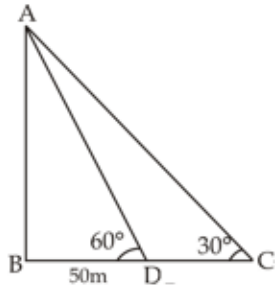


Quant Mega Quiz for SSC CGL Tier - 2 (Solutions)

S1. Ans.(c)

Sol.

In  $\triangle ABD$ ,



$$\tan 60^\circ = \frac{AB}{BD}$$

$$\sqrt{3} = \frac{AB}{50}$$

$$AB = 50\sqrt{3} \text{ m}$$

In  $\triangle ABC$

$$\tan 30^\circ = \frac{AB}{BC}$$

$$\frac{1}{\sqrt{3}} = \frac{50\sqrt{3}}{BC}$$

$$BC = 150 \text{ m}$$

$$DC = 150 - 50 = 100 \text{ m}$$

$$\text{Speed of boat} = \frac{100 \text{ m}}{8 \text{ sec}}$$

$$= \frac{100}{8} \times \frac{18}{5} \text{ km/hr}$$

$$= 45 \text{ km/hr}$$



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S2. Ans.(a)

Sol.

$$\frac{n_1}{n_2} = \frac{5}{6}$$

$$\frac{(n_1 - 2) \times 180}{n_1} = \frac{24}{\frac{(n_2 - 2) \times 180}{n_2}}$$

$$\frac{(n_1 - 2)}{(n_2 - 2)} \times \frac{n_2}{n_1} = \frac{24}{25}$$

$$\frac{(n_1 - 2)}{(n_2 - 2)} \times \frac{6}{5} = \frac{24}{25}$$

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$$\frac{(n_1 - 2)}{(n_2 - 2)} = \frac{4}{5}$$

$$5n_1 - 10 = 4n_2 - 8$$

$$5n_1 - 4n_2 = 2$$

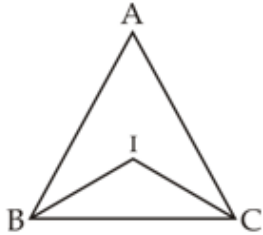
$$\frac{25n_1}{6} - 4n_2 = 2$$

$$n_2 = 12$$

$$n_1 = 10$$

**S3. Ans.(b)**

**Sol.**

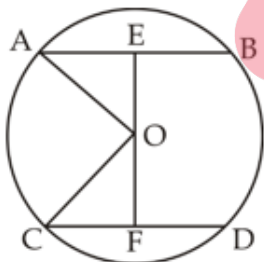


$$\begin{aligned}\angle BAC &= 180^\circ - (65^\circ + 55^\circ) \\ &= 180^\circ - 120^\circ \\ &= 60^\circ\end{aligned}$$

$$\begin{aligned}\angle BIC &= 90^\circ + \frac{\angle A}{2} \\ &= 90^\circ + 30^\circ = 120^\circ\end{aligned}$$

**S4. Ans.(a)**

**Sol.**



$$EO = x, OF = 17 - x$$

$$AB = 10 \quad CD = 24$$

$$AE = 5 \text{ cm} \quad CF = 12$$

In  $\triangle AOE$

$$AO^2 = 25 + x^2$$

In  $\triangle COF$

$$CO^2 = 144 + (17 - x)^2$$

$$AO = CO = r$$

$$25 + x^2 = 144 + 289 + x^2 - 34x$$

$$34x = 144 + 289 - 25$$

$$x = 12$$

$$AO^2 = 25 + 144$$

$$AO^2 = 169$$

$$AO = 13 \text{ cm}$$

$$\text{Radius} = 13 \text{ cm}$$

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S5. Ans.(b)

Sol.

$$\frac{\text{Run}_{10}}{10} = 60$$

$$\text{Run}_{10} = 600$$

$$\frac{\text{Run}_{11}}{11} = 62$$

$$\text{Run}_{11} = 682$$

$$\text{Run}_{10} + 11^{\text{th}} \text{ Inning} = 682$$

$$\text{Run required in 11th inning} = 682 - 600 = 82$$

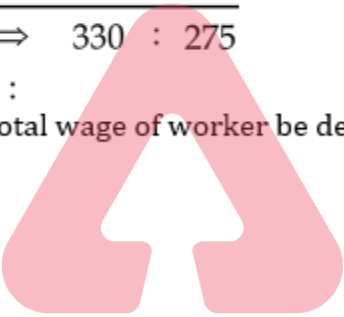
S6. Ans.(a)

Sol.

$$\text{Workers} \Rightarrow 15 : 11$$

$$\text{Wages} \Rightarrow 22 : 25$$

$$\text{Total wages} \Rightarrow 330 : 275$$



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$$\begin{aligned} &: \\ \text{Ratio by which total wage of worker be decreased} \\ &= 330 : 275 \\ &= 6 : 5 \end{aligned}$$

S7. Ans.(b)

Sol.

$$\begin{aligned} \text{Interest on } \frac{1}{4} \text{ capital} &= \frac{1}{4} \times \frac{3}{100} \\ &= \frac{3}{400} \end{aligned}$$

$$\text{Interest on } \frac{2}{3} \text{ capital} = \frac{2}{3} \times \frac{5}{100} = \frac{1}{30}$$

$$\text{Interest on } \frac{1}{12} \text{ capital} = \frac{1}{12} \times \frac{11}{100} = \frac{11}{1200}$$

$$\text{Total interest} = \frac{3}{400} + \frac{1}{30} + \frac{11}{1200}$$

$$= \frac{9 + 40 + 11}{1200}$$

$$= \frac{60}{1200} = \frac{1}{20}$$

% he receives on the whole

$$= \frac{1}{20} \times 100$$

$$= 5\%$$

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**S8. Ans.(c)****Sol.**

$$n_1^{t_1} = n_2^{t_2}$$

$$2^4 = 4^{t_2}$$

$$2^4 = 2^{2t_2}$$

$$\frac{1}{4} = \frac{2}{t_2}$$

$$t_2 = 8 \text{ years}$$

**S9. Ans.(c)****Sol.**

$$x \rightarrow \frac{1}{4\text{th}} \text{ work} \rightarrow 6 \text{ days}$$

Whole work  $\rightarrow 24$  days

$$y \rightarrow \frac{3\text{th}}{4} \text{ work} \rightarrow 12 \text{ days}, \quad \text{whole work} \Rightarrow 16 \text{ days}$$

$$x \text{ \& } y \text{ will complete the whole work in} \Rightarrow \frac{1}{24} + \frac{1}{16}$$

$$\Rightarrow \frac{24 + 16}{24 \times 16}$$

$$\Rightarrow \frac{40}{24 \times 16}$$

$$\Rightarrow \frac{5}{48}$$

$$\text{Days required} = \frac{48}{5}$$

$$= 9\frac{3}{5} \text{ days}$$

**SSC****adda247****S10. Ans.(c)****Sol.**

$$(2M + 3B) \times 10 = (3M + 2B) \times 8$$

$$20M + 30B = 24M + 16B$$

$$4M = 14B$$

$$M = \frac{7}{2}B$$

$$2M + 3B \Rightarrow 2 \times \frac{7}{2}B + 3B \Rightarrow 10B$$

$$2M + 1B \Rightarrow 2 \times \frac{7}{2}B + 1B \Rightarrow 8B$$

$$10B \times 10 = 8B \times \text{Days}$$

$$\text{Days} = \frac{100}{8}$$

$$= \frac{25}{2}$$

$$= 12\frac{1}{2} \text{ days}$$

S11. Ans.(c)

Sol.

LCM of 2, 6, 3, 4 = 12

so,  $9 < 64 < 125 < 256$

S12. Ans.(d)

Sol.

$$(251)^{98} + (21)^{59} - (106)^{100} + (705)^{35} - 164 + 259$$

$$= 1 + 1 - 6 + 5 - 4 + 9$$

$$= 6$$

S13. Ans.(d)

Sol.

The required number must also be divisible by  $(2^{32} + 1)$   
and among the options given,  $(2^{96} + 1)$  is divisible by  $(2^{32} + 1)$

$$\because 2^{96} + 1 = 2^{96} + 1^{96}$$

$$= (2^{32})^3 + (1^{32})^3, \text{ which is divisible by } 2^{32} + 1$$

[ $\because$  when n is odd,  $(a^n + b^n)$  is always divisible by  $(a + b)$ ]

S14. Ans.(d)

Sol.

$$\left(\frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}}\right)^2 + \left(\frac{\sqrt{7}-\sqrt{5}}{\sqrt{7}+\sqrt{5}}\right)^2$$
$$= \left(\frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}}\right)^2 + \left(\frac{\sqrt{7}-\sqrt{5}}{\sqrt{7}+\sqrt{5}}\right)^2 + 2 - 2$$

$$= \left(\frac{\sqrt{7}+\sqrt{5}}{\sqrt{7}-\sqrt{5}} + \frac{\sqrt{7}-\sqrt{5}}{\sqrt{7}+\sqrt{5}}\right)^2 - 2$$

$$= \left[\frac{(\sqrt{7}+\sqrt{5})^2 + (\sqrt{7}-\sqrt{5})^2}{(\sqrt{7})^2 - (\sqrt{5})^2}\right]^2 - 2$$

$$= \left[\frac{2(7+5)}{7-5}\right]^2 - 2$$

$$= 144 - 2$$

$$= 142$$

S15. Ans.(b)

Sol.

$$x + 809436 \times 809438$$

= A square number

$$\Rightarrow x + (809437 - 1)(809437 + 1)$$

= square number

$$\Rightarrow x + (809437)^2 - 1 = A \text{ square number}$$

It is possible, when  $x = 1$

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**S16. Ans.(a)****Sol.**

$$\begin{aligned}\frac{1}{3}x^2 - 2x - 9 &= \frac{1}{3}[x^2 - 6x - 27] \\ &= \frac{1}{3}(x^2 - 9x + 3x - 27) \\ &= \frac{1}{3}(x - 9)(x + 3)\end{aligned}$$

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

Sum of digits at even place

$$= 8 + 5 + 6 = 19$$

Sum of digits at odd places

$$= 5 + 7 + 6 = 18$$

Now, to make the difference 0, we have to add 1 in the unit place

**S18. Ans.(b)****Sol.**

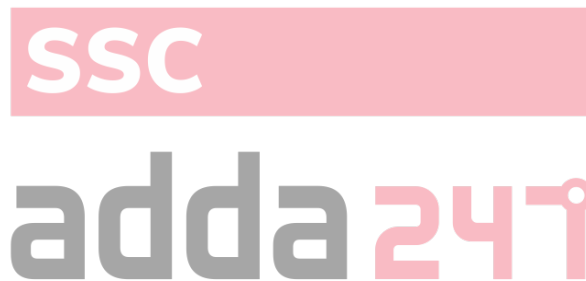
ATQ,

$$xy = 64$$

And,

$$x = \frac{4 + 24}{7} = 4$$

$$\therefore y = \frac{64}{4} = 16$$

**S19. Ans.(c)****Sol.**

$$\frac{\sqrt{5+x} + \sqrt{5-x}}{\sqrt{5+x} - \sqrt{5-x}} = \frac{5}{1}$$

By applying componendo and dividendo

$$\frac{2\sqrt{5+x}}{2\sqrt{5-x}} = \frac{5+1}{5-1} = \frac{6}{4} = \frac{3}{2}$$

Squaring both sides

$$\frac{5+x}{5-x} = \frac{9}{4}$$

$$20 + 4x = 45 - 9x$$

$$-25 = -13x$$

$$x = \frac{25}{13}$$

**S20. Ans.(d)**

**Sol.** As 476, is not a multiple of 24, we cannot get the required remainder by just dividing 67 by 24. Hence, cannot be determined

**S21. Ans.(b)****Sol.**

Let A has x guavas and B has y guavas, the

$$x - \frac{1}{4}x = \left(y + \frac{1}{4}x\right) + 2 \quad \dots(i)$$

$$\text{And } y - \frac{7}{10}y = x + \frac{1}{10}y - 4 \quad \dots(ii)$$

Solving (i) and (ii), we get

$$x = 44, \quad y = 20$$

$$\text{Total guavas} = 44 + 20 = 64$$

**S22. Ans.(d)****Sol.**

Income →	4	4.4	4.8	5.2	18.4 lakh
Saving →	2	1.76	1.44	1.04	6.24 lakh
Exp. →	2	2.64	3.36	4.16	12.16 lakh

$$\text{So, } \frac{6.24}{12.16} \times 100 = 51\frac{6}{19}\%$$

**S23. Ans.(d)****Sol.**

$$A + B + C + D = 56$$

$$B + C + D = 4.6A$$

$$\Rightarrow A + B + C + D = 5.6A \text{ (adding A in both side)}$$

$$56 \text{ lakh} = 5.6A$$

$$\Rightarrow A = 10 \text{ lakh}$$

$$\text{Similarly, } A + C + D = \frac{11}{3}B$$

$$\Rightarrow A + B + C + D = \frac{14}{3}B$$

$$\Rightarrow B = 12 \text{ lakh}$$

$$\text{Similarly, } 4(A + B + D) = C$$

$$\Rightarrow A + B + D = 2.5C$$

$$\Rightarrow A + B + C + D = 3.5C$$

$$\Rightarrow C = 16 \text{ lakh}$$

$$\text{Therefore } D = (A + B + C + D) - (A + B + C) = 18 \text{ lakh}$$

**S24. Ans.(b)****Sol.**

Let Ram replaces x litres of 12% sol. with 39% solution.

$$\text{Now, quality of 12\% sol. in 27 litre} = \frac{27 \times 12}{100}$$

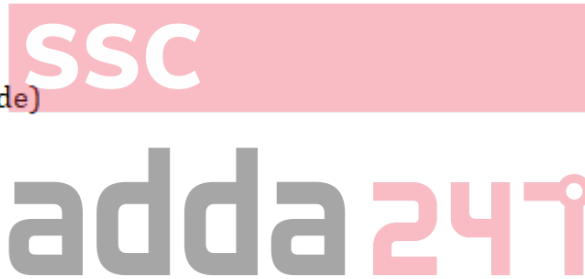
∴ After replacing we have volume of 12% sol.

$$= \frac{27 \times 12}{100} - \frac{12x}{100} + \frac{39x}{100} = \frac{324 + 27x}{100}$$

This will be equal to 27 litre of 21% sol.

$$\therefore \frac{324 + 27x}{100} = \frac{21 \times 27}{100}$$

$$\therefore x = \frac{567 - 324}{27} = \frac{243}{27} = 9$$



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**S25. Ans.(a)****Sol.**

Year	Rate of Commission	Commission in values
1	20%	$0.2 \times 20,000 = 4000$
	25% (bonus)	$0.25 \times 4000 = 1000$
2	16%	$0.16 \times 20,000 = 3200$
3	12%	$0.12 \times 20,000 = 2400$
4	10%	$0.1 \times 20,000 = 2000$
5-10	4%	$6 \times 0.04 \times 20,000 = 4800$
Total commission		
		$= (4000 + 3200 + 2400 + 2000 + 4800) + (1000) = 17,400$

**S26. Ans.(a)****Sol.**

House hold expenditure = 50%

Remaining = 50%

On Remaining amount he spends:-

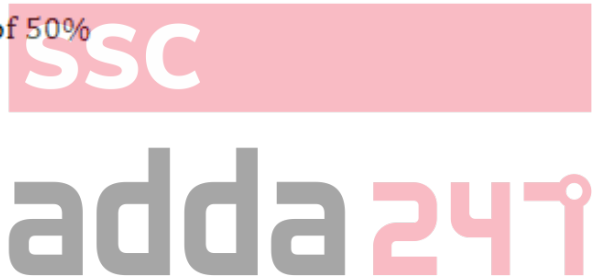
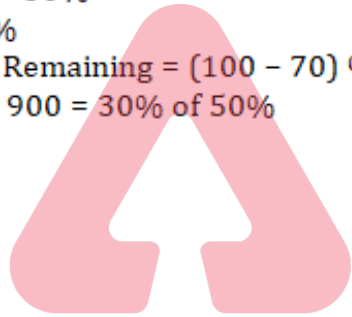
Travelling = 25%

Entertainment = 30%

Shopping = 15%

Total = 70%  $\Rightarrow$  Remaining = (100 - 70) % of 50%Rest amount  $\Rightarrow$  900 = 30% of 50% $\Rightarrow$  15% = 900

100% = 6,000

**S27. Ans.(c)****Sol.**

Total marks of test = 80

Ankita scored = 65% of 40 Question (1 mark)

= 26

But she needs to score = 80% of entire 'test'

= 80% of 80

= 64 marks

So, she needs = (64 - 26) marks

= 38

Percentage  $\Rightarrow$  x% of 40 = 38 $\Rightarrow$  x = 95**S28. Ans.(c)****Sol.**

No. of students = 60

No. of teachers = 5

No. of sweets each students got = 20% of (60)

= 12

Total sweets distributed among students

=  $12 \times 60 = 720$



No. of sweets each teacher got = 30% of (60)  
= 18  
Total sweets =  $18 \times 5 = 90$   
distributed among teachers  
Total sweets =  $(720 + 90)$   
= 810

**S29. Ans.(d)**

**Sol.**

Let total votes = 100%  
Invalid = 15%  
Valid votes = 85%  
1<sup>st</sup> candidate = 55% of 85%  
So, 2<sup>nd</sup> candidate = 45% of 85%  
According to the question,  
100% → 15200  
85% → 12920  
Other candidate got = 45% of 12920  
= 5814 vote

**S30. Ans.(b)**

**Sol.**

Total correct questions for getting 60% grade

$$= \frac{60}{100} \times 250 = 150$$

40% of 125 = 50 questions

$$\therefore x\% \text{ of } 125 = 150 - 50$$

$$= 100 \text{ questions}$$

$$\Rightarrow x = \frac{100}{125} \times 100 = 80$$

Required percentage = 80%

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