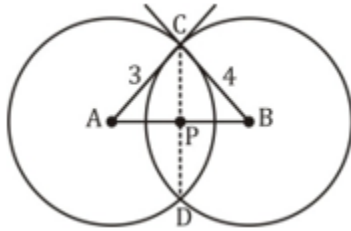


Quant Mega Quiz for SSC CHSL (Solutions)

S1. Ans.(d)

Sol.



In  $\Delta ACB$

$$AB^2 = AC^2 + BC^2$$

$$AB^2 = 4^2 + 3^2$$

$$AB = 5$$

Let  $AP = x$ ,  $BP = 5 - x$  &  $CP = PD = y$

In  $\Delta ACP$

$$3^2 = x^2 + y^2 \quad \dots(i)$$

In  $\Delta CPB$

$$4^2 = (5 - x)^2 + y^2 \quad \dots(ii)$$

Subtracting (ii) - (i)

$$16 - 9 = 25 + x^2 - 10x + y^2 - x^2 - y^2$$

$$7 = 25 - 10x$$

$$10x = 18$$

$$x = 1.8$$

$$9 = (1.8)^2 + y^2$$

$$y^2 = 9 - 3.24$$

$$y^2 = 5.76, y = 2.4$$

$$CD = 2y = 2 \times 2.4 = 4.8$$

S2. Ans.(d)

Sol.

$$\begin{aligned} & (\sec 20^\circ + \cot 70^\circ + 1)(\operatorname{cosec} 20^\circ - \tan 70^\circ - 1) \\ &= (\sec 20^\circ + \tan 20^\circ + 1)(\operatorname{cosec} 20^\circ - \cot 20^\circ - 1) \\ &= \left( \frac{1}{\cos 20^\circ} + \frac{\sin 20^\circ}{\cos 20^\circ} + 1 \right) \left( \frac{1}{\sin 20^\circ} - \frac{\cos 20^\circ}{\sin 20^\circ} - 1 \right) \\ &= \left( \frac{1 + \sin 20^\circ + \cos 20^\circ}{\cos 20^\circ} \right) \left( \frac{1 - (\sin 20^\circ + \cos 20^\circ)}{\sin 20^\circ} \right) \end{aligned}$$

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$$\begin{aligned}
&= \frac{1 - (\sin 20^\circ + \cos 20^\circ)^2}{\sin 20^\circ \cos 20^\circ} \\
&= \frac{1 - (1 + 2 \sin 20^\circ \cos 20^\circ)}{\sin 20^\circ \cos 20^\circ} \\
&= \frac{1 - 1 - 2 \sin 20^\circ \cos 20^\circ}{\sin 20^\circ \cos 20^\circ} \\
&= -2
\end{aligned}$$

### S3. Ans.(b)

Sol.

$$\begin{aligned}
&x^4 + 17x^3 + 17x^2 - 17x + 17 \\
&\Rightarrow x^4 - (16 + 1)x^3 + (16 + 1)x^2 - (16 + 1)x + 16 + 1 \\
&x^4 - (x + 1)x^3 + (x + 1)x^2 - (x + 1)x + 16 + 1 \\
&\Rightarrow x^4 - x^4 - x^3 + x^3 + x^2 - x^2 - x + x + 1 \\
&= 1
\end{aligned}$$

### S4. Ans.(b)

Sol.

1<sup>st</sup> mixture → 40% platinum, x% gold  
2<sup>nd</sup> mixture → 26% silver x% gold  
Platinum 1<sup>st</sup> mixture =  $\frac{40}{100} \times 150 = 60$  kg  
Gold is mixture 1 & 2  
 $\Rightarrow 150 \times \frac{x}{100} + 250 \times \frac{x}{100}$   
 $= \frac{3x}{2} + \frac{5}{2}x$   
 $= \frac{8}{2}x = 4x$   
Gold in resultant mixture =  $400 \times \frac{30}{100}$   
 $= 120$   
 $4x = 120$   
 $x = 30$   
platinum is mixture 2 =  $\frac{250(100-26-30)}{100}$   
 $= 250 \times \frac{44}{100}$   
 $= 110$   
Platinum in resultant mixture =  $110 + 60$   
 $= 170$  kg

### S5. Ans.(c)

Sol.

Efficiency A + B =  $\frac{1}{30}$   
Work done in 11 days =  $\frac{11}{30}$   
Remaining work =  $1 - \frac{11}{30}$   
 $= \frac{19}{30}$   
 $\frac{19}{30}$  work is done by A in → 28 days  
1 work is done by A in →  $\frac{28 \times 30}{19}$   
 $= \frac{840}{19}$   
 $= 44 \frac{4}{19}$

**S6. Ans.(a)****Sol.**

Let total profit = x

Amount paid to B =  $120 \times 12$ 

= 1440 Rs

Share of Each one =  $\frac{x-1440}{2}$ 

Interest Paid by B = 2250

A's share =  $\frac{x-1440}{2} + 2250$ =  $\frac{x - 1440 + 4500}{2}$ =  $\frac{x + 3060}{2}$ =  $\frac{x + 3060}{2}$ B's share =  $\left(\frac{x-1440}{2}\right) - (2250 - 1440)$ =  $\frac{x - 1440}{2} - 810$ =  $\frac{x - 1440 - 1620}{2}$ =  $\frac{x - 3060}{2}$ =  $\frac{x - 3060}{2}$ B's income =  $\frac{\text{A's income}}{2}$ 

$$\frac{x - 3060}{2} = \frac{x + 3060}{2 \times 2}$$

$$4x - 12240 = 2x + 6120$$

$$2x = 18360$$

$$x = 9180$$

**S7. Ans. (c)****Sol.**

$$x + \frac{1}{x} = 1$$

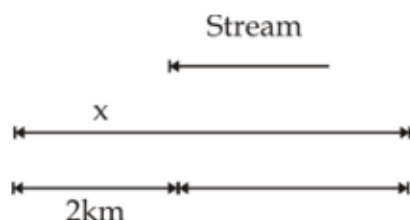
$$x^6 = -1, x^3 = 1$$

$$x^5 + x^{46} + x^{32} + x^{26} + x^{21} + x^{15}$$

$$= x^{46}(x^6 + 1) + x^{26}(x^6 + 1) + x^{15}(x^6 + 1) + x^6 + x^3 + 4$$

$$= x^{46}(-1 + 1) + x^{26}(-1 + 1) + x^{15}(-1 + 1) - 1 + 1 + 4$$

$$= 4$$

**S8. Ans.(a)****Sol.**

$$\text{Boat's speed} = \frac{9}{2} \text{ km/hr}$$

$$\text{Speed of stream} = \frac{3}{2} \text{ km/hr}$$

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# SSC CGL

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$$\frac{x}{\frac{9}{2}} + \frac{(x-2)}{\left(\frac{9+3}{2}\right)} = 2h \ 10 \text{ minute}$$

$$\frac{x}{3} + \frac{(x-2)}{6} = 2 \frac{10}{60} \text{ h}$$

$$\frac{2x + x - 2}{6} = \frac{13}{6}$$

$$3x = 15 \text{ km}$$

$$x = 5 \text{ km}$$

**S9. Ans.(b)**

**Sol.**

$$\tan 50^\circ = \tan(40^\circ + 10^\circ)$$

$$\tan 50^\circ = \frac{\tan 40^\circ + \tan 10^\circ}{1 - \tan 40^\circ \tan 10^\circ}$$

$$\tan 50^\circ - \tan 40^\circ \tan 50^\circ + \tan 10^\circ = \tan 40^\circ + \tan 10^\circ$$

$$\tan 50^\circ - \tan(90-50^\circ) \tan 50^\circ \tan 10^\circ = \tan 40^\circ + \tan 10^\circ$$

$$\tan 50^\circ - \cot 50^\circ \tan 50^\circ \tan 10^\circ = \tan 40^\circ + \tan 10^\circ$$

$$\tan 50^\circ = \tan 40^\circ + 2 \tan 10^\circ$$

**S10. Ans.(c)**

**Sol.**

$$\text{Kavita} \rightarrow 20 \quad 3$$

$$\text{Babita} \rightarrow 60 \quad 60 \quad 1$$

$$\text{Samita} \rightarrow 30 \quad 2$$

$$5 \text{ days work of } (K + B + S) = 5 \times (3 + 2 + 1) = 30$$

$$3 \text{ days work of } (K + B) = 3 \times (3 + 1) = 3 \times 4 = 12$$

$$\text{Remaining work} = 60 - 30 - 12 = 18$$

$$\text{Kavita will complete the remaining work in } \frac{18}{3} = 6 \text{ days}$$

**S11. Ans.(a)**

**Sol.**

$$\text{Expenditure} = \text{Price} \times \text{Consumption}$$

$$10 = 32 \times x$$

Using successive rule,

$$10 = 32 + x + \frac{32x}{100}$$

$$x = \frac{-50}{3} \%$$

Thus, consumption reduces by

$$\frac{1}{6}$$

$\frac{1}{6} \rightarrow$  Before

Now, she is buying 5 kg instead of 6 kg.

Earlier                  Now

$$6 \rightarrow 5$$

$$1 \rightarrow \frac{5}{6}$$

$$12 \rightarrow \frac{5}{6} \times 12 = 10 \text{ kg}$$

Now she buys 10 kg.

S12. Ans.(a)

Sol.

Let the C.P be Rs. x

$$S.P \rightarrow (1.1) x$$

According to the questions,

$$C.P \text{ (new)} \rightarrow (0.9 x)$$

$$S.P \text{ (new)} = (1.1 x) + 3$$

$$\text{gain} = 25\%$$

A/Q,

$$(0.9 x) (1.25) = (1.1 x) + 3$$

$$1.125 x - 1.10 x = 3$$

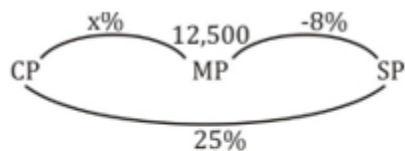
$$0.025x = 3$$

$$x = 120$$

$$C.P = \text{Rs. } 120$$

S13. Ans.(b)

Sol.



$$S.P = 12500 (0.92)$$

$$C.P = \frac{12500 (0.92)}{1.25}$$

$$C.P = 9200$$

S14. Ans.(c)

Sol.

	T1	:	T2
Speed →	50	:	60
	5	:	6
Distance →	5	:	6
	└──────────┘		
	1R		

$$1R = 120 \text{ km}$$

$$\therefore (6 + 5)R = 11R = 120 \times 11 = 1320 \text{ km}$$

S15. Ans.(b)

Sol.

A	B	C
(13 + x)	(6 + x)	x

$$13 + x + 6 + x + x = 76$$

$$19 + 3x = 76$$

$$x = \frac{57}{3} = 19$$

A	B	C
32	25	19

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**S16. Ans.(c)****Sol.**

Sum of internal angle = 1440

$$180(n - 2) = 1440$$

$$n - 2 = \frac{1440}{180}$$

$$n = 8 + 2 = 10$$

**S17. Ans.(b)****Sol.**

$$\text{Price of 510 eggs} = \frac{510}{12} \times 20 = 850 \text{ Rs.}$$

$$\text{S.P at 20\% gain} = 850 \times \frac{120}{100} = 1020 \text{ Rs.}$$

$$\text{S.P of } (510 - 30) \Rightarrow 480 \text{ eggs} \Rightarrow \text{Rs. } 1020$$

$$\text{S.P of 1} \Rightarrow 1020/480$$

$$\text{S.P of Dozen} = 1020/48 \times 12 = 25.50 \text{ Rs.}$$

**S18. Ans.(a)****Sol.**

A    B    C

100   88   99

If A sells to B at 99 Rs.

Then there will be loss of Rs. 1

$$\text{Loss \%} = \frac{1}{100} \times 100$$

$$= 1\%$$

**S19. Ans.(b)****Sol.**

Let C.P of Type-1 be x &amp; Type-2 be y

$$3x + 6y = 900 \quad \dots(i)$$

$$3x \times \frac{115}{100} + 6y \times \frac{90}{100} = 900 + 30$$

$$115x + 180y = 31000 \quad \dots(ii)$$

$$90x + 180y = 27000$$

$$\hline 25x = 4000$$

$$x = 160 \text{ Rs.}$$

$$480 + 6y = 900$$

$$6y = 420$$

$$y = 70 \text{ Rs.}$$

**S20. Ans.(b)****Sol.** Let the speed of car be x km/hr

$$(x - 4) \times \frac{3}{60} = \frac{130}{1000}$$

$$30x - 120 = 78$$

$$30x = 198$$

$$x = 6.6 \text{ km/hr}$$

S21. Ans.(c)

Sol.

Let  $x \rightarrow$  hens

$y \rightarrow$  goats.

$$x + y = 81 \times 4$$

$$2x + 4y = 234$$

$$\begin{array}{r} 4x+4y=324 \\ \underline{2x+4y=234} \\ 2x=90 \end{array}$$

$$2x = 90$$

$$x = 45$$

$$y = 81 - 45 = 36$$

No of goats = 36

S22. Ans.(d)

Sol.

First Number =  $33K + 21$

Second Number =  $33k + 28$

Sum of the two Numbers =  $33k + 21 + 33k + 28$

$$= 66k + 49$$

$$66k + 49$$

$$\begin{array}{r} 33 \\ \underline{66k + 49} \\ 0 \end{array} \quad + \quad \begin{array}{r} 49 \\ \underline{33} \\ 16 \end{array}$$

Remainder      Remainder

0      16

S23. Ans.(d)

Sol.

Number =  $5n + 2$

$$(\text{Number})^2 = (5n+2)^2$$

$$= 25n^2 + 4 + 20n$$

$$\frac{25n^2+4+20n}{5}, \text{Remainder} = 4$$

S24. Ans.(b)

Sol.

Number  $\rightarrow x$

$$\frac{(x+12)}{6} = 12$$

$$x + 12 = 672$$

$$x = 660$$

$$\text{Correct Answer} = \frac{660}{6} + 12 = 110 + 12 = 122$$

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**S25. Ans.(b)****Sol.**Let  $x \rightarrow$  numerator $y \rightarrow$  denominatorATQ  $\rightarrow x = y - 4$ 

$$y = x + 4 \quad \dots(1)$$

ATQ,

$$y + 1 = 8x (x-2)$$

$$y + 1 = 8x - 16$$

$$8x - y = 17 \quad \dots (2)$$

From (1) &amp; (2)

$$8x - x - 4 = 17$$

$$7x = 21, x = 3$$

$$Y = 3 + 4 = 7$$

Fraction is  $\Rightarrow 3/7$ **S26. Ans.(c)****Sol.**Let the number is  $\rightarrow xy$ 

$$x = y - 2$$

ATQ

$$3(10x+y) + \frac{6}{7}(10y+x) = 108$$

$$3(10y-20+y) + \frac{6}{7}(10y+y-2) = 108$$

$$33y - 6 + \frac{6}{7}(11y-2) = 108$$

$$231y - 420 + 66y - 12 = 756$$

$$297y = 1188$$

$$y = 4$$

$$x = 4 - 2$$

$$= 2$$

$$\text{Number is} = 24$$

$$\text{Sum} = 2 + 4 = 6$$

**S27. Ans.(c)****Sol.** Let the number are $x, y, z$ 

$$y = 2x, x = y/2$$

$$y = 3z, z = y/3$$

$$\frac{x+y+z}{3} = 44$$

$$\frac{y}{2} + y + \frac{y}{3} = 132$$

$$11y = 132 \times 6$$

$$y = 72$$

$$x = 36$$

$$z = 24$$

$$\text{Difference} = 36 - 24 = 12$$



**S28. Ans.(b)**

**Sol.**  $A + B = 3(B + C) \dots (1)$

$A + B + C = A + 30$

$B + C = 30 \dots(2)$

$B = 5C \dots(3)$

From (2) &amp; (3)

$5C + C = 30$

$C = 5$

$B = 5 \times 5 = 25$

$A + 25 = 3(25+5)$

$A + 25 = 90$

$A = 65 \text{ Rs.}$

**S29. Ans.(a)****Sol.** Let total students  $\Rightarrow 5$ Girls  $\Rightarrow 3$ Boys  $\Rightarrow 2$ 

Girls Absent  $\Rightarrow 3 \times \frac{2}{9} = 2/3$

Girls Present  $= 3 - 2/3 = 7/3$

Boys Absent  $= 2 \times \frac{1}{4} = \frac{1}{2}$

Boys Present  $= 2 - \frac{1}{2} = 3/2$

Total Present  $= \frac{3}{2} + \frac{7}{3} = \frac{9+14}{6} = \frac{23}{6}$

Fraction Present  $= \frac{23}{6} \div 5 = \frac{23}{30}$

**S30. Ans.(b)**

**Sol.**  $A + B + C + D = 60 \dots(1)$

$A = \frac{1}{2}(B + C + D) \dots(2)$

$B = \frac{1}{3}(A + C + D) \dots(3)$

$C = \frac{1}{4}(A + B + D) \dots(4)$

From (1) &amp; (2)

$A + 2A = 60$

$3A = 60$

$A = 20$

From (1) &amp; (3)

$B + 3B = 60$

$4B = 60$

$B = 15$

From (1) &amp; (4)

$C + 4C = 60$

$5C = 60$

$C = 12$

$20 + 15 + 12 + D = 60$

$D = 60 - 47$

$D = 13$

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