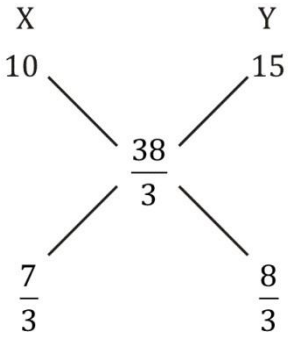
SEBI Grade A Quant (Solutions)

S1. Ans.(d)

Sol. Since Pigeon gets 38 gm protein from 300 gm diet

$\therefore$ % protien diet $= \frac{38}{300} \times 100 = \frac{38}{3}\%$



X : Y = 7 : 8

$\therefore$ Quantity of X $= \frac{7}{15} \times 300 = 140$ gm

S2. Ans.(c)

Sol. Ratio of their respective capitals = A : B : C

= 12800 : 16800 : 9600

= 16 : 21 : 12

Let the total profit be Rs. x.

$\therefore$ B's share $=$ Rs. $\frac{21x}{49}$

$\therefore \frac{21x}{49} = 13125$

$x = \frac{13125 \times 49}{21} =$ Rs. 30625

$\therefore$ C'sshare $= \frac{12}{49} \times 30625 = 7500$ rs

S3. Ans.(b)

Sol. Time taken by trains to cross each other

$= \frac{\text{Sum of lengths of trains}}{\text{Relative speed}}$

60 kmph $= \frac{60 \times 5}{18} = \frac{50}{3}$ m/sec.

If the speed of other trains be x m/sec. then.

$10.8 = \frac{180+270}{\frac{50}{3}+x}$

$\Rightarrow 180 + 10.8x = 450$

$\Rightarrow 10.8x = 450 - 180 = 270$

$\Rightarrow x = \frac{270}{10.8} = 25$ metre/sec.

$= 25 \times \frac{18}{5}$kmph = 90 kmph

S4. Ans.(c)

Sol. Required Probability = $\frac{8}{14} \times \frac{8}{14} = \frac{64}{14\times14} = \frac{16}{49}$

S5. Ans.(a)

Sol. Volume = (25.872 × 1000) = 25872 cm^3

Let, the radius be r cm. Then, height = 3r cm

$\therefore \frac{22}{7} \times r^2 \times 3(r) = 25872$

$\Rightarrow r^3 = \frac{25872 \times 7}{66} = (392 \times 7) = (7 \times 7 \times 7 \times 8)$

$\Rightarrow r = (7 \times 2) = 14$ cm

Area of base $= \pi r^2 = \left(\frac{22}{7} \times 14 \times 14\right) = 616\ cm^2$

S6. Ans.(e)

Sol.

I. $x^2 - 5\sqrt{3}x + 18 = 0$

$x^2 - 2\sqrt{3}x - 3\sqrt{3}x + 18 = 0$

$(x - 2\sqrt{3})(x - 3\sqrt{3}) = 0$

$x = 2\sqrt{3}, 3\sqrt{3}$

II. $y^2 - 3\sqrt{3}y - 30 = 0$

$y^2 - 5\sqrt{3}y + 2\sqrt{3}y - 30 = 0$

$(y + 2\sqrt{3})(y - 5\sqrt{3}) = 0$

$y = -2\sqrt{3}, 5\sqrt{3}$

So, no relation can be established

S7. Ans.(d)

Sol.

I. $6x^2 - 23x + 21 = 0$

$6x^2 - 14x - 9x + 21 = 0$

$(2x - 3)(3x - 7) = 0$

$x = \frac{3}{2}, \frac{7}{3}$

II. $3y^2 - 46y + 91 = 0$

$3y^2 - 39y - 7y + 91 = 0$

$(3y - 7)(y - 13) = 0$

$y = \frac{7}{3}, 13$

So, $x \leq y$

S8. Ans.(b)

Sol.

I. $x^{\frac{3}{2}} + x^{\frac{1}{2}} = 2x^{-\frac{1}{2}}$

Multiply with $x^{\frac{1}{2}}$ on both side

$x^2 + x = 2$

$x^2 + x - 2 = 0$

$x^2 + 2x - x - 2 = 0$

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

$x = 1, -2$

II. $y^2 + 7y + 10 = 0$

$y^2 + 5y + 2y + 10 = 0$

$(y + 2)(y + 5) = 0$

$y = -2, -5$

So, $x \geq y$

S9. Ans.(c)

Sol.

I. $x^{\frac{7}{2}} = 2187$

$x = (2187)^{\frac{2}{7}}$

$x = 3^2$

$x = 9$

II. $y^{\frac{3}{5}} = 8$

$y = 2^5$

$y = 32$

So, $x < y$

S10. Ans.(c)

Sol. $3x + 8y = 71$

$7x + 3y = 56$

On solving both equation

$x = 5$ and $y = 7$

So, $x < y$

S11. Ans.(a)

Sol. required ratio $= \frac{2000}{(4000-2500)} = \frac{2000}{1500}$

$= \frac{4}{3}$

S12. Ans.(d)

Sol. required % $= \frac{(2500-2000)+(4000-2500)}{3000} \times 100 = \frac{2000}{3000} \times 100$

$= 66.67\%$

S13. Ans.(b)

Sol. required average $= \frac{2000+2000+2500+2500}{4} = \frac{9000}{4}$

$= 2250$

S14. Ans.(c)

Sol. Total girls in school A and B $= (3000 - 2000) + (2500 - 2000)$

$= 1000 + 500 = 1500$

Total girls in school B and D $= (2500 - 2000) + (3500 - 1500)$

$= 500 + 2000 = 2500$

So, required percentage $= \frac{2500-1500}{2500} \times 100$

$= \frac{1000}{2500} \times 100 = 40\%$

S15. Ans.(e)

Sol. Total no. of girls in school A, C and D

$= (3000 - 2000) + (4000 - 2500) + (3500 - 1500)$

$= 1000 + 1500 + 2000 = 4500$

Required difference $= (2000 + 2500) - (4500) = 0$

a = 48

quantity of mixture after drawn out 40 liters of mixture = 3a + 5a = 8a

$= 8 \times 48$

= 384 liters

So, initial quantity = 384 + 40 = 424 liters.

S16. Ans.(d)

Sol. Let side of square =a cm

ATQ

$4a = 3 \times (l + b)$

$4a=3 \times 2(12 + 8)$

a=30 cm

since diameter of sphere is 2 times the side of square

so, radius of sphere (r) = side of square= 30 cm

total surface area of sphere=$4\pi r^2$

=3600π cm^2

S17. Ans.(a)

Sol. The ratio of A and B in mixture =3:5

After drawn out 40 liters of mixture their ratio must be same =3:5

Let the quantity of liquid A in the mixture = 3a

And the quantity of liquid B in the mixture= 5a

ATQ,

$\frac{3a}{5a+40} = \frac{18}{35}$

a = 48

quantity of mixture after drawn out 40 liters of mixture=3a+5a=8a

$= 8 \times 48$

= 384 liters

So, initial quantity=384+40 =424 liters.

S18. Ans.(b)

Sol. For 1st year simple interest and compound interest will be same.

So, $1750 = \frac{p \times (12.5-7.5) \times 1}{100}$

P=Rs.35000

Simple interest $= \frac{35000 \times 5 \times 3}{100}$

= Rs.5250

S19. Ans.(e)

Sol. Let the share of A, B and C are 3a, 5a and 7a respectively.

The ratio of profit divided into A, B and C in the ratio = $3a \times 12 : 5a \times 12 : 7a \times 12$

=3a:5a:7a

Let total investment =P

ATQ

$p \times \frac{15}{100} = 23550$

P=Rs.157000

So, share of B $= \frac{5}{3+5+7} \times 157000$

$=$Rs.52333.33$\approx$ Rs. 52334

S20. Ans.(c)

Sol. A is three times more than B

So, ratio of A and B=4:1

And ratio of A and C=8:1

So, A:B:C =8:2:1

Let A=8a , B=2a and C=a

Average of A,B and C $= \frac{8a+2a+a}{3} = 770$

a=210

second largest number =2a

and smallest number =a

difference between 2nd largest number and smallest number = 2a – a

= a

= 210

S21. Ans.(a)

Sol. $14\frac{2}{7}\%$of $91 + 9.09\%$ of $198 - ? = 30$

$\frac{100}{7 \text{ X } 100}$ of $91 + \frac{9.09}{100}$ of $198 - ? = 30$

$\frac{1}{7} \text{ X } 91 + \frac{1}{11} \text{ X } 198 - ? = 30$

$13 + 18 - ? = 30$

$? = 1$

S22. Ans.(b)

Sol. $\frac{\sqrt[3]{1728} \text{ X } \sqrt[2]{1.21} \text{ X } \sqrt[2]{49}}{\sqrt[3]{1331} \text{ X } \sqrt[3]{0.343} \text{ X } \sqrt[2]{1.44}} = ?$

$= \frac{12 \text{ X } 1.1 \text{ X } 7}{11 \text{ X } 0.7 \text{ X } 1.2}$

$= 10$

S23. Ans.(e)

Sol. $\frac{27^9 \text{ X } 32^5 \text{ X } 9^{27} \text{ X } 81^5}{2^{20} \text{ X } 6^5 \text{ X } 243^5} = 3^?$

$3^? = \frac{(3^3)^9 \text{X } (2^5)^5 \text{ X } (3^2)^{27} \text{ X } (3^4)^5}{2^{20} \text{ X } 2^5 \text{X } 3^5 \text{ X } (3^5)^5}$

$3^? = \frac{3^{27} \text{X } 2^{25} \text{ X } 3^{54} \text{ X } 3^{20}}{2^{20} \text{ X } 2^5 \text{ X } 3^5 \text{ X } 3^{25}}$

$3^? = 3^{71}$

So, $? = 71$

S24. Ans.(c)

Sol. 50% of $\sqrt{1.69} + 16.66\%$ of $\sqrt{9216} - ? = \sqrt[8]{(256)^4}$

$\frac{50}{100} \text{ X } 1.3 + 16\frac{2}{3}\% \text{ X } 96 - ? = (256)^{4/8}$

$0.65 + 16 - ? = 16$

$? = 0.65$

S25. Ans.(b)

Sol. 15% of $1500 + 22\%$ of $1100 - 13\%$ of $1500 = ?$

$\frac{15}{100} \text{ X } 1500 + \frac{22}{100} \text{ X } 1100 - \frac{13}{100} \text{ X } 1500$

$= 225 + 242 - 195$

$= 272$

S26. Ans.(e)

Sol. Series is × 3 + 2, × 3 + 2, × 3 + 2, ……

Next number 26 × 3 + 2 = 80

80 × 3 + 2 = 242

S27. Ans.(a)
Sol. Series is × 1 + $(1)^2$, × 2 + $(2)^2$, × 3 + $(3)^2$, × 4 + $(4)^2$

S28. Ans.(d)
Sol. Series is × 2 – 1, × 2 – 1, × 2 – 1, ...

S29. Ans.(a)
Sol. Series is × 2 – 1^2, × 2 –2^2,× 2 – 3^2,× 2 – 4^2

S30. Ans.(c)
Sol. Series is × 0.5 + 0.5, × 1.5+1.5 , × 2.5 + 2.5, × 3.5 + 3.5