Quant Mega Quiz for SSC CHSL (Solutions)

S1. Ans.(a)
Sol.
+10% – 5% → 1000 Rs.
5% → 1000 Rs.
1% → 200 Rs.
100% → 20,000 Rs.

S2. Ans.(b)
Sol.
Using short cut
Loss % = $\left(\frac{x}{10}\right)^2$
= $(2.5)^2$
= 6.25%
C. P = $240 \times \frac{100}{93.75} = 256$
S.P = 240
Loss = Rs. 16

S3. Ans.(d)
Sol.
Shortcut = $\left(\frac{x}{10}\right)^2$
= 6.25%
= $6\frac{1}{4}\%$

S4. Ans.(a)
Sol.
C.P × $\frac{80}{100} = 480$
C.P = 600
S.P that he want to sell = $600 \times \frac{120}{100}$
= 720 Rs.

S5. Ans.(c)
Sol.
+5% – (–5%) ⇒ Rs. 5
10% = Rs. 5
1% = $\frac{1}{2}$
100% = Rs. 50

S6. Ans.(c)

Sol.

$C.P \times \frac{91}{100} = 105$

$C.P = \frac{10500}{91}$

$S.P = \frac{10500}{91} \times \frac{130}{100}$

= 150 Rs.

S7. Ans.(a)

Sol.

Let C.P → 100

C.P	S.P
100	90
100	112.5

22.5 → Rs. 9

$1r \rightarrow \frac{9}{22.5}$

$100r \rightarrow \frac{9}{22.5} \times 100$

$= \frac{9}{225} \times 1000$

= 40 Rs.

S8. Ans.(d)

Sol.

5% ⇒ Rs. 50

1% ⇒ Rs. 10

100% ⇒ Rs. 1000

S9. Ans.(c)

Sol.

Single discount = −20 − 10 + 2

= −28%

$S.P = 500 \times \frac{72}{100}$

= 360 Rs.

S10. Ans.(d)

Sol.

P = 10 − 10 − 1

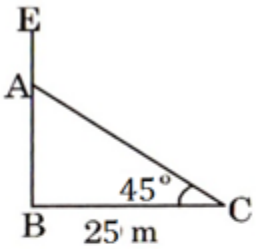
= −1%

⇒ loss → 1%

S11. Ans.(b)

Sol.

In right Δ ABC,



$\tan 45° = \frac{AB}{BC}$

$1 = \frac{AB}{BC}$

$\therefore AB = 25\text{m}$ .....(i)

Now,

In Δ ABC,

$\cos 45° = \frac{BC}{AC} \Rightarrow AC = \sqrt{2} \times 25$

$\therefore$ AC = $25\sqrt{2}$m .....(ii)

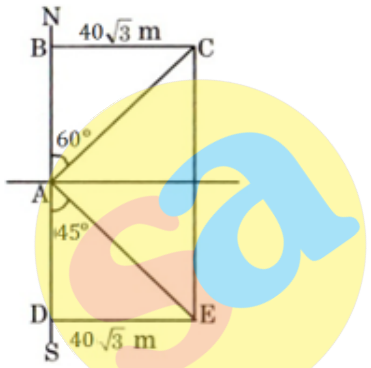
$\therefore$ length of pole = AB + AC [$\because$ AC = AE]

$= 25 + 25\sqrt{2}$

$= 25(1 + \sqrt{2})$ m

S12. Ans.(a)

Sol. In right ΔABC,



$\tan 60° = \frac{BC}{AB}$

$\Rightarrow \sqrt{3} = \frac{40\sqrt{3}}{AB}$

$\therefore$ AB = 40

In right Δ ADE,

$\tan 45° = \frac{DE}{AD}$

$\Rightarrow 1 = \frac{40\sqrt{3}}{AD}$

$\therefore AD = 40\sqrt{3}$ m

$\therefore$ distance travelled by bird = AB + AD = $40(1+\sqrt{3}) = 109.2$ m

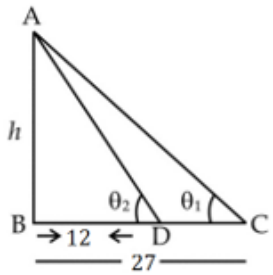
Now, speed = $\frac{distance}{time}$

$= \frac{109.2}{120}$ m/s = 3.276 km/hr

S13. Ans.(c)

Sol.

Given : $\theta_1 + \theta_2 = 90°$



$h = 27 \tan\theta_1 \quad \ldots(i)$

$h = 12\ tan\ \theta_2$

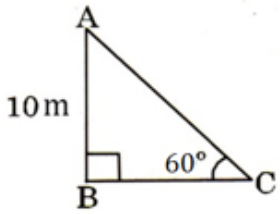
$h = 12 \tan(90 - \theta_1)$

$h = 12\ cot\theta_1 \quad \ldots.(ii)$

From (i) and (ii) $h = 18\ ft$

S14. Ans.(a)

Sol. In right ΔABC,



$\tan 60 = \frac{AB}{BC}$

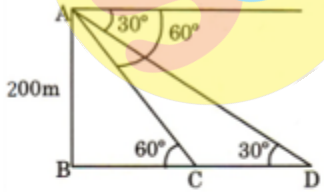
$\Rightarrow \sqrt{3} = \frac{10}{BC}$

$\therefore BC = \frac{10}{\sqrt{3}}\ m$

Distance between foot of ladder to wall $= \frac{10}{\sqrt{3}}\ m$

S15. Ans.(b)

Sol. Distance covered, CD



$= h\ (\cot\theta_1 - \cot\theta_2)$

$= 200(\cot 30° - \cot 60°)$

$= 200\left(\sqrt{3} - \frac{1}{\sqrt{3}}\right)$

$= 200\left(\frac{3-1}{\sqrt{3}}\right)$

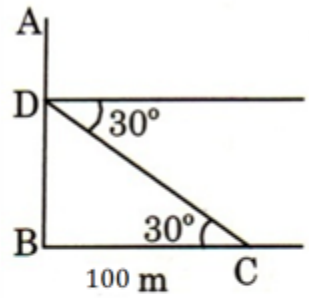
$= \frac{2\times200}{\sqrt{3}}$

$= \frac{400}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{400\sqrt{3}}{3}\ m$

S16. Ans.(d)

Sol.

In right Δ BDC,



$\tan 30° = \frac{BD}{BC}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{BD}{100}$

$BD = \frac{100}{\sqrt{3}}$

From question, $\frac{2AB}{3} = BD$

$\Rightarrow AB = 3 \times \frac{100}{2\sqrt{3}}$

$= \frac{150}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}}$

$= \frac{150\sqrt{3}}{3} = 50\sqrt{3}$ m

S17. Ans.(b)

Sol.

Let height of tower be h m

Distance travelled by Rana when angle of elevation changes from 30° to 45°

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

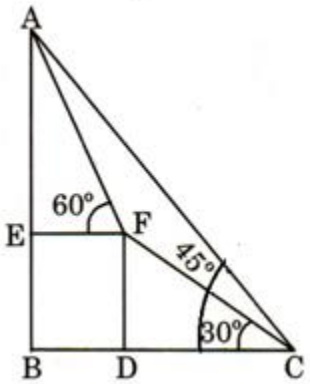
And remaining distance to be covered to reach to tower = h

So, time required = $\frac{10h}{(\sqrt{3}-1)h} = 5(\sqrt{3} + 1)min$

S18. Ans.(d)

Sol.

Let the height of mountain = x km



In right Δ ABC,

$\tan 45° = \frac{AB}{BC}$

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

$\therefore BC = x$ km

In right Δ FDC,

$\sin 30° = \frac{FD}{FC}$

$= \frac{1}{2} = \frac{FD}{1}$

$\therefore FD = 0.5$ km

$\therefore DC = \sqrt{(FC)^2 - (FD)^2} = \sqrt{(1)^2 - (0.50)^2}$

$= \frac{\sqrt{3}}{2}$ km

In right Δ AEF,

$\tan 60° = \frac{AE}{EF} \Rightarrow \sqrt{3} = \frac{(x-0.50)}{x-\frac{\sqrt{3}}{2}}$

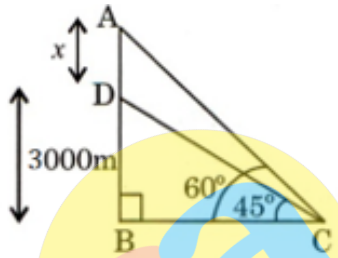
$\Rightarrow \sqrt{3}\left(x - \frac{\sqrt{3}}{2}\right) = (x - 0.5)$

$\Rightarrow x = \frac{(\sqrt{3}+1)}{2}$ km

S19. Ans.(c)

Sol.

Let the height of first aeroplane to second aeroplane is x metre.



In right Δ DBC,

$\tan 45° = \frac{DB}{BC}$

$1 = \frac{3000}{BC}$

$\therefore BC = 3000$ m

In right Δ ABC,

$\tan 60° = \frac{AD+DB}{BC}$

$\sqrt{3} = \frac{x+3000}{BC}$

$\Rightarrow \sqrt{3} = \frac{x+3000}{3000}$

$\Rightarrow x + 3000 = 3000\sqrt{3}$

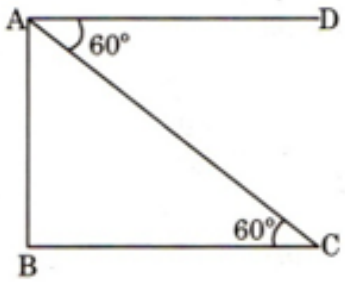
$\Rightarrow x = 3000\sqrt{3} - 3000$

$\therefore x = 3000\left(\sqrt{3} - 1\right)$ m

S20. Ans.(c)

Sol.

In right Δ ABC,



$\tan 60° = \frac{AB}{BC}$

$\sqrt{3} = \frac{800}{BC}$

$\Rightarrow BC = \frac{800}{\sqrt{3}}$

S21. Ans.(c)

Sol.

Volume of cube = 343 cm^3

$a^3 = 343$

a = 7 cm

Diameter of the base of cone = side of the cube

D = 7 cm

r = 7/2 cm

Height of cone = side of cube = 7 cm

Volume of cone = $\frac{1}{3}\pi r^2 h$

$= \frac{1}{3} \times \frac{22}{7} \times \frac{49}{4} \times 7$

= 89.83 cm^3

$\cong$ 90 cm^3

S22. Ans.(a)

Sol.

Total surface area of Remaining solid

= Total surface area of cylinder + Curved surface area of cone

$= 2\pi rh + \pi r^2 + \pi rl$

$= 2 \times \pi \times 8 \times 15 + \pi \times (8)^2 + \pi \times 8 \times \sqrt{225 + 64}$

$= 240\pi + 64\pi + \pi \times 8 \times 17$

$= 240\ \pi + 64\ \pi + 136\ \pi$

$= 440\ \pi$

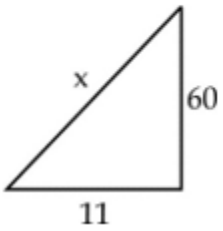
S23. Ans.(d)
Sol.
Area of circular shell
$= \pi ((12)^2 - (8)^2)$
$= \pi (144 - 64)$
$= 80\ \pi$
Total surface area of cylinder
$= 2\pi R_1 h + 2\pi R_1^2$
$= 2\pi R_1 (h + R_1)$
ATQ,
$80\pi = 2\pi R_1 (h + R_1)$
$\frac{40}{R_1} = h + R_1$
$h = \frac{40}{R_1} - R_1$
$= \frac{40 - R_1^2}{R_1}$

S24. Ans.(d)
Sol. Radius : Height = 4 : 3
Radius → 4x
Height → 3x
Total Surface area of cylinder
$= 2\pi rh + 2\pi r^2$
$= 2\pi \times 4x\ (3x + 4x)$
$= 2\pi \times 4x \times 7x$
$= 56\pi\ x^2$
Total surface area of cone
$= \pi rl + \pi r^2$
$= \pi r\ (l + r)$
$= \pi \times 4x\ (\sqrt{16x^2 + 9x^2} + 4x)$
$= \pi \times 4x\ (5x + 4x)$
$= 36\ \pi\ x^2$
Ratio = $56\pi x^2 : 36\pi x^2$
= 14 : 9

S25. Ans.(d)
Sol. Volume of spherical ball = Volume of water in cylindrical vessel upto height 6.75 cm
$\frac{4}{3}\pi r^3 = \pi(12)^2 \times 6.75$
$\frac{4}{3} \times r^3 = 144 \times 6.75$
$r^3 = 36 \times 3 \times 6.75$
$r^3 = 729$
r = 9 cm

S26. Ans.(b)
Sol.
$l : b = 2 : 1$
$2x^2 = 24200$
$\text{Diagonal} = \sqrt{(110)^2 + (220)^2} = 110\sqrt{1^2 + 2^2}$
$= 110 \times \sqrt{5} = 110 \times 2.236$
$= 246 \text{ m}$

S27. Ans.(a)
Sol.
Using Pythagoras theorem –
$x^2 = (60)^2 + (11)^2$
$x = 61 \text{ m}$



S28. Ans.(c)
Sol.
ATQ,
$\text{Angle} = \frac{40}{360} = \frac{1}{9}$
So, $\frac{360-40}{360} = \frac{8}{9}$
$\text{Area of major sector} = 8 \times 8.25 = 66 \text{ cm}^2$

S29. Ans.(b)
Sol.
ATQ-
$2\pi \times R \times \frac{75}{360} = 25$
$R = \frac{60}{\pi}$

S30. Ans.(d)
Sol.
ATQ,
$2\pi r = 4.4 \Rightarrow r = \frac{7}{10} \text{ m}$
$\pi r^2 = 0.49 \pi \text{m}^2$