

Quant Mega Quiz for SSC CGL Tier - 2 (Solutions)

S1. Ans.(b)

Sol.

Let t be the right time

$$78(t + 25) = 91(t + 10)$$

$$6(t + 25) = 7(t + 10)$$

$$150 - 70 = t$$

$$t = 80 \text{ min}$$

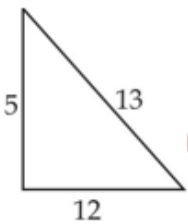
S2. Ans.(b)

Sol.

$$\frac{135 \times 22}{9} \times \frac{65}{100} = 214 \frac{1}{2} \text{ days}$$

S3. Ans.(d)

Sol.



$$12 \text{ ----- } 36$$

$$5 \text{ ----- } 15$$

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S4. Ans.(b)

Sol.

$$\frac{3x6249y}{88} = \frac{11 \times 8}{8} \Rightarrow y = 6$$

$$\frac{(3+6+4+6) - (x+3+9)}{11} = \frac{7-x}{11}$$

$$x = 7$$

S5. Ans.(a)

Sol.

$$(x - 4)^3 + (3x - 7)^3 + (x - 2)^3 - 3(x - 4)(3x - 7)(x - 2) = 0$$

$$x - 4 + 3x - 7 + x - 2 = 0$$

$$5x - 13 = 0$$

$$x = \frac{13}{5} = 2.6$$

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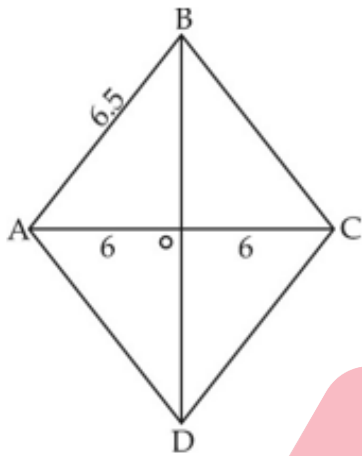
S6. Ans.(a)

Sol.

$$100 \left(\frac{(72.5)^2 + (27.5)^2}{(72.5)^2 + (27.5)^2 - (72.5)(27.5)} \right)$$
$$100 (100) \Rightarrow 10,000$$

S7. Ans.(b)

Sol.



$$OB = \sqrt{(6.5)^2 - (6)^2}$$

$$OB = 2.5 \text{ cm}$$

$$BD = 5 \text{ cm}$$

$$\text{Area} = \frac{1}{2} \times 12 \times 5 = 30 \text{ cm}^2$$

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S8. Ans.(b)

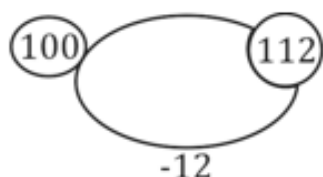
Sol.



$$\frac{27}{73} \times 100 = 36.98\%$$

S9. Ans.(a)

Sol.

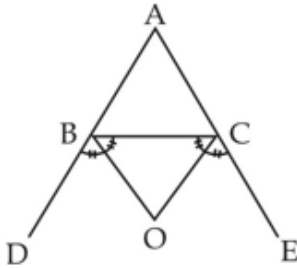


$$\frac{12}{112} \times 100 = 10.7\%$$

S10. Ans.(a)

Sol.

$$\begin{aligned}\angle BOC &= 90 - \frac{1}{2}\angle A \\ &= 90 - 17.5 \\ &= 72.5^\circ\end{aligned}$$



S11. Ans. (b)

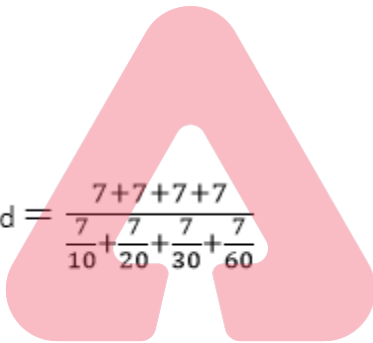
Sol.

$$\begin{aligned}3(a^2 + b^2 + c^2) &= (a^2 + b^2 + c^2) + 2(ab + bc + ca) \\ \Rightarrow 2a^2 + 2b^2 + 2c^2 - 2ab - 2bc - 2ac &= 0 \\ \Rightarrow (a - b)^2 + (b - c)^2 + (c - a)^2 &= 0 \\ \Rightarrow a = b = c\end{aligned}$$

S12. Ans. (b)

Sol.

$$\begin{aligned}\text{Average speed} &= \frac{7+7+7+7}{\frac{7}{10} + \frac{7}{20} + \frac{7}{30} + \frac{7}{60}} \\ &= 20 \text{ km/hr.}\end{aligned}$$



S13. Ans. (d)

Sol.

$$\begin{aligned}\pi(8)^2(2) &= \frac{1}{3}\pi(r)^2(6) \\ \Rightarrow r &= 8 \text{ cm}\end{aligned}$$

S14. Ans. (c)

Sol.

$$\begin{aligned}\text{Let the cost price be Rs } 100x \\ \Rightarrow 100x \left(\frac{100 + 40}{100}\right) \left(\frac{100 - 20}{100}\right) - 100x &= 48 \\ \Rightarrow 100x &= 400\end{aligned}$$

S15. Ans. (a)

Sol.

$$\text{Average} = \frac{na+2+4+8+\dots+2^n}{n} = \frac{na+2\left(\frac{2^n-1}{2-1}\right)}{n} = a + 2 \cdot \frac{2^n-1}{n}$$

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S16. Ans. (a)

Sol.

$$\begin{aligned}x^2 &= a^2 \sin^2 \theta + b^2 \cos^2 \theta - 2ab \sin \theta \cos \theta \\y^2 &= a^2 \cos^2 \theta + b^2 \sin^2 \theta + 2ab \sin \theta \cos \theta \\ \Rightarrow x^2 + y^2 &= a^2 (\sin^2 \theta + \cos^2 \theta) + b^2 (\cos^2 \theta + \sin^2 \theta) \\ &= a^2 + b^2\end{aligned}$$

S17. Ans. (a)

Sol.

$$\begin{aligned}x + y &= \frac{\sqrt{13} - \sqrt{11}}{\sqrt{13} + \sqrt{11}} + \frac{\sqrt{13} + \sqrt{11}}{\sqrt{13} - \sqrt{11}} = \frac{2(13 + 11)}{13 - 11} = 24 \\ 3x^2 - 5xy + 3y^2 &= 3(x + y)^2 - 11xy \\ &= 3(24)^2 - 11(1) = 1717.\end{aligned}$$

S18. Ans. (b)

Sol.

$\frac{2}{3}$ rd of the tank is emptied using 64 buckets.

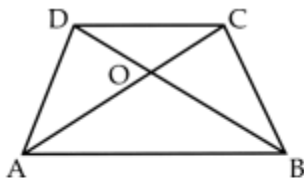
\Rightarrow Volume of the tank = $64 \times \frac{3}{2}$ i.e., 96 buckets of water

\therefore Volume of each bucket = $\frac{1.2 \times 1.2 \times 1.2 \times 1000 \text{ litres}}{96}$

= 18 litres

S19. Ans. (b)

Sol.



$$\left. \begin{aligned}\angle OAB &= \angle OCD \\ \angle OBA &= \angle ODC \\ \angle DCA &= \angle CDB\end{aligned} \right\} \begin{aligned} \Delta AOB \text{ is similar to} \\ \Delta COD \end{aligned}$$

$$\begin{aligned}\frac{AB}{CD} = \frac{2}{1} &\Rightarrow \frac{\text{Area of } \Delta AOB}{\text{Area of } \Delta COD} = \left(\frac{2}{1}\right)^2 \\ \Rightarrow \text{Area of } \Delta COD &= 84 \times \frac{1}{4} = 21 \text{ cm}^2.\end{aligned}$$

S20. Ans. (b)

Sol.

$$(20) + (-20) + \frac{(20)(-20)}{100} = -4$$

4% decrease.

S21. Ans.(a)

Sol.

Amount of A = P + SI

Amount of B = Q + SI

$$\text{So, } SI = \frac{P \times r \times t}{100}$$

$$P + \frac{P \times x \times t}{100} = Q + \frac{Q \times y \times t}{100}$$

$$t = 100 * \frac{(Q - P)}{(Px - Qy)} \text{ year.}$$

S22. Ans.(b)

Sol.

Amount after 2 year = 2420

Amount after 3 year = 2662

So, the difference = 2662 - 2420 = 242

$$\text{so, } \Rightarrow \frac{2662}{2420} = \frac{P \left(1 + \frac{r}{100}\right)^3}{P \left(1 + \frac{r}{100}\right)^2}$$

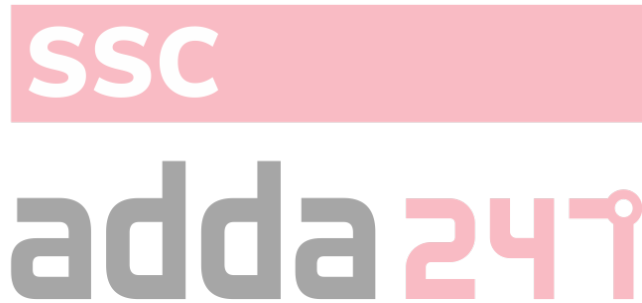
$$r = 10\%$$

$$\text{so, Total amount} = P \left(1 + \frac{r}{100}\right)^2$$

$$2420 = P \left(1 + \frac{10}{100}\right)^2$$

$$2420 = P \cdot \frac{121}{100}$$

$$P = 2000$$



S23. Ans.(a)

Sol.

Amount after 2 year = 4000

Amount after $4\frac{1}{2}$ year = 5500

So, the difference = 1500 in $2\frac{1}{2}$ year

So, Interest in 1 year = 600

Sum of money = 4000 - 1200 = Rs 2800

Then,

$$SI = \frac{P \times r \times t}{100}$$

$$1200 = \frac{2800 \times r \times 2}{100}$$

$$r = 21\frac{3}{7}\%$$

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S24. Ans.(b)

Sol.

$$\begin{aligned}\text{Volume of tube} &= \pi(r_1^2 - r_2^2) \cdot h \\ &= \frac{22}{7} \times 20 \times (16 - 9) \\ &= \frac{22}{7} \times 20 \times 7 = 440\end{aligned}$$

S25. Ans.(c)

Sol.

Given that,

$$\text{Area of faces}_1 = 12\text{cm}^2 = 4 \times 3$$

$$\text{Area of faces}_2 = 15\text{cm}^2 = 5 \times 3$$

$$\text{Area of faces}_3 = 20\text{cm}^2 = 4 \times 5$$

$$\text{So, the volume of the Box} = 4 \times 3 \times 5$$

$$= 60\text{cm}^3$$

Or

$$\text{Volume of the box} = \sqrt{12 \times 15 \times 20} = 60\text{cm}^3$$

S26. Ans.(c)

Sol.

Given that,

$$\text{Ratio between length \& breath} = 3 : 2$$

So, distance covered by Man in 8 minutes

$$= \frac{12 \times 1000}{60 \text{ min}} \times 8 = 1600 \text{ meter}$$

$$\text{then, distance} = 2(3 + 2)x = 1600, x = 160$$

$$\text{So, Area} = 3 \times 2 \times x \times x$$

$$= 3 \times 2 \times 160 \times 160$$

$$= 153600 \text{ m}^2$$

S27. Ans.(d)

Sol.

We know that,

$$\text{Curved surface area of cylinder} = 2\pi rh$$

So, here we use successive percentage formula

$$= \left(-25 + 25 - \frac{25 \times 25}{100}\right)$$

$$= -\frac{6.25}{100} = -6.25\% \text{ (decreased)}$$

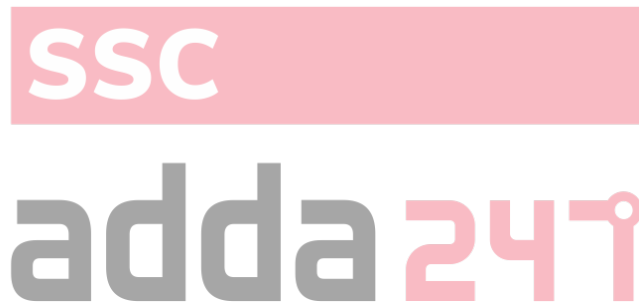
S28. Ans.(a)

Sol.

$$\text{Required volume of material} = \left(\pi r^2 h - \frac{1}{3} \pi r^2 h\right)$$

$$= \frac{22}{7} \times 1.4 \left(\frac{2}{3} \times \frac{1.2}{2} \times \frac{1.2}{2}\right)$$

$$= 1.056 \text{ cm}^3$$



S29. Ans.(a)

Sol.

We know that,

the Area path = total area - lawn Area

$$w(\ell + b - w) = \ell \times b - 2109$$

$$w(100 - w) = 2400 - 2109$$

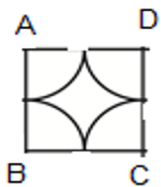
$$w(100 - w) = 291$$

from options, we put the value of $w = 3$,
or solve the quadratic equation.

We find that 3 meter is correct answer.

S30. Ans.(a)

Sol.



Required Area = Total Area - Area enclosed the circles

$$= (140 \times 140) - (4 \times \frac{1}{4} \times \pi \times r^2)$$

$$= 19600 - 4 \times \frac{22}{7} \times 70 \times 70$$

$$= 4200 \text{ cm}^2$$

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