

Quant Mega Quiz for SSC Tier - 1 (Solutions)

S1. Ans.(a)

Sol.

Let two parts are x & y

$$x \times \frac{8}{100} = \frac{y \times 6}{100}$$

$$x : y = 3 : 4$$

$$7r \rightarrow 1750$$

$$1r \rightarrow 250$$

$$1^{\text{st}} \text{ Part} = 3 \times 250$$

$$= 750 \text{ Rs.}$$

$$\text{Interest on } 1^{\text{st}} \text{ part} = 750 \times \frac{8}{100}$$

$$= \frac{6000}{100}$$

$$= 60 \text{ Rs.}$$

S2. Ans.(d)

Sol.

$$\frac{x \times 5 \times 3}{100} + \frac{y \times 8 \times 3}{100} = 300$$

$$5x + 8y = 10000$$

$$x + y = 1550 \times 5$$

$$5x + 5y = 7750$$

$$5x + 8y = 10000$$

$$3y = 2250$$

$$y = 750$$

$$x + 750 = 1550$$

$$x = 800$$

$$x : y = 800 : 750$$

$$\Rightarrow 16 : 15$$

S3. Ans.(a)

Sol.

$$\text{S.I for 3 years} = 48$$

$$\text{S.I for 1 year} = 24$$

$$\text{S.I for 5 years} = 120$$

$$\text{Principal} = 520 - 120$$

$$= 400 \text{ Rs.}$$

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TEST SERIES

BILINGUAL



SSC CGL 2020-21

PRIME

500+ TOTAL TESTS

S4. Ans.(c)

Sol.

$$\frac{500 \times 12 \times 4}{100} + \frac{x \times 10 \times 4}{100} = 480$$

$$240 + \frac{4}{10}x = 480$$

$$\frac{4}{10}x = 240$$

$$x = 600 \text{ Rs.}$$

S5. Ans.(c)

Sol.

$$\frac{x \times 8}{100} - \frac{x \times 31}{400} = 61.50$$

$$\frac{x}{400} = 61.50$$

$$x = 6150 \times 4$$

$$= 24600$$

S6. Ans.(d)

Sol.

$$\text{SI for } \frac{3}{2} \text{ year} = 117$$

$$\text{S.I for 2 years} = 156$$

$$P = 756 - 156 = 600$$

$$156 = \frac{600 \times 2 \times r}{100}$$

$$\text{Rate} = 13\%$$

S7. Ans.(c)

Sol.

$$7000 = P \left(1 + \frac{5 \times 10}{3 \times 100} \right)$$

$$7000 = P \left(\frac{35}{30} \right)$$

$$P = 6000 \text{ Rs.}$$

S8. Ans.(d)

Sol.

$$\frac{P \times 15 \times 5}{1200} - \frac{P \times 8 \times 4}{1200} = 129$$

$$\frac{75P - 32P}{1200} = 129$$

$$\frac{43P}{1200} = 129$$

$$P = 3600 \text{ Rs.}$$

S9. Ans.(d)

Sol.

$$5400 = \frac{P \times 12 \times 3}{100}$$

$$P = 15000 \text{ Rs.}$$



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S10. Ans.(d)

Sol.

$$\frac{P \times 9 \times 2}{100} + \frac{P \times 10 \times 2}{100} = 760$$
$$\frac{18P}{100} + \frac{20P}{100} = 760$$
$$\frac{38P}{100} = 760$$
$$P = 2000 \text{ Rs.}$$

S11. Ans.(c)

Sol.

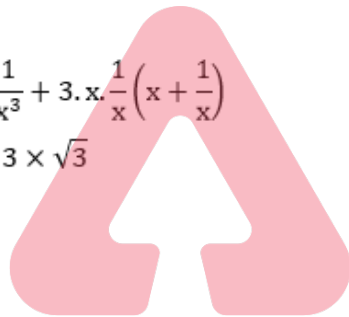
$$a^2 + b^2 + \frac{1}{a^2} + \frac{1}{b^2} = 4$$

Put $a = b = 1$
Thus, $a^2 + b^2 = 2$

S12. Ans.(d)

Sol.

$$x + \frac{1}{x} = \sqrt{3}$$
$$\left(x + \frac{1}{x}\right)^3 = x^3 + \frac{1}{x^3} + 3 \cdot x \cdot \frac{1}{x} \left(x + \frac{1}{x}\right)$$
$$3\sqrt{3} = x^3 + \frac{1}{x^3} + 3 \times \sqrt{3}$$
$$x^3 + \frac{1}{x^3} = 0$$



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S13. Ans.(c)

Sol.

$$x^3 + 3x^2 + 3x = 7$$
$$x^3 + 3 \cdot x^2 \cdot 1 + 3 \cdot 1^2 \cdot x + 1^3 - 1^3 = 7$$
$$(x + 1)^3 - 1 = 7$$
$$(x + 1)^3 = 8$$
$$x + 1 = \pm 2$$
$$x = 1$$

S14. Ans.(b)

Sol.

$$2x + \frac{2}{x} = 1$$
$$x + \frac{1}{x} = \frac{1}{2}$$
$$x^3 + \frac{1}{x^3} = (\text{Value})^2 - 3(\text{Value})$$
$$= \frac{1}{8} - 3 \times \frac{1}{2}$$
$$= \frac{-11}{8}$$

S15. Ans.(c)

Sol.

$$2x + \frac{1}{3x} = 6$$

Multiply by $\frac{3}{2}$ both sides,

$$3x + \frac{1}{2x} = 9$$

S16. Ans.(a)

Sol.

$$x = (\sqrt{2} - 1)^{-\frac{1}{2}}$$

$$= \frac{1}{\sqrt{\sqrt{2} - 1}}$$

$$x^2 = \frac{1}{\sqrt{2} - 1} = (\sqrt{2} + 1)$$

$$\frac{1}{x^2} = (\sqrt{2} - 1)$$

$$x^2 - \frac{1}{x^2} = (\sqrt{2} + 1) - (\sqrt{2} - 1)$$
$$= 2$$

S17. Ans.(d)

Sol.

$$x^2 + y^2 - 2x + 6y + 10 = 0$$

$$(x^2 - 2x + 1) + (y^2 + 2 \cdot y \cdot 3 + 9) = 0$$

$$(x - 1)^2 + (y + 3)^2 = 0$$

$$x = 1, y = -3$$

$$x^2 + y^2 = 1 + 9$$

$$= 10$$

S18. Ans.(a)

Sol.

$$x^{\frac{1}{3}} + y^{\frac{1}{3}} = z^{\frac{1}{3}}$$

Cubing both sides,

$$x + y + 3 \left(x^{\frac{1}{3}} + y^{\frac{1}{3}} \right) (xy)^{\frac{1}{3}} = z$$

$$x + y + 3(z)^{\frac{1}{3}}(xy)^{\frac{1}{3}} = z$$

$$(z + y - z) = -3(xy)^{\frac{1}{3}}$$

Again cubing both sides,

$$(x + y - z)^3 = -27xyz$$

$$(x + y - z)^3 + 27xyz = 0$$

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Test Series, eBooks

Bilingual (with eBooks)
12 Months Validity

S19. Ans.(d)

Sol.

$$a^2 = 2, \text{ then } (a + 1)$$

$$a = \sqrt{2}$$

$$(a + 1) = (\sqrt{2} + 1)$$

Now, check from option, (d)

$$\frac{a - 1}{3 - 2a} = \frac{(\sqrt{2} - 1)}{3 - 2(\sqrt{2})} = \frac{(\sqrt{2} - 1)(3 + 2\sqrt{2})}{(3 - 2\sqrt{2})(3 + 2\sqrt{2})}$$

$$= \frac{3\sqrt{2} + 4 - 3 - 2\sqrt{2}}{(3 - 2\sqrt{2})(3 + 2\sqrt{2})}$$

$$= (\sqrt{2} + 1)$$

S20. Ans.(a)

Sol.

If $x + \frac{1}{x} = \sqrt{3}$, $x^6 = -1$ & power difference of 6 = 0

$$\underbrace{x^{206} + x^{200}}_0 + \underbrace{x^{90} + x^{84}}_0 + \underbrace{x^{18} + x^{12}}_0 + \underbrace{x^6 + 1}_0 = 0$$

S21. Ans.(c)

Sol.

Let C.P of 1 camera $\rightarrow 100$

C.P of 20 cameras = 2000

S.P of 20 cameras

$$= 1200 \times \frac{120}{100} + 800 \times \frac{110}{100}$$

$$= 1440 + 880$$

$$= 2320$$

$$\text{Profit} = 2320 - 2000 = 320$$

S.P of 20 cameras at profit 15%

$$= 2000 \times \frac{115}{100}$$

$$= 2300$$

$$\text{Profit} = 2300 - 2000$$

$$= 300$$

$$\text{Reduction in Profit} = 320 - 300 = 20$$

$$20r \rightarrow 36$$

$$1r \rightarrow 1.8$$

$$100r \rightarrow 1.8 \times 100$$

$$= 180$$

$$\text{C.P of 1 camera} = 180$$

S22. Ans.(c)**Sol.**

Original M.P = 400 Rs.

M.P is 33.33% greater than C.P

$$33.33\% = \frac{1}{3} \rightarrow \text{Increase}$$

$$\frac{1}{3} \rightarrow \text{C.P}$$

$$\text{M.P} \Rightarrow (3 + 1)r \Rightarrow 400 \text{ Rs.}$$

$$4r \Rightarrow 400$$

$$1r \Rightarrow 100$$

$$3r \Rightarrow 300$$

$$\text{C.P} = 300 \text{ Rs.}$$

Let S.P be x

$$\text{Profit} = x - 300$$

$$\text{Increased M.P} = 400 \times \frac{125}{100} = 500 \text{ Rs.}$$

$$16.66\% \Rightarrow \frac{1}{6} \rightarrow \text{Increase}$$

$$\frac{1}{6} \rightarrow \text{S.P}$$

$$6r \rightarrow x$$

$$(6 + 1)r \rightarrow \frac{x}{6} \times 7$$

$$\text{Increased S.P} = \frac{7}{6}x$$

$$\text{Profit} = \frac{7}{6}x - 300$$

ATQ,

$$\frac{7}{6}x - 300 = 2(x - 300)$$

$$\frac{7}{6}x - 2x = -600 + 300$$

$$x = 360$$

$$\text{Increased S.P} = \frac{7}{6} \times 360$$

$$= 420 \text{ Rs.}$$

S23. Ans.(c)**Sol.**

$$\text{C.P of A} = \text{Rs. } 160$$

$$\text{Let S.P of A} = x$$

$$\text{S.P of B} = \text{Rs. } 240$$

$$\text{Let C.P of B} = y$$

If S.P of A = C.P of B, Then profit is 20% on selling A

$$\therefore 160 \times \frac{120}{100} = y$$

$$y = 192$$

$$\text{Profit of B} = 240 - 192$$

$$= 48$$

$$\text{Profit \%} = \frac{48}{192} \times 100$$

$$= 25\%$$

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English Edition

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SUPREME**

BOOKS PACK 2021

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TOTAL 7 BOOKS

S24. Ans.(c)

Sol.

Let S.P of cold drinks of both companies be x

$$\text{M.P of Pepsi} = x \times \frac{100}{90} \times \frac{100}{75}$$

$$\text{M.P of Coke} = x \times \frac{100}{85} \times \frac{100}{80}$$

Ratio $\Rightarrow$

$$x \times \frac{100}{90} \times \frac{100}{75} : x \times \frac{100}{85} \times \frac{100}{80}$$

$$85 \times 80 : 90 \times 75$$

$$136 : 135$$

S25. Ans.(b)

Sol.

Let C.P = 100

Tag price = 80

S.P after discount

$$= 80 \times \frac{93.75}{100}$$

$$= 75 \text{ Rs.}$$

$$\text{Loss} = 100 - 75 = 25 \text{ Rs.}$$

25 Rs. are less at C.P of Rs. 100

$$1 \text{ Rs. less at C.P of} = \frac{100}{25}$$

$$37.5 \text{ Rs. less at C.P of} = \frac{100}{25} \times 37.5 = \text{Rs. } 150$$

$$\text{S.P} = 150 - 37.5 = \text{Rs. } 112.5$$

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S26. Ans.(c)

Sol.

C.P	S.P
100	95
100	103.33

Profit 3.33%

$$(103.33 - 95)r \rightarrow 65$$

$$8.33r \rightarrow 65$$

$$1r \rightarrow \frac{65}{8.33} \cong 7.80$$

$$100r \rightarrow 780$$

$$\text{CP} = \text{Rs. } 780$$

$$\text{S.P} = 936$$

$$\begin{aligned} \text{Profit \%} &= \frac{156}{780} \times 100 \\ &= 20\% \end{aligned}$$

S27. Ans.(a)

Sol.

Let C.P of watch = x

Profit % = x%

$$x \times \frac{(100 + x)}{100} = 96$$

$$x^2 + 100x = 9600$$

$$x^2 + 100x - 9600 = 0$$

$$x^2 + 160x - 60x - 9600 = 0$$

$$x(x + 160) - 60(x + 160) = 0$$

$$x = 60$$

$$\begin{aligned}\text{New S.P} &= 60 \times \frac{220}{100} \\ &= 132\end{aligned}$$

S28. Ans.(b)

Sol.

Let C.P of 1000 gm → Rs. 1000

C.P of 1100 gm → Rs. 1000

C.P of 1000 gm for shopkeeper → $\frac{10000}{11}$

S.P of 900 gm → Rs. 1000

S.P of 1000 gm → $\frac{10000}{9}$

$$\begin{aligned}\text{Profit} &= \frac{10000}{9} - \frac{10000}{11} \\ &= \frac{20000}{99}\end{aligned}$$

$$\begin{aligned}\text{Profit \%} &= \frac{\frac{20000}{99}}{\frac{10000}{11}} \times 100 \\ &= \frac{200}{9} = 22\frac{2}{9}\%\end{aligned}$$

S29. Ans.(b)

Sol.

$$\text{Profit \%} = 14\frac{2}{7}\%$$

$$= \frac{1}{7} \rightarrow \text{Profit}$$

$$= \frac{1}{7} \rightarrow \text{S.P}$$

$$\text{C.P} = 7 - 1 = 6$$

$$7r \rightarrow 280$$

$$1r \rightarrow 40$$

$$6r \rightarrow 240$$

$$\text{C.P} \Rightarrow 240$$

$$\text{S.P} \Rightarrow 280$$

$$\begin{aligned}\text{Actual Profit} &= \frac{40}{240} \times 100 \\ &= \frac{50}{3} = 16.66\%\end{aligned}$$

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S30. Ans.(a)

Sol.

$$P\% = M\% - D\% - \frac{MD}{100}$$
$$32 = M - 12 - \frac{12M}{100}$$

$$44 = \frac{22}{25}M$$

$$M = 50\%$$

$$P = 50 - 20 - \frac{20 \times 50}{100}$$
$$= 50 - 20 - 10$$
$$= 20\%$$

ENGLISH



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Ace - Advanced | Arithmetic | English
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