

Quant Mega Quiz for SSC CHSL (Solutions)

S1. Ans.(d)

Sol. Interest Rate = 10%

Let P → 100

Rate ⇒ 10

Actual Principal = 100 - 10 = 90

$$\text{Rate} = \frac{10}{90} \times 100 = 11\frac{1}{9}\%$$

S2. Ans.(c)

Sol.

$$\frac{n_1 - 1}{t_1} = \frac{n_2 - 1}{t_2}$$

$$\frac{1}{7} = \frac{3}{t_2}$$

$$t_2 = 21 \text{ years}$$

S3. Ans.(b)

Sol. Let Principal be x

$$\frac{3}{4}x = \frac{x \times 25 \times r}{2 \times 100}$$

$$r = 6\%$$

S4. Ans.(a)

Sol. Time = 6 years 8 months

$$= 6\frac{8}{12} = 6\frac{20}{3} \text{ years}$$

$$720 = \frac{P \times 20 \times 12}{3 \times 100}$$

$$P = 36 \times 25$$

$$= 900 \text{ Rs.}$$

S5. Ans.(b)

Sol.

Total % discount for 9/4 years

$$= \frac{9}{4} \times \frac{8}{3}\%$$

$$= 6\%$$

$$78 = P \times 6/100$$

$$P = \text{Rs. } 1300$$

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S6. Ans.(c)

Sol.

$$t = 1 \text{ months} = 1/12 \text{ years}$$

$$\text{S.I.} = 1 \text{ paisa}$$

$$= 1/100 \text{ Rs}$$

$$\frac{1}{100} = \frac{1 \times 1 \times R}{12 \times 100}$$

$$R = 12\%$$

S7. Ans.(a)

Sol.

ATQ,

$$\frac{400 \times 3 \times r}{100} + \frac{500 \times 4 \times r}{100} = 160$$

$$r(12 + 20) = 160$$

$$32r = 160$$

$$r = 5\%$$

S8. Ans.(b)

Sol.

ATQ,

$$840 = \frac{P \times 40}{100}$$

$$P = \text{Rs. } 2100$$

$$840 = \frac{2100 \times R \times 5}{100}$$

$$R = 8\%$$

S9. Ans.(d)

Sol.

$$\text{S.I.} = 2P - P = P$$

$$P = \frac{P \times 8 \times r}{100}$$

$$r = \frac{100}{8} = \frac{25}{2}$$

$$= 12\frac{1}{2}\%$$

S10. Ans.(c)

Sol.

$$P : \text{SI} = 10 : 3$$

$$\text{Let, } P = 10x$$

$$\text{S.I.} = 3x$$

$$3x = \frac{10x \times 6 \times t}{100}$$

$$t = 5 \text{ years}$$

S11. Ans.(a)

Sol.

	Total work	Efficiency
A → 2h	3	
	6	
B → 3h	2	

A + B fills the tank in
⇒ $6/5$ hours = $1\frac{1}{5}$ hours
= 1 hour 12 minutes

S12. Ans.(d)

Sol.

One drop per sec

Drops in 1 minute = 60

Drops in 1 hour = 3600

Drops in 24 hours = 3600×24

Drops in 300 days = $3600 \times 24 \times 300$

$3600 \times 24 \times 300$ Drops

$$= \frac{3600 \times 24 \times 300}{600} \times 100 \text{ mL}$$

$$= 4320000 \text{ mL}$$

$$1 \text{ mL} = \frac{1}{1000} \text{ L}$$

$$= \frac{4320000}{1000} \text{ L} = 4320 \text{ L}$$

S13. Ans.(b)

Sol.

ATQ,

$$9 \times 20 = x \times 15$$

$$x = 12$$

S14. Ans.(c)

Sol.

	Total work	Efficiency
A → 20m	3	
	60	
B → -30m	-2	

Work done by A & B in 2 minutes = $3 - 2 = 1$ work

57 work will be done in ⇒ 2×57 ⇒ 114 minutes

Remaining work ⇒ $60 - 57 = 3$

Next turn is of A will complete 3 work in 1 minute

∴ Total time required to fill the cistern = $114 + 1$

= 115 minutes

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S15. Ans.(b)

Sol.

	Total work	Efficiency
A →	30	6
B →	45	180
C →	-36	-5

Work done by A & B in 12 minutes = $(6 + 4) \times 12 = 120$

Remaining work = $180 - 120 = 60$

Efficiency of A + B + C = $6 + 4 - 5 = 5$

60 work will be done by A + B + C in = $60/5 = 12$ minutes

Total time in which tank will be full = $12 + 12 = 24$ minutes

S16. Ans.(d)

Sol.

	Total work	Efficiency
A →	x	y
	xy	
B →	-y	-x

Total time required to finish xy work = $\frac{xy}{y-x}$

S17. Ans.(b)

Sol.

	Total work	Efficiency
A →	4	6
	24	
B →	6	4

Work done by (A + B) in 2 hours = $(6 + 4) \times 2 = 20$

Work done by (A + B) in 4 hours = $20 \times 2 = 40$

Remaining work = $24 - 40 = -16$

4 work will be done by A in

$\Rightarrow 4/6$ hours

$\Rightarrow 2/3$ hours

Total time = $4 + 2/3$ hours

= $4\frac{2}{3}$ hours

S18. Ans.(d)

Sol.

	Total work	Efficiency
A →	6	4
	24	
B →	8	3

Work done by (A + B) in 2 hours = $(4 + 3) \times 2 = 14$

Remaining work = $24 - 14 = 10$

Remaining work will be done by B is $\Rightarrow \frac{10}{3}$ hours

= $3\frac{1}{3}$ hours

S19. Ans.(d)

Sol.

	Work	Efficiency
A →	4	4
	16	
B →	-16	-1

Total time required to fill the tank

$$= \frac{16}{4-1} = \frac{16}{3} = 5\frac{1}{3} \text{ hours}$$

S20. Ans.(c)

Sol.

Efficiency of A = $\frac{1}{24}$

Let B is leakage

Efficiency of A + B = $\frac{1}{36}$

$$\frac{1}{24} + B = \frac{1}{36}$$

$$B = \frac{1}{36} - \frac{1}{24} = \frac{2-3}{72} = -\frac{1}{72}$$

B will empty the tank in 72 hours

A →	24	3
	72	

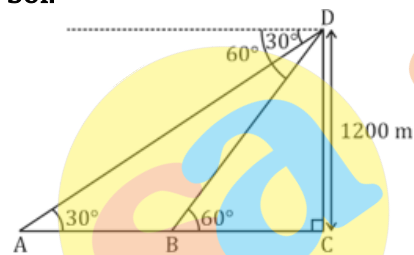
B → 72 -1

Half work = $72/2 = 36$

Half full tank will be empty is = $36/1 = 36$ hours

S21. Ans.(b)

Sol.



In $\triangle BDC$

$$\tan 60^\circ = \frac{P}{B}$$

$$\sqrt{3} = \frac{1200}{BC}$$

$$BC = \frac{1200}{\sqrt{3}}$$

$$= 400\sqrt{3}$$

In $\triangle ADC$

$$\tan 30^\circ = \frac{1200}{AC}$$

$$\frac{1}{\sqrt{3}} = \frac{1200}{AC}$$

$$AC = 1200\sqrt{3}$$

Distance between ships

$$= AC - BC$$

$$= 1200\sqrt{3} - 400\sqrt{3}$$

$$= 800\sqrt{3} \text{ m}$$

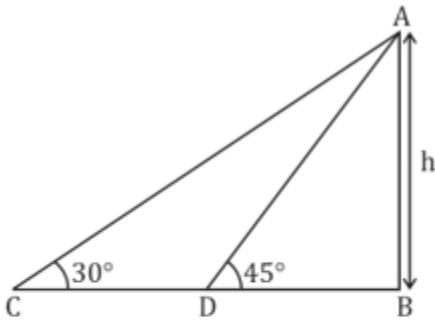
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S22. Ans.(a)

Sol.



Let the speed of car be v m/minute

CD, Distance travelled in 12 minutes = $12v$

Let t minutes is the time taken by car to travel DB

$DB = vt$

In $\triangle ADB$

$$\tan 45^\circ = \frac{h}{vt}$$

$$h = vt$$

... (i)

In $\triangle ACB$

$$\tan 30^\circ = \frac{h}{vt + 12v}$$

$$\frac{1}{\sqrt{3}} = \frac{h}{vt + 12v}$$

$$vt + 12v = h\sqrt{3}$$

... (ii)

From (i) & (ii)

$$vt + 12v = vt\sqrt{3}$$

$$v(t + 12) = vt\sqrt{3}$$

$$t + 12 = t\sqrt{3}$$

$$12 = t(\sqrt{3} - 1)$$

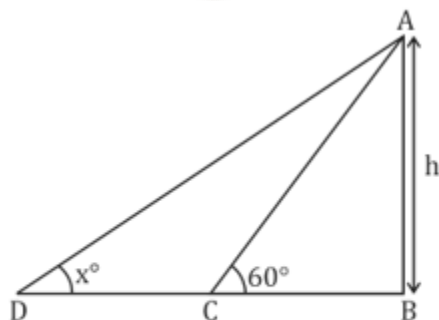
$$t = \frac{12}{\sqrt{3} - 1}$$

$$= \frac{12(\sqrt{3} + 1)}{3 - 1}$$

$$= 6(\sqrt{3} + 1) \text{ minutes}$$

S23. Ans.(d)

Sol.



Let $BC = x$

ATQ,

$DB = 3x$

In $\triangle ABC$

$$\tan 60^\circ = \frac{h}{x}$$

$$\sqrt{3} = \frac{h}{x}$$

$$h = \sqrt{3}x$$

In $\triangle ADB$

$$\tan x^\circ = \frac{h}{3x}$$

$$\tan x^\circ = \frac{\sqrt{3}x}{3x}$$

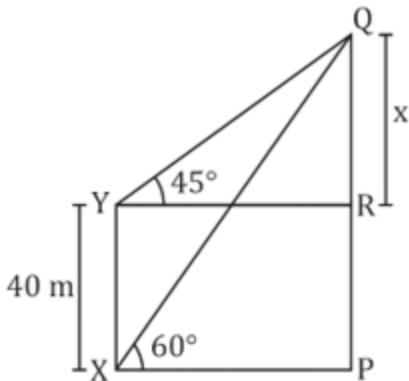
$$\tan x^\circ = \frac{1}{\sqrt{3}}$$

$$\tan x^\circ = \tan 30^\circ$$

$$x = 30^\circ$$

S24. Ans.(a)

Sol.



In $\triangle QXP$

$$\tan 60^\circ = \frac{PQ}{XP}$$

$$\sqrt{3} = \frac{x + 40}{XP}$$

$$XP = \frac{x + 40}{\sqrt{3}}$$

In $\triangle QYR$

$$\tan 45^\circ = \frac{QR}{YR} \quad (YR = XP)$$

$$1 = \frac{x}{\frac{x + 40}{\sqrt{3}}}$$

$$x + 40 = x\sqrt{3}$$

$$40 = x(\sqrt{3} - 1)$$

$$x = \frac{40}{\sqrt{3} - 1}$$

$$x = \frac{40(\sqrt{3} + 1)}{3 - 1}$$

$$x = 20(\sqrt{3} + 1)$$

$$\text{Height of tower} = 20(\sqrt{3} + 1) + 40$$

$$= 20[\sqrt{3} + 1 + 2]$$

$$= 20(\sqrt{3} + 3)$$

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S25. Ans.(d)

Sol.

$$\begin{aligned} \operatorname{cosec} A &= \sqrt{2}, A = 45^\circ \\ \frac{2 \sin^2 A + 3 \cot^2 A}{4 \tan^2 A - \cos^2 A} & \\ &= \frac{2 \sin^2 45^\circ + 3 \cot^2 45^\circ}{4 \tan^2 45^\circ - \cos^2 45^\circ} \\ &= \frac{2 \times \left(\frac{1}{\sqrt{2}}\right)^2 + 3 \times (1)^2}{4 \times (1)^2 - \left(\frac{1}{\sqrt{2}}\right)^2} \\ &= \frac{2 \times \frac{1}{2} + 3}{4 - \frac{1}{2}} = \frac{4}{\frac{7}{2}} \\ &= \frac{8}{7} \end{aligned}$$

S26. Ans.(a)

Sol.

$$\begin{aligned} \sec \theta &= x + \frac{1}{4x} \\ \tan^2 \theta &= \sec^2 \theta - 1 = x^2 + \frac{1}{16x} + \frac{1}{2} - 1 \\ \tan^2 \theta &= x^2 + \frac{1}{16x} - \frac{1}{2} \\ \tan^2 \theta &= \left(x - \frac{1}{4x}\right)^2 \\ \tan \theta &= \pm \left(x - \frac{1}{4x}\right) \\ \text{when } \tan \theta &= + \left(x - \frac{1}{4x}\right) \\ \sec \theta + \tan \theta & \\ &= x + \frac{1}{4x} + x - \frac{1}{4x} \\ &= 2x \\ \text{When } \tan \theta &= - \left(x - \frac{1}{4x}\right) \\ \sec \theta + \tan \theta & \\ &= x + \frac{1}{4x} - x + \frac{1}{4x} \\ &= \frac{1}{2x} \end{aligned}$$

S27. Ans.(b)

Sol.

$$\begin{aligned} \text{Sum of 11 numbers} &= 35 \times 11 = 385 \\ \text{Sum of 1 to 6} &= 32 \times 6 = 192 \\ \text{Sum of 6 to 11} &= 37 \times 6 = 222 \\ 6^{\text{th}} \text{ number} &= (192 + 222) - 385 \\ &= 414 - 385 \\ &= 29 \end{aligned}$$

S28. Ans.(a)

Sol.

$$\frac{m + m + 1 + m + 2 + m + 3 + m + 4}{5} = n$$

$$5m + 10 = 5n$$

$$5m = 5n - 10$$

$$m = n - 2$$

sum of 6 consecutive number starting with $m + 2$

$$= m + 2 + m + 3 + m + 4 + m + 5 + m + 6 + m + 7$$

$$= 6m + 27$$

$$= 6n - 12 + 27$$

$$= 6n + 15$$

$$\text{Average} = \frac{6n + 15}{6} = \frac{2n + 5}{2}$$

S29. Ans.(d)

Sol. Average of Eight consecutive terms = Average of two middle numbers = 6

Sum of 8 consecutive numbers = $6 \times 8 = 48$

S30. Ans.(d)

Sol.

$a, a+2, a+4, a+6$

$$\frac{a + a + 2 + a + 4 + a + 6}{4} = 15$$

$$4a + 12 = 60$$

$$4a = 48$$

$$a = 12$$

2nd highest number = $a + 4$

$$= 12 + 4$$

$$= 16$$

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