13th Oct. SSC Quant Sunday Mega Quiz (Solutions)

S1. Ans.(c)
Sol.

$$= \frac{\frac{1}{\cos\theta}}{\frac{(\sin^2\theta + \cos^2\theta)}{\sin\theta\cos\theta}}$$

$$= \sin\theta$$

S2. Ans.(b)
Sol.

$$2\sin\left(\frac{8\theta + 6\theta}{2}\right)\cos\left(\frac{8\theta - 6\theta}{2}\right)$$

$$= 2\sin 7\theta\cos\theta$$

S3. Ans.(b)
Sol.

Let $\theta = 30°$

$$\frac{\sqrt{3}}{1 - \frac{1}{\sqrt{3}}} + \frac{\frac{1}{\sqrt{3}}}{1 - \sqrt{3}}$$

$$= \frac{3}{\sqrt{3} - 1} - \frac{1}{\sqrt{3}(\sqrt{3} - 1)}$$

$$= \frac{3\sqrt{3} - 1}{3 - \sqrt{3}}$$

$$= \frac{(3\sqrt{3} - 1) \times (3 + \sqrt{3})}{6}$$

$$= \frac{9\sqrt{3} - 3 + 9 - \sqrt{3}}{6}$$

$$= \frac{8\sqrt{3}+6}{6} = \frac{4\sqrt{3}+3}{3}$$

$$= \frac{4}{\sqrt{3}} + 1$$

So, (ii) option

$$= \frac{4}{\sqrt{3}} + 1$$

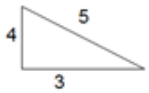
S4. Ans.(c)
Sol.

$$\frac{\cot A}{\cot A + \tan A}$$

$$\frac{\cos A/\sin A}{\frac{1}{\cos A \sin A}} = \cos^2 A$$

S5. Ans.(c)
Sol.

$\text{Sin } x = \frac{4}{5}$



/So,

$$\left(\frac{\frac{4}{3}-\frac{3}{4}}{\frac{5}{3}-\frac{4}{3}}\right)\left(\frac{\left(\frac{3}{5}\right)^4-\left(\frac{4}{5}\right)^4}{2\times\left(\frac{3}{5}\right)^2-1}\right)$$

$= 7/4$

S6. Ans.(b)
Sol.

$\frac{5400}{7,20,000} \times 100 = 0.75\%$

S7. Ans.(c)
Sol.

$$\frac{Arts}{Commerce} = \frac{180}{108} = \frac{10}{6}$$

$$= \frac{5}{3}$$

S8. Ans.(c)
Sol.

$\frac{54°}{360°} \times 100 = 15\%$

S9. Ans.(d)
Sol.

Arts + commerce + non-med

$= 108 + 54 + 180$

$= \frac{342}{360} \times 7,20,000$

$= 684000$

$\therefore$ Average $= \frac{684000}{3}$

$= 228000$

S10. Ans.(d)
Sol.

$\left(\frac{72°}{360°}\right) \times \frac{1.3}{100} \times 720000$

$= \frac{1.3 \times 7200}{5} = 1872$

So, Commerce + Arts = 5400 – 1872 = 3528

S11. Ans.(b)
Sol.

x : y : z

3x : 2x : 3x – 24700

ATQ,

(3x – 24700) × 100 = 2x × 112

(3x – 24700) 25 = 56x

75x – 56x = 25 × 24700

x = 25 × 1300

x = 32500

Total Voter = 8 × 32500 – 24700

= 260000 – 24700

= 235300

S12. Ans.(a)
Sol.

	Arun (Diesel)		Dev (Petrol)
(km in per. liter)	130		100
Price per liter	100 Rs.		120 Rs.
Cost (per km)	1.3 Rs.		5 / 6
	$\frac{13}{10}$	:	$\frac{5}{6}$
	39	:	25

S13. Ans.(c)
Sol.

Let MP after giving two discount 12% and 13% = 100

Then SP = $100 \times \frac{90}{100} = 90$ After all discount

CP = $\frac{90}{112} \times 100$

If he give only 2 discounts 12% and 13%
then 100 becomes selling price.

Ratio = CP : SP (New)

$\frac{90 \times 100}{112}$: 100

CP SP

90 : 112

Required profit percent = $\frac{112 - 90}{90} \times 100$

$= \frac{2200}{90} = \frac{220}{9}$

= 24.44%

S14. Ans.(a)
Sol.
Required percentage

$$= \left[\frac{\frac{14.4}{160} - \frac{14.4}{208}}{14.4}\right] \times 100$$

$$= 14.4\left[\frac{13-10}{14.4 \times 32 \times 5 \times 13}\right] \times 100$$

$$= \frac{3 \times 100}{32 \times 5 \times 13} = \frac{15}{104} = 0.144\%$$

S15. Ans.(c)
Sol.
Let the cost of raw material = 100
New cost of raw material = 125
Old labour cost = 30

$$\text{New labour cost} = 125 \times \frac{40}{100} = 50$$

Total cost = 130
New total cost = 175

$$\text{Required \%} = \frac{175-130}{175} \times 100$$

$$\frac{45}{1.75} = \frac{45 \times 4}{7} = 25.7\%$$

S16. Ans.(a)
Sol.

$$57.26\% \rightarrow (1663.67 + 133.7214)$$

$$100\% \rightarrow \frac{1797.3914}{57.26} \times 100 = 3139$$

S17. Ans.(c)
Sol.

$$\frac{V}{V+U} = \frac{72}{100} = \frac{18}{25} \quad \Rightarrow \begin{matrix} V = 18 \\ U = 7 \end{matrix} \Big) 11 \rightarrow 22 \text{years}$$

Umabharti's present age = 7 × 2 = 14
15 year hence it will be = 14 + 15 = 29 years

S18. Ans.(c)
Sol.

$$\frac{12}{100} \times a = b \quad \Rightarrow b = \frac{3}{25}a$$

$$b\% \text{ of } 50 = \frac{3a}{25}\% \text{of } 50$$

$$= 30\% \text{ of } \frac{a}{5}$$

S19. Ans.(a)
Sol. LET C=100 then according a is 78% lesser than c and b is 71% lesser than c therefore ratio is

a	b	c
22	29	100

According to question

$$\text{Required percentage} = \frac{29-22}{22} \times 100 = 31.81\%$$

S20. Ans(a)
Sol.
Let No = x
X + 561 = 1.51x
0.51x = 561
x = 1100

S21. Ans.(a)
Sol.
$$\frac{141 \times 142 \times 143}{6}$$
$$= \frac{3+4+5}{6} = \frac{12}{6} = \text{zero}$$

S22. Ans.(a)
Sol.
$= 9 + 20 + 12\sqrt{5}$
$= 29 + k\sqrt{5}$
So, $k = 12$

S23. Ans.(d)
Sol.
$$3 + \sqrt{3} + \frac{6}{6} = 4 + \sqrt{3}$$

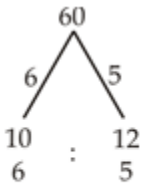
S24. Ans.(a)
Sol.
$$\sqrt{5 + 2\sqrt{6}} = (\sqrt{3} + \sqrt{2})$$
So,
$$\sqrt{3} + \sqrt{2} + \frac{1}{\sqrt{3} + \sqrt{2}}$$
or, $\sqrt{3} + \sqrt{2} + \sqrt{3} - \sqrt{2}$
Or, $2\sqrt{3}$

S25. Ans.(d)
Sol.
$3^{33} = (3^3)^{11} = (27)^{11}$
$= 27^9.729$
Clearly, $3^{33} > 333$
(as 729>333)
So, statement III is true
& $33^3 = 33.1089$
Clearly, $33^3 > 333$
So, statement II is correct.
& $27^8.19683 > 33.1089$
∴ Statement I is correct
So, I, II & III all are correct

S26. Ans.(a)
Sol.

$24 \times 45 = 18 \times x$
$12 \times 5 = 60 = x$

S27. Ans.(c)
Sol.



$\therefore$ Difference $= \frac{1}{11} \times 2200$
$= 200$

S28. Ans.(a)
Sol.

$0.2MP = 0.3CP$
$MP = 1.5CP$
$\therefore$ Profit % $= 50\%$

S29. Ans.(b)
Sol.

I. $25 + 25 - 6.25 = 43.75\%$
II. $10 + 40 - 4 = 46\%$
III. $20 + 30 - 6 = 44\%$
Clearly, II is the best.

S30. Ans.(b)
Sol.

Milk $= 5/7 \times 126 = 90$ l

Water $= \frac{2}{7} \times 126 = 36\ell$
Now, new mix quantity of milk = 90 l
So, $\frac{3}{5}x = 90$
Or, $x = 150\ell$
$\therefore$ Water $= \frac{2}{5} \times 150 = 60\ell$
So, required quantity = 60 – 36 = 24 ltr