

Quant Mega Quiz for SSC Tier-1 (Solutions)

S1. Ans.(b)

Sol.

$$\frac{A}{B} = \frac{5}{4}, \quad \frac{B}{C} = \frac{9}{10}$$

A : B : C

$$\begin{array}{ccc} 5 & & 4 \\ & \searrow & \downarrow \\ & 9 & 10 \end{array} \Rightarrow 45 : 36 : 40$$

$$\text{So, C get} = \frac{2420}{121} \times 40 = 800$$

S2. Ans.(b)

Sol.

Given that,

$$\begin{array}{l} \text{Assam : Darjeeling} \\ 49 \text{ kg Tea} = \begin{array}{l} 5 : 2 \\ 35 : 14 \end{array} \end{array}$$

$$\text{We want — } \begin{array}{l} 2 : 1 \\ \Rightarrow 35 : 17.5 \end{array} \text{ by adding Darjeeling tea.}$$

Means add this amount to get the ratio = $17.5 - 14 = 3.5$ kg

S3. Ans.(d)

Sol.

The ratio of successful to unsuccessful student = 108 : 24

Now 4 passed = 112 : 20 \Rightarrow 28 : 5

S4. Ans.(c)

Sol.

Let the number of officers be $3x$ and that of soldiers $31x$

After battle,

Number of officers = $3x - 6$ and that of soldiers = $31x - 22$

As per question,

$$\frac{(3x - 6)}{(31x - 22)} = \frac{1}{13}$$

$$13(3x - 6) = 31x - 22$$

$$8x = 56$$

$$x = 7$$

Hence, no. of officers = $3 \times 7 = 21$

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S5. Ans.(c)

Sol.

Given that,

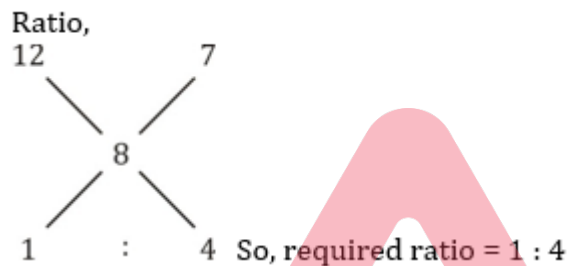
	Total quantity	Mix in that ratio
	↓	
4 : 1 = 4 + 1 = 5		× 3
3 : 1 = 3 + 1 = 4		× 4
5 : 2 = 5 + 2 = 7		× 5

So, we get,

$$\begin{array}{l} 112 : 28) \times 3 \\ 105 : 35) \times 4 \\ \hline 110 : 40) \times 5 \\ \hline 1256 : 424 = 157 : 53 \end{array}$$

S6. Ans.(b)

Sol.



S7. Ans.(b)

Sol.

Required average daily attendance = $\frac{600 \times 15}{9} = 1000$

S8. Ans.(a)

Sol.

$$A + B + C = 45 \times 3 = 135$$

$$A + B = 80$$

$$B + C = 86$$

So, from all these equations, $B = 31$ kg.

S9. Ans.(d)

Sol.

$$\text{Total runs scored by the player in 40 innings} = 40 \times 50$$

$$\text{Total runs scored by the player in 38 innings after excluding two innings} = 38 \times 48$$

$$\begin{aligned} \text{Sum of the scores of the excluded innings} &= 40 \times 50 - 38 \times 48 \\ &= 2000 - 1824 = 176 \end{aligned}$$

Given that,

the scores of the excluded innings differ by 172.

Hence let's take the highest score as $x + 172$
and lowest score as x

Now,

$$x + 172 + x = 176$$

$$\Rightarrow 2x = 4$$

$$\Rightarrow x = 4/2 = 2$$

$$\text{Highest score} = x + 172 = 2 + 172 = 174$$

S10. Ans.(b)

Sol.

Avg. of '7' consecutive no. = 20

$$\text{so, } \frac{x - 3 + x - 2 + x - 1 + x + x + 1 + x + 2 + x + 3}{7} = 20$$

$$\text{So, } x = 20, \text{ bigger no.} = 20 + 3 = 23$$

S11. Ans.(a)

Sol.

Speed of train = 54 kmph

$$= \left(\frac{54 \times 5}{18}\right) \text{ m/sec} = 15 \text{ m/sec}$$

Required time

$$= \frac{\text{Length of trains}}{\text{Speed of train}}$$

$$= \frac{300}{15} = 20 \text{ seconds}$$

S12. Ans.(b)

Sol.

Time taken in covering 5

$$\text{Km} = \frac{5}{10} = \frac{1}{2} \text{ hour}$$

$$= 30 \text{ minutes}$$

That person will take rest for four times.

∴ Required time

$$= (30 + 4 \times 5) \text{ minutes}$$

$$= 50 \text{ minutes}$$

S13. Ans.(d)

Sol.

Amount borrowed = Rs. x

$$\therefore \text{Interest to be paid} = \frac{x \times 3}{100}$$

$$= \text{Rs. } \frac{3x}{100}$$

Case II,

$$\text{Rate} = \frac{5}{2} \% \text{ per half year}$$

$$\text{Time} = 2 \text{ half years}$$

$$\therefore \text{C. I.} = P \left[\left(1 + \frac{R}{100} \right)^T - 1 \right]$$



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$$\begin{aligned}
&= x \left[\left(1 + \frac{5}{200} \right)^2 - 1 \right] \\
&= x \left[\left(1 + \frac{5}{200} \right)^2 - 1 \right] \\
&= \text{Rs. } \frac{81x}{1600} \\
\text{Difference} &= \frac{81x}{1600} - \frac{3x}{100} \\
&= \frac{81x - 48x}{1600} \\
&= \text{Rs. } \frac{33x}{1600} \\
\therefore \frac{33x}{1600} &= 330 \\
\Rightarrow x &= \frac{1600 \times 330}{33} = \text{Rs. } 16000
\end{aligned}$$

S14. Ans.(b)

Sol.

Present worth of bike

$$\begin{aligned}
&= P \left(1 - \frac{R}{100} \right)^T \\
&= 62500 \left(1 - \frac{4}{100} \right)^2 \\
&= \text{Rs. } 57600
\end{aligned}$$

S15. Ans.(d)

Sol.

Principal = Rs. P (let)

$$\begin{aligned}
\therefore \text{C.I.} &= P \left[\left(1 + \frac{R}{100} \right)^T - 1 \right] \\
\Rightarrow 510 &= P \left[\left(1 + \frac{25}{200} \right)^2 - 1 \right] \\
\Rightarrow 510 &= \frac{17P}{64} \\
\Rightarrow P &= \frac{510 \times 64}{17} = \text{Rs. } 1920
\end{aligned}$$

\therefore S.I.

$$\begin{aligned}
&= \frac{\text{Principal} \times \text{Time} \times \text{Rate}}{100} \\
&= \frac{1920 \times 2 \times 25}{100 \times 2} = \text{Rs. } 480
\end{aligned}$$

S16. Ans.(c)

Sol.

Number of wrist watches sold in 2010 = 28.7 lakhs

Number of table clocks sold in 2010 = 22.3 lakhs

\therefore Required per cent

$$\begin{aligned}
&= \left(\frac{28.7 - 22.3}{22.3} \right) \times 100 \\
&= \frac{6.4}{22.3} \times 100 \approx 28.7\%
\end{aligned}$$



S17. Ans.(d)

Sol.

$$\begin{aligned}\text{Required ratio} &= 3.5 : 9.5 \\ &= 7 : 19\end{aligned}$$

S18. Ans.(b)

Sol.

$$\begin{aligned}\text{Required per cent} &= \frac{30.7-9.5}{30.7} \times 100 \\ &= \frac{21.2 \times 100}{30.7} = 69.05\%\end{aligned}$$

S19. Ans.(d)

Sol.

Here, decrease is evident from bar diagram.

Wrist watches : 21.3 \Rightarrow 28.7 lakhs

Table clocks 9.5 \Rightarrow 22.3 lakhs

Wall clocks 30.7 \Rightarrow 32.7 lakhs

S20. Ans.(a)

Sol.

Percentage increase in the sales of table clocks

$$\begin{aligned}&= \frac{(22.3-9.5)}{9.5} \times 100 \\ &= \frac{12.8}{9.5} \times 100 \approx 135\end{aligned}$$

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S21. Ans.(b)

Sol.

$$\frac{x^3-y^3}{x^2+xy+y^2} = x-y = 5 \dots \dots (1)$$

$$\frac{x^3-y^3}{x-y} = x+y = 7 \dots \dots (2)$$

From (1) and (2): $x = 6, y = 1$

$$\therefore \frac{2x}{3y} = \frac{2(6)}{3(1)} = \frac{4}{1}$$

S22. Ans.(a)

Sol.

$$x = \sqrt{a} + \frac{1}{\sqrt{a}}; y = \sqrt{a} - \frac{1}{\sqrt{a}}$$

$$\Rightarrow x+y = 2\sqrt{a}; x-y = \frac{2}{\sqrt{a}}$$

$$x^4 - x^2y^2 - 1 + y^4 - x^2y^2 + 1 = x^4 + y^4 - 2x^2y^2$$

$$= (x^2 - y^2)^2 = [(x+y)(x-y)]^2$$

$$= \left[(2\sqrt{a}) \left(\frac{2}{\sqrt{a}} \right) \right]^2 = 4^2 = 16.$$

S23. Ans.(a)

Sol.

$$12600 \left(\frac{100-5}{100} \right) \left(\frac{100-2}{100} \right) = \text{Rs. } 11730.60$$

S24. Ans.(a)

Sol.

$$\frac{d}{5} - \frac{d}{6} = \frac{12}{60} \Rightarrow d = 6 \text{ km.}$$

S25. Ans.(c)

Sol.

$$\begin{aligned} x &= \sqrt{3} + \sqrt{2}; y = \sqrt{3} - \sqrt{2} \\ \Rightarrow xy &= 1 \text{ and } x - y = 2\sqrt{2} \\ x^3 - 20\sqrt{2} - y^3 - 2\sqrt{2} \\ &= (x - y)^3 + 3xy(x - y) - 22\sqrt{2} \\ &= (2\sqrt{2})^3 + 3(1)(2\sqrt{2}) - 22\sqrt{2} = 0 \end{aligned}$$

S26. Ans.(d)

Sol.

$$\begin{aligned} \frac{4}{3}\pi(1^3 + 6^3) &= \frac{4}{3}\pi(9^3 - x^3) \\ \Rightarrow 729 - x^3 &= 217 \Rightarrow x = 8 \\ \therefore \text{Thickness} &= 9 - 8 = 1 \text{ cm.} \end{aligned}$$

S27. Ans.(d)

Sol.

$$\begin{aligned} \text{Side of the cube} &= a \\ \Rightarrow \sqrt{3} a &= 2(6\sqrt{3}) \Rightarrow a = 12 \\ \therefore \text{Total surface area} \\ &= 6a^2 = 6(12)^2 = 864 \text{ cm}^2. \end{aligned}$$

S28. Ans.(b)

Sol.

$$\begin{aligned} 60\% A &= 30\% B \Rightarrow B = 2A \\ 2A &= 40\% C \Rightarrow C = 5A \\ 5A &= x\% A \Rightarrow x = 500. \end{aligned}$$

S29. Ans.(b)

Sol.

$$\begin{aligned} \boxed{A} + \boxed{B} &= 1 \\ \frac{x}{30} + \frac{x+25}{36} &= 1 \Rightarrow x = 5. \end{aligned}$$

S30. Ans.(d)

Sol.

$$\begin{aligned} 2p &= p \left(1 + \frac{R}{100} \right)^5 \\ \Rightarrow \left(1 + \frac{R}{100} \right)^5 &= 2 \Rightarrow \left[\left(1 + \frac{R}{100} \right)^5 \right]^3 = (2)^3 \\ \Rightarrow 8p &= p \left(1 + \frac{R}{100} \right)^{15} \end{aligned}$$



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