52. Ans.(a)
Sol.

128   [64]   32   16   8   4

X 0.5   X 0.5   X 0.5   X 0.5   X 0.5

S53. Ans.(b)
Sol.

16   22   28   34   40   [46]

+ 6   + 6   + 6   + 6   + 6

S54. Ans.(e)
Sol.

1   8   27   [64]   125   216

1^3 2^3 3^3 4^3 5^3 6^3

S55. Ans.(c)
Sol.

20   [11]   12   19   39   98.5

X0.5+1   X1+1   X1.5+1   X2+1   X2.5+1
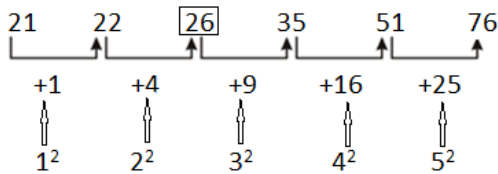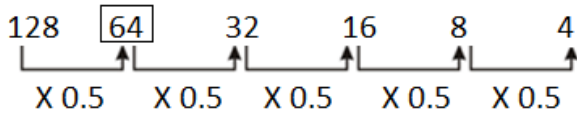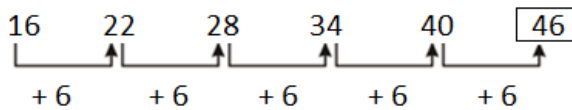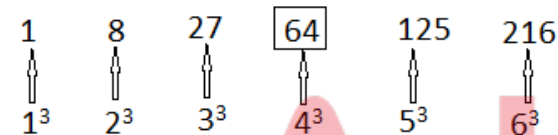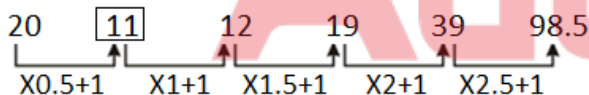
S56. Ans.(d)
Sol. addition of prime numbers
Pattern is
31 + 2 = 33
33 + 3 = 36
36 + 5 = **41**
41 + 7 = 48
48 + 11 = 59

S57. Ans.(e)
Sol. Pattern is
6 × 6 = 36
36 × 5 = 180
180 × 4 = 720
720 × 3 = **2160**
2160 × 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 × 1) = 10
10 + (5 × 2) = 20
20 + (5 × 3) = 35
35 + (5 × 4) = 55
55 + (5 × 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× 1 = 2000
2000÷ 2 = 1000
1000× 3 = 3000
3000÷ 4 = 750
750× 5 = 3750
3750 ÷ 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
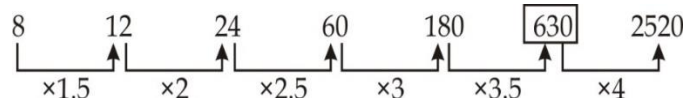$(4.5)^2 = 20.25$
$(4.8)^2 = 23.04$
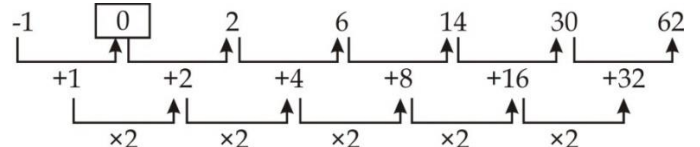$(5.1)^2 = 26.01$
$(5.4)^2 = 29.16$
$(5.7)^2 = 32.49$
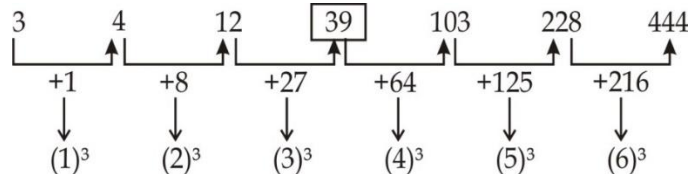$(6.0)^2 = 36.00$
$(6.3)^2 = 39.69$
So, wrong number is 32.56 and it should be replaced by 32.49

S71. Ans.(d)
Sol.
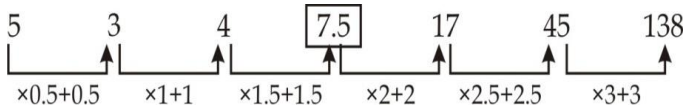
So, the wrong no. in this series is 640

S72. Ans.(a)
Sol.

So, the wrong no. in this series is 1

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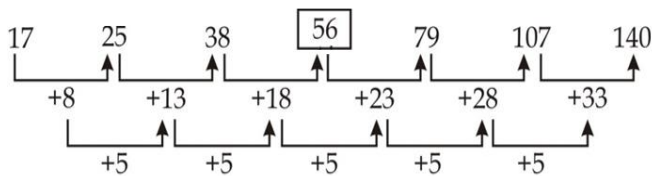**Sol.**

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 × 2 + 1 = 5
5 × 2 + 1 = 11
11 × 2 + 1 = 23
23 × 2 + 1 = 47
47 × 2 + 1 = 95
95 × 2 + 1 = 191
So, wrong term is 6.

S81. Ans.(c)
Sol. I. $x^2 - 21x + 110 = 0$
x²−11x −10x +110=0
x(x-11) −10(x−11)=0
(x-11)(x-10)=0
x =11,10
II. $y^2 - 25y + 156 = 0$
y²-13y -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. $x^2 + 29x + 208 = 0$
x²+16x+13x+208=0
x (x+16)+13(x+16)=0
(x+16) (x+13)=0
x= -16, -13
II. $y^2 + 35y + 306 = 0$
y²+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.
y² + 121 = 377
y² = 256
y = ± 16
So, x ≥ y

S84. Ans.(e)
Sol. I. $3x^2 + 23x + 44 = 0$
3x²+12x+11x+44=0
3x(x+4)+11(x+4)=0
(3x+11)(x+4)=0
x= -4,- $\frac{11}{3}$
II. $4y^2 + 33y + 65 = 0$
4y²+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
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 ≥ 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 = ±14
II. $y = \sqrt{196}$
y = 14
So, x ≤ y

S98. Ans.(e)
Sol. I. $x^2 + 12x + 35 = 0$
x²+5x+7x+35=0
x(x+5)+7(x+5)=0
(x+5)(x+7)=0
x= -5,-7
II. $y^2 + 14y + 48 = 0$
y²+ 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. $3x^2 + 23x + 30 = 0$
3x² +18x +5x +30 =0
3x(x+6) +5(x+6)=0
(3x+5)(x+6)=0
x= -6,$-\frac{5}{3}$
II. $y^2 + 15y + 56 = 0$
y² +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. $x^2 + 17x + 72 = 0$
x²+ 8x+9x+72=0
x(x+8)+9(x+8)=0
(x+9)(x+8)=0
x = -8,-9
II. $y^2 + 13y + 42 = 0$
y² +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 (given) = $\frac{90}{100} \times 1.3x = Rs. 1.17x$

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

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.

Total SP of bags = $\frac{110}{100} \times 4x + \frac{120}{100} \times 5x = 4.4x + 6x = Rs. 10.4x$

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

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

Selling price of items after giving discounts=160x $\times \frac{90}{100} \times \frac{85}{100}$ =122.4x

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.

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

= Rs.110x

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

And, new selling price of the article = Rs.(110x + 120)

ATQ,

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

$\Rightarrow 4x = 120$

x = 30

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

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

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

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

S108. Ans.(a)
Sol. let speed of Manoj & Shreya be x & y kmph respectively

Let Manoj covers D km in t hours

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

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

$x : y = 1 : 4\ or\ a : 4a$

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

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

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

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

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

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

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

Relative Speed=(63+54)km/hr

=117 km/hr

Distance travelled by Train A in 2 hrs=63× 2 = 126 km

Remaining distance =594 – 126

=468 km

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

Distance travelled by Train B in 4 hr= 54× 4 =216 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 covered

Let speed of Dhoni, Rohit & Virat be x kmph, y kmph & z kmph respectively

x : y = 1 : 3 or a : 3a

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

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

D = 11a km

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

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

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

= 10x liters

Now, quantity of kerosene in the vessel

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

= 20x liters

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,
Quantity of alcohol=$\frac{3}{10} \times 20 = 6$ litre
Quantity of water = $\frac{7}{10} \times 20 = 14$ litre
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 litre

S113. Ans.(a)
Sol. Let cost price of the mixture =Rs x per kg
35   50
x
3   2
(50 -x) : (x -35) = 3 : 2
$\frac{50-x}{x-35} = \frac{3}{2}$
100 -2x =3x -105
5x =205
x =41
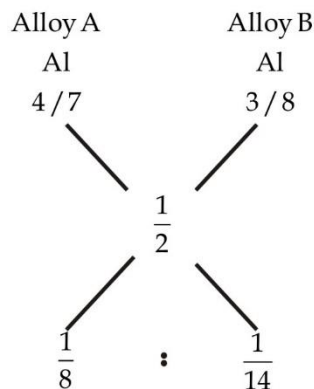Selling price of the mixture when sold at 25% profit = 41 $\times \frac{125}{100}$
=Rs 51.25 per kg

S114. Ans.(b)
Sol.

Alloy A   Alloy B
Al   Al
4 / 7   3 / 8

$\frac{1}{2}$

$\frac{1}{8}$: $\frac{1}{14}$

⇒ 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 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 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 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
Also,(q-6)=($\frac{75}{100}$)$\times q$
q-6 =$\frac{3q}{4}$
q=24
Sum of ages of shivam and ayush, 8 yrs hence
= 25+8+24+8
=65 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
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 years

S122. Ans.(d)
Interest earned in 1st half of the year= $30000 \times \frac{1}{2} \times \frac{20}{100}$
=Rs 3000
Similarly, during 2 nd half , interest earned = 10 % of
33000 = Rs 3300
During 2nd year, interest earned
=(30000+3000+3300)$\times \frac{20}{100}$ = Rs 7260
Total interest earned at the end of 2 yrs
= 3000 +3300 + 7260 = 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%
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
Interest received after 1 yrs on S.I = $\frac{7560}{3}$
=Rs 2520
Rate of interest(r) = $\frac{2520}{16800} \times 100$
=15%
Interest received on C.I at (r+5)% after 2 yrs
=$16800[(1+\frac{20}{100})^2 - 1]$
=$16800(\frac{36}{25} - 1)$
= $16800(\frac{11}{25})$
=Rs 7392

S125. Ans.(a)
Sol. ATQ,
$\frac{x \times 14 \times 3}{100} - \frac{x \times 10 \times 3}{100} = 120$
$\frac{(42-30)x}{100} = 120$
$x = Rs. 1000$
Required answer = $5x = 5 \times 1000 = Rs. 5000$

S126. Ans.(c)
Sol. Let total work be 30 units (LCM of 15, 30, 10)
Efficiency Arshad = $\frac{30}{15} = 2\frac{units}{day}$
Sanjay = $\frac{30}{30} = 1\frac{units}{day}$
Arshad, Sanjay, Vidya = $\frac{30}{5} = 6$ units/day

S127. Ans.(b)
Sol. 1 day wage of 4 men & 3 children = $\frac{600}{3} = Rs. 200$
Let efficiency of a man & a child be M & C units/day respectively
Equating total work,
$(4M + 3C) \times 3 = M \times 15$
$M:C = 3:1$ (this is also ratio of daily wage)
Daily wage of a man = $\frac{3}{15} \times 200 = Rs. 40$

S128. Ans.(b)
Sol. Let efficiency of a man & a boy be M & B units/day respectively
$5B \times 20 = 10M \times 8$
$\frac{M}{B} = \frac{5}{4}$
Total work = $(4 \times 5 + 4 \times 4) \times 3 = 108$ units
Work done by 4 boys in 3 days = $4 \times 4 \times 3 = 48$ units
Amount earned by boys for their contribution =
$\frac{48}{108} \times 540 = Rs. 240$

S129. Ans.(d)
Sol. Let, Abhishek can complete the work alone in 'x' days.
Then, Satish can complete the work alone in x $\times \frac{100}{75}$
$= \frac{4x}{3}$ days
Bhavya can complete the work alone in $\frac{4x}{3} \times \frac{1}{2}$ 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
$\frac{15 \times 10}{15 + 10} = \frac{150}{25} = 6$ 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

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

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

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

$\frac{1}{b} = \frac{3}{60}$
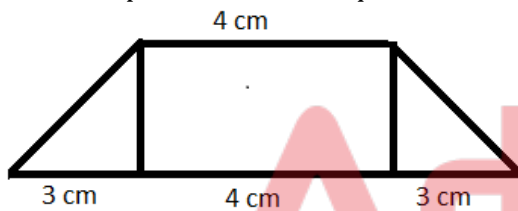
Q alone can complete the total work in 20 days

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

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

S131. Ans.(d)
Sol. side of square $= \sqrt{25} = 5\ cm$
Since non-parallel sides are equal,

Height of trapezium $= \sqrt{5^2 - 3^2} = 4\ cm$
Area of trapezium $= \frac{1}{2}(base1 + base2) \times height$
$\frac{1}{2} \times (4 + 10) \times 4 = 28\ cm^2$

S132. Ans.(e)
Sol. let side of square be x cm
$\frac{x^2}{10x} = \frac{4}{5}$
$x = 8\ cm$
Diagonal of square $= \sqrt{2}x = 8\sqrt{2}\ cm$

S133. Ans.(c)
Sol. Let r and h be radius and height of cylinder respectively.
Now, r + h = 23 cm
ATQ,
$2\pi r (r + h) = 368\pi$
$\Rightarrow$ r = 8 and h = 15
Now, radius of cone = 8 cm.
ATQ,
$\pi r (l + r) = 200\pi$
$\Rightarrow$ l = 17 cm
Volume of cone $= \frac{1}{3}\pi \times 8 \times 8 \times 15$
$= 320\ \pi\ cm^3$

S134. Ans.(d)
Sol. Let radius of smaller & larger circles be r_1 & r_2 respectively.
$2\pi r_1 = 132$
$r_1 = 21$ m
$2\pi r_2 = 176 \Rightarrow r_2 = 28$ m.
$\therefore$ Required difference
$= \pi(r_2^2 - r_1^2)$
$= \frac{22}{7} \times 49 \times 7$
$= 1078\ m^2$

S135. Ans.(b)
Sol. let side of 4 squares be a,b,c & d cm respectively
$a = \frac{24}{4} = 6\ cm$
$b = \frac{32}{4} = 8\ cm$
$c = \frac{40}{4} = 10\ cm$
$d = \frac{48}{4} = 12\ cm$
Perimeter of new square $= a + b + c + d = 6 + 8 + 10 + 12 = 36\ cm$
$4(side) = 36$
$side = 9\ cm$
Required area $= side^2 = 9^2 = 81\ cm^2$

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
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 $= (45-14) \times \frac{16800}{84}$
= 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
7000 × 2   6000 × 2   8500 × 2
  +   +   +
9000 × 1   7500 × 1   6500 × 1
= 46   :   39   47

B's profit share = $26400 \times \frac{39}{132}$

= Rs 7800

S140. Ans.(e)

Sol. Let x = Amount invested by 'A' and y = amount invested by 'B'

Ratio of profit of A, B & C = $(x \times 12)$: $(y \times 9)$: (12000×3)

= $4x$: $3y$: 12000

ATQ,

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

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

Required sum = 6,000 + 8,000 = 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 kmph

Now, downstream speed = 21 + 3 = 24 kmph

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

= 2 hours 30 minutes

S142. Ans.(b)

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

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

Speed of the boat = 9 – 3 = 6 km/hr

Now , Uptream speed = 6 – 3 = 3 km/hr

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

S143. Ans.(c)

Sol. let speed of stream be x km/hr

Speed 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 km/hr

speed of stream = 4 km/hr

speed of boat in still water = 4x = 16 km/hr

Reqd. sum = $\frac{40}{20} + \frac{48}{12}$ = 2 + 4 = 6 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 km/hr

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

= 45 hrs. (approx.)

S146. Ans.(a)

Sol. Expenditure of A = 2400 Rs.

Now, 4 → 2400

1 → 600

Average expenditure of A, B and C

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

S147. Ans.(d)

Sol. Let no. of questions he attempted correct be x.

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 × 25 = 500

Sum of ages of first 18 members = 18 × 24 = 432

Sum of ages of last 2 members = 500 – 432 = 68

∴ 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
= $\frac{200+2\times80+3\times95}{8} = \frac{645}{8} = Rs$ 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
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
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
Required average = $\frac{125}{3} = 41.67$

S154. Ans.(e)
Sol. Total students in section C = $20 + 35 + 30 - 25 = 60$
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 & 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× $\frac{76}{100}$ + 150 × $\frac{84}{100}$
=120+114+126 =360
Total marks scored by Amit in physics, chemistry and maths together=150× $\frac{70}{100}$ +150× $\frac{66}{100}$ + 150 × $\frac{58}{100}$
= 105 + 99 + 87 =291
Required difference =360 – 291 =69

S157. Ans.(d)
Sol. Total marks scored by Siddharth in all the subjects=150× $\frac{48}{100}$ +150× $\frac{72}{100}$ + 150 × $\frac{88}{100}$ +100× $\frac{70}{100}$ + 100 × $\frac{86}{100}$
=72+108+132+70+86 =468
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× $\frac{76}{100}$ +150× $\frac{82}{100}$ + 150 × $\frac{64}{100}$ +100× $\frac{72}{100}$ + 100 × $\frac{94}{100}$
=114+123+96+72+94 =499
Total marks scored by Aakash in all the subjects=150× $\frac{50}{100}$ +150× $\frac{64}{100}$ + 150 × $\frac{78}{100}$ +100× $\frac{65}{100}$ + 100 × $\frac{75}{100}$
=75+96+117+65+75 =428
Required difference =499 – 428 =71

S159. Ans.(c)
Sol. marks scored in physics subject by all the given five students together=150× $\frac{66}{100}$ +150× $\frac{64}{100}$ + 150 × $\frac{72}{100}$ +150× $\frac{76}{100}$ + 150 × $\frac{82}{100}$
=99+96+108+114+123 =540
Average marks scored in physics= $\frac{540}{5}$ =108

S160. Ans.(b)
Sol. Total marks scored by Aakash, Siddharth and Lokesh in English=100× $\frac{65}{100}$ +100× $\frac{70}{100}$ + 100 × $\frac{75}{100}$
=65+70+75 =210
Total marks scored by Amit, Aakash and Lokesh in maths=150× $\frac{70}{100}$ +150× $\frac{50}{100}$ + 150 × $\frac{80}{100}$
=105+75+120 = 300
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 × $\frac{110}{100}$
x = $\frac{33y}{70}$
$12x + 5y$ =746
$12 \times \frac{33y}{70}$ +5y =746
396y +350y =746 × 70
y = $\frac{746\times70}{746}$ = 70
x = $\frac{33y}{70}$ = $\frac{33\times70}{70}$ =33

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

S161. Ans.(c)
Sol. Total amount received by selling all pen by A=231× 20 = Rs 4620
Total amount received by selling all pencil by A =165×10 =Rs 1650
Total amount earned by selling all pen &pencil by A =4620+1650 =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× $\frac{120}{100}$ =252
number of pencil sold by stationary C after increase of 25 %=48× $\frac{125}{100}$ =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
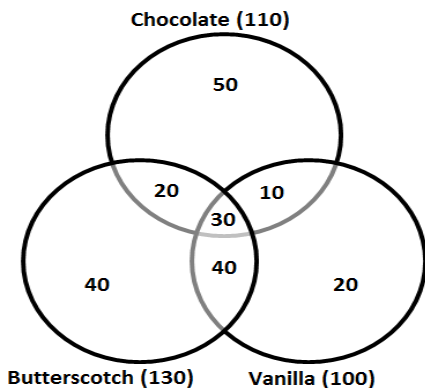Person who eat butterscotch and chocolate only = 130-(40+40+30)=20
Person who eat only chocolate = 210-(40+40+30+10+20+20) =50
Person who eat chocolate= 50+20+30+10= 110

Chocolate (110) — 50, 20, 10, 30, 40, 40, 20 — Butterscotch (130), Vanilla (100)

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

S170. Ans.(b)
Sol. people eating only chocolate and only butterscotch together= 50+40= 90
People eating only vanilla = 20
∴ $required\ ratio = 9:2$

S171. Ans.(d)
Sol. required difference = average marks scored by Student A - Average marks scored by Student B
∴ $\frac{70+90+60+55}{4} - \frac{50+80+75+65}{4} = \frac{5}{4} = 1.25$

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 =$\frac{40}{100} \times 120 = 48$
∴ required difference = 80 – 48 = 32

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

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

S177. Ans.(e)
Sol. interest amount received by Karan
$= \frac{8000 \times 10 \times 2}{100} = Rs.1600$
Interest amount received by Mahesh
$= \frac{6000 \times 12 \times 4}{100} = Rs.2880$
Required % $= \frac{2880 - 1600}{1600} \times 100 = 80\%$

S178. Ans.(d)
Sol. total interest amount received by Anurag & Rohit
together $= \frac{4000 \times 16 \times 4}{100} + \frac{4000 \times 10 \times 2}{100} = Rs.3360$

S179. Ans.(a)
Sol. interest received by Karan (SI) $= \frac{8000 \times 10 \times 2}{100} = Rs.1600$
Interest received by Karan (CI)
$= 8000 \left(1 + \frac{10}{100}\right)^2 - 8000 = Rs.1680$
Required value $= 1680 - 1600 = Rs.80$

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

S181. Ans.(d)
Sol. let his total expenditure be Rs. x in July
Savings $= \frac{40}{100} \times x \times \frac{1}{2} = Rs.\frac{x}{5}$
ATQ, $x + \frac{x}{5} = 12000$
$x = Rs.10000$
Expenditure on food $= \frac{30}{100} x = \frac{30}{100} \times 10000 = Rs.3000$

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 = $Rs. \frac{40}{100} \times (x - y)$
Required % $= \frac{35}{40} \times 100 = 87.5\%$

S183. Ans.(e)
Sol. let total expenditure in May & July is Rs. 5x & Rs. 4x respectively.
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 $= \frac{90}{100} \times 5000 = Rs.4500$
Expenditure on rent in March $= \frac{40}{100} \times 4500 = Rs.1800$
Expenditure in July $= \frac{90}{100} \times 8000 = Rs.7200$
Expenditure on rent in July $= \frac{40}{100} \times 7200 = Rs.2880$
Required average $= \frac{1800 + 2880}{2} = Rs.2340$

S185. Ans.(c)
Sol. let equal expenditure be Rs. x.
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)
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)
Sol. Nokia (2017) $= \frac{2500 - 2300}{2300} \times 100 = 8.7\%$
Nokia (2018) $= \frac{3500 - 2500}{2500} \times 100 = 40\%$
Samsung (2019) $= \frac{2800 - 1800}{1800} \times 100 = 55.55\%$
Nokia (2019) $= \frac{2700 - 3500}{3500} \times 100 = 23\%$ (decrease)
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
$x + x - 12 = 100$
$x = 56\%$
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 & E
$= \frac{10000}{3} \times \frac{(25+15+20)}{100} = 2000$
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
$= 5400 \times \frac{20}{100} \times \frac{3}{5} = 648$
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
$= 5400 \times \frac{22}{100} \times \frac{1}{3} = 396$
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
$= 5400 \times \frac{28}{100} \times \frac{3}{4} + 5400 \times \frac{12}{100} \times \frac{1}{3} + 5400 \times \frac{20}{100} \times \frac{2}{5}$
$= 1134 + 216 + 432$
$= 1782$
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 together$= (28+20) \times \frac{360}{100} = 172.8°$