

Quant Mega Quiz for SSC Tier-1 (Solutions)

S1. Ans.(b)

Sol.

$$PA \cdot PB = PC \cdot PD$$

$$\Rightarrow PD = \frac{8 \times 6}{4} = 12 \text{ cm}$$

S2. Ans.(b)

Sol.

$$\frac{B}{G} = \frac{1554 \times \frac{4}{7} - x}{1554 \times \frac{3}{7} + 30} = \frac{7}{6}$$

$$\Rightarrow x = 76$$

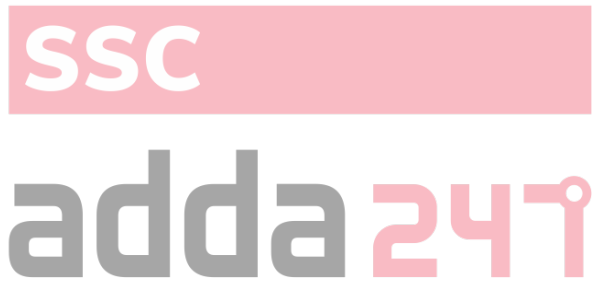
S3. Ans.(a)

Sol.

$$4\sin^2 \theta + 3\sin^2 \theta + 3\cos^2 \theta = 4$$

$$\Rightarrow 4\sin^2 \theta = 1 \Rightarrow \sin \theta = \frac{1}{2} \Rightarrow \theta = 30^\circ \text{ (Acute)}$$

$$\therefore \tan \theta = \tan 30^\circ = \frac{1}{\sqrt{3}}$$



S4. Ans.(a)

Sol.

$$6(3x - 2y) = 5(2x + 3y) \Rightarrow \frac{y}{x} = \frac{8}{27}$$

$$\left[ \frac{\sqrt[3]{x} \left( 1 + \sqrt[3]{\frac{y}{x}} \right)}{\sqrt[3]{x} \left( 1 - \sqrt[3]{\frac{y}{x}} \right)} \right]^2 = \left( \frac{1 + \frac{2}{3}}{1 - \frac{2}{3}} \right)^2$$

$$= \left( \frac{5}{1} \right)^2 = 25.$$

S5. Ans.(b)

Sol.

$$\tan A = n \tan B \Rightarrow \cot B = n \cot A \quad \rightarrow (i)$$

$$\sin A = m \sin B \Rightarrow \operatorname{Cosec} B = m \operatorname{cosec} A \rightarrow (ii)$$

$$(2)^2 - (1)^2 : \operatorname{Cosec}^2 B - \cot^2 B = m^2 \operatorname{cosec}^2 A - n^2 \cot^2 A$$

$$\Rightarrow \frac{m^2 - n^2 \cos^2 A}{\sin^2 A} = 1 \Rightarrow m^2 - n^2 \cos^2 A = 1 - \cos^2 A$$

$$\therefore \cos^2 A = \frac{m^2 - 1}{n^2 - 1}.$$

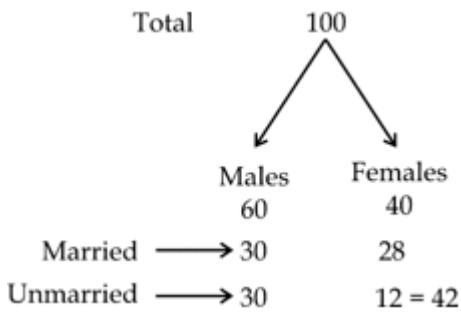
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**S6. Ans.(a)**

**Sol.**



**S7. Ans.(b)**

**Sol.**

$$\frac{4(85)+5(87)}{9} = 86.1$$

**S8. Ans.(b)**

**Sol.**

$$\text{Cost price} = 100x$$

$$\Rightarrow \text{Marked price} = 125x$$

$$\text{and selling price} = 112.5x$$

$$\therefore \text{Discount (\%)} = \frac{12.5x}{125x} \times 100 = 10\%$$

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**S9. Ans.(d)**

**Sol.**

$$\sin A = 1 - \sin^2 A = \cos^2 A$$

$$\cos^2 A + \cos^4 A = \sin A + \sin^2 A = 1$$

**S10. Ans.(d)**

**Sol.**

$$\text{Cost price} = 100 \Rightarrow \text{Selling price} = 133$$

$$\text{New cost price} = 112 \text{ and new selling price} = 133 + 13.3 = 146.3$$

$$\therefore \text{Profit (\%)} = \frac{34.3}{112} \times 100 = 30 \frac{5}{8}\%$$

**S11. Ans.(b)**

**Sol.** Put  $x = 1$  then,

We get = 2

**S12. Ans.(d)**

**Sol.**

$$h = \frac{8 \times 2.5 \times 2}{3 \times 3} = 4.44 \text{ ft}$$

**S13. Ans.(a)**

**Sol.**

Let the water level series by x m

$$x = \frac{150 \times 8}{90 \times 40} = 0.3333\text{m} = 33.33\text{cm}$$

**S14. Ans.(d)**

**Sol.** Required number of students

$$= (13 + 11) \times 3600/100 = 864$$

**S15. Ans.(b)**

**Sol.** Required number of students

$$= 15 \times 3600/100 = 540$$

**S16. Ans.(a)**

**Sol.**  $15/18 \times 100 = 83.33 = 83\%$  (Approx.)

**S17. Ans.(c)**

**Sol.** Ratio  $= (18 + 21)/13 = 39/13 = 3 : 1$

**S18. Ans.(d)**

**Sol.** Required ratio = 50% of 2 : 60% of 3 = 5 : 9.

**S19. Ans.(b)**

**Sol.** Required number =  $5800/0.8 = 7250$

**S20. Ans.(d)**

**Sol.** Since we don't know the number of candidates appeared in 2005 and 2006 individually, we cannot find the number of qualified candidates.

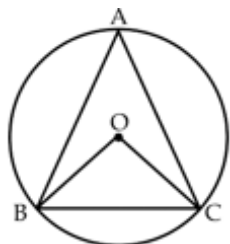
**S21. Ans.(b)**

**Sol.**

$$\frac{d/4}{10} + \frac{3d/4}{12} = 7 \Rightarrow d = 80 \text{ km.}$$

**S22. Ans.(b)**

**Sol.**



$$\angle BAC = x \Rightarrow \angle BOC = 2x$$

$$\Rightarrow \angle OBC = \frac{180 - 2x}{2} = 90 - x$$

$$\therefore \angle OBC + \angle BAC = 90 - x + x = 90^\circ$$



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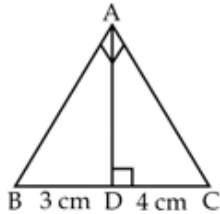
S23. Ans.(a)

Sol.

$$\frac{8}{25}P = \frac{P \times \frac{R}{2} \times R}{100} \Rightarrow R = 8\%$$

S24. Ans.(a)

Sol.



$$AD = \sqrt{BD \cdot CD} = \sqrt{3 \times 4} = \sqrt{12} = 2\sqrt{3} \text{ cm.}$$

S5. Ans.(d)

Sol.

$$\frac{\frac{2}{5} + \frac{3}{7} + \frac{4}{9}}{\frac{3}{5} + \frac{4}{7} + \frac{5}{9}} = \frac{401}{544}$$

S26. Ans.(d)

Sol.

$$A : B = 2 : 3 ; B : C = 3 : 7 \Rightarrow A : B : C = 2 : 3 : 7 \\ \therefore (A + B) : (B + C) : (C + A) = 5 : 10 : 9.$$

S27. Ans.(c)

Sol.

$$\frac{1}{3}\pi r^2 h = \pi r l \Rightarrow \frac{l}{hr} = \frac{1}{3} \\ \Rightarrow \frac{1}{h^2} + \frac{1}{r^2} = \frac{r^2 + h^2}{h^2 r^2} = \left(\frac{l}{hr}\right)^2 = \left(\frac{1}{3}\right)^2 = \frac{1}{9}$$

S28. Ans.(a)

Sol.

$$\text{Speed of train Q} = S \text{ km/hr} \\ \Rightarrow \frac{162}{(S+8)+S} = 6 \Rightarrow S = 9\frac{1}{2} \text{ km/hr.}$$

S29. Ans.(d)

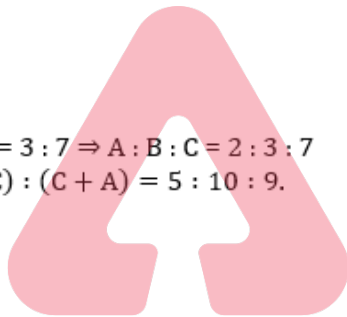
Sol.

$$\tan\theta = \cot\theta \Rightarrow \theta = 45^\circ \\ \frac{\tan(\theta+15)}{\tan(\theta-15)} = \frac{\tan 60}{\tan 30} = \frac{\sqrt{3}}{1/\sqrt{3}} = 3.$$

S30. Ans.(b)

Sol.

$$\frac{\left(\frac{22}{7}\right)(2)^2(56)}{48 \times 16.5 \times 4} = \frac{2}{9}$$



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