

Quant Mega Quiz for SSC CHSL (Solutions)

S1. Ans.(a)

Sol. Using Alligation

$$\begin{array}{r} 5\% \quad 8\% \\ 6\% \\ \hline 2 \quad : \quad 1 \end{array}$$

S2. Ans.(c)

Sol.

Milk : Water

Ist Container → 5 : 3

$$\text{Milk} = \frac{5}{8} = 0.625$$

$$\text{Water} = \frac{3}{8} = 0.375$$

Milk : Water

IInd Container → 2 : 1

$$\text{Milk} = \frac{2}{3} = 0.66$$

$$\text{Water} = \frac{1}{3} = 0.33$$

Milk : Water

IIIrd Container → 3 : 2

$$\text{Milk} = \frac{3}{5} = 0.6$$

$$\text{Water} = \frac{2}{5} = 0.4$$

Milk : Water

IVth Container → 7 : 4

$$\text{Milk} = \frac{7}{11} = 0.66$$

$$\text{Water} = \frac{4}{11} = 0.33$$

In Container ⇒ 3rd

S3. Ans.(a)

Sol.

Acid : Water

25 liters → 4 : 1

$$\text{Acid} = \frac{4}{5} \times 25 = 20$$

$$\text{Water} = \frac{1}{5} \times 25 = 5$$

New Acid : Water

20 : 8

5 : 2




**ENGLISH
BY
NEETU SINGH
12th May**

Tue, Thr, Sat 5 pm - 7 pm

BILINGUAL

S4. Ans.(d)**Sol.**

Loan Amount : Total Interest

5 : 2

Principal → 5

Interest for 1 year ⇒ 2

Interest for 5 year ⇒ 10

$$10 = \frac{5 \times r \times 5}{100}$$

 $r\% = 40\%$

$$= \frac{40}{100} = \frac{2}{5}$$

 $P : r = 5 : 2/5$ $= 25 : 2$ **S5. Ans.(c)****Sol.**

S.I for 2 years

$$= \frac{15600 \times 10 \times 2}{100}$$

 $= 3120 \text{ Rs.}$

Principal after 2 years

 $= 15600 + 3120$ $= 18720 \text{ Rs.}$

S.I for next 2 years

$$= \frac{18720 \times 10 \times 2}{100}$$

 $= 3744$

Interest at the end of 4 years

 $= 3744 \text{ Rs.}$ **S6. Ans.(d)****Sol.**

Case I

$$P = \frac{P \times 5 \times r}{100}$$

 $r = 20\%$

Case II

$$2P = \frac{P \times 12 \times r}{100}$$

$$\frac{100}{6} = r$$

$$r = \frac{50}{3} = 16\frac{2}{3}\%$$

S7. Ans.(b)

Sol.

$$15 \times 20 \times 8 = 20 \times 12 \times x$$

$$x = 10 \text{ hours}$$

S8. Ans.(b)

Sol.

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

$$x = 12 \text{ taps}$$

S9. Ans.(d)

Sol.

Efficiency

$$\text{Efficiency} \rightarrow \text{Raj} + \text{Ram} = \frac{1}{10}$$

$$\text{Efficiency} \rightarrow \text{Raj} = \frac{1}{12}$$

$$\text{Efficiency Ram} = \frac{1}{10} - \frac{1}{12}$$

$$= \frac{6 - 5}{60}$$

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

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

$$\text{Ram will take} \Rightarrow 60 \text{ days}$$

S10. Ans.(j)

Sol.

$$\text{Let C.P} = 100$$

$$\text{S.P} = 90$$

$$90 + \frac{1}{2}x = x$$

$$90 = \frac{1}{2}x$$

$$x = 180$$

$$\text{C.P} \Rightarrow 100, \text{MP} = 180$$

$$\frac{\text{C.P}}{\text{M.P}} \Rightarrow \frac{100}{180} = \frac{5}{9}$$

$$\frac{\text{C.P}}{\text{M.P}} \Rightarrow \frac{100}{180} = \frac{5}{9}$$

$$\text{C.P is } \frac{5}{9} \text{ of marked price.}$$

S11. Ans.(c)

Sol. Let water is filled upto h height in the cylinder.

Let after dropping sphere in the cylinder height of water become h_1

Volume of water raised $(-h) = \text{Volume of sphere}$

$$\pi r^2(h_1 - h) = \frac{4}{3}\pi(3)^3$$

$$\pi 36 \times (h_1 - h) = \frac{4}{3} \times \pi \times 27$$

$$h_1 - h = 1 \text{ cm}$$

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S12. Ans.(c)**Sol.**

$$\text{Volume of wire} = \pi r^2 h = \pi (0.1)^2 \times 22$$

Volume of one spherical ball

$$= \frac{4}{3} \pi \left(\frac{0.1}{2} \right)^3$$

$$= \frac{\pi}{6} (0.1)^3$$

Number of balls

$$= \frac{\pi (0.1)^2 \times 22}{\frac{\pi}{6} (0.1)^3}$$

$$= \frac{132}{0.1} = 1320$$

S13. Ans.(a)**Sol.**

$$\text{External radius, } r_2 = 10/2$$

$$= 5 \text{ cm}$$

$$\text{Internal radius, } r_1 = \frac{10-2}{2}$$

$$= 4 \text{ cm}$$

Area to be painted

$$= 2\pi r_1^2 + 2\pi r_2^2 + (\pi r_1^2 - \pi r_2^2)$$

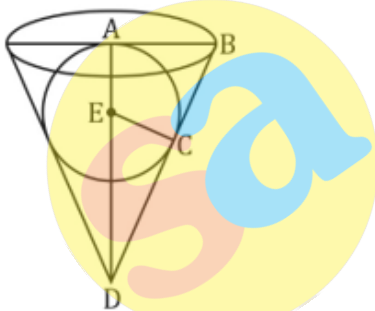
$$= 3\pi r_1^2 + \pi r_2^2$$

$$= \pi (3 \times 25 + 16)$$

$$= \frac{22}{7} \times 91$$

$$\text{Cost} = \frac{22}{7} \times 91 \times 0.7$$

$$= \text{Rs. } 200.2 \cong 200 \text{ Rs.}$$

S14. Ans.(c)**Sol.**

$$AB = 6, AD = 8$$

$$BD = \sqrt{64 + 36}$$

$$= \sqrt{100} = 10$$

$$BA = BC = 6 \text{ cm}$$

$$DC = 10 - 6 = 4$$

$$\triangle ACD \cong \triangle EOC$$

$$\frac{AD}{AB} = \frac{DC}{EC}$$

$$EC = \frac{AB \times DC}{AD}$$

$$= \frac{6 \times 4}{8}$$

$$= 3 \text{ cm}$$

Radius of sphere = 3 cm

Required fraction of water overflows

$$= \frac{\text{Volume of sphere}}{\text{Volume of cone}}$$

$$= \frac{\frac{4}{3}\pi(3)^3}{\frac{4}{3}\pi \times 36 \times 8}$$

$$= \frac{4 \times 27}{8 \times 36}$$

$$= \frac{8 \times 36}{8 \times 36}$$

$$= 3:8$$

S15. Ans.(b)

Sol.

$C_1 \rightarrow$ Curved surface area of 1st cone

$C_2 \rightarrow$ Curved surface area of 2nd cone

$$l_2 = 3l_1$$

$$C_1 = 3C_2$$

$$\pi r_1 l_1 = 3(\pi r_2 l_2)$$

$$r_1 l_1 = 3r_2 l_2$$

$$r_1 l_1 = 3 \times r_2 \times 3l_1$$

$$r_1 = 9r_2$$

Ratio of area of base

$$= \frac{\pi r_1^2}{\pi r_2^2}$$

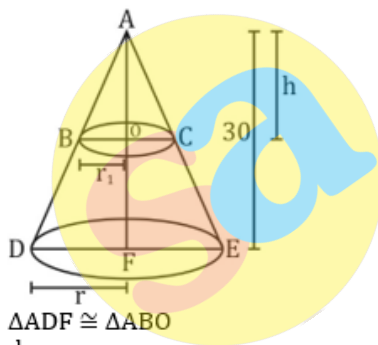
$$= \left(\frac{r_1}{r_2}\right)^2$$

$$= \left(\frac{9r_2}{r_2}\right)^2$$

$$= 81:1$$

S16. Ans.(c)

Sol.



$$\triangle ADF \cong \triangle ABO$$

$$\frac{h}{30} = \frac{r_1}{r}$$

$$r_1 = \frac{hr}{30}$$

Volume of smaller cone

$$= \frac{1}{27} \times \text{Volume cone larger cone}$$

$$\frac{1}{3}\pi r_1^2 h = \frac{1}{3}\pi r^2 \times 30 \times \frac{1}{27}$$

$$r_1^2 h = r^2 \times 30 \times \frac{1}{27}$$

$$\frac{h^2 \times r^2 \times h}{900} = r^2 \times \frac{10}{9}$$

$$h^3 = 1000$$

$$h = 10 \text{ cm}$$

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S17. Ans.(a)

Sol.

$$\begin{aligned}\text{Volume of tank} &= l \times b \times h \\ &= 20 \times 7 \times (10 - 2) \\ &= 20 \times 7 \times 8 \\ &= 1120\end{aligned}$$

S18. Ans.(a)

Sol.

Let length = l

Breadth = $l/2$

$$\text{Area of selling, } l \times \frac{l}{2} = \frac{5000}{25}$$

$$l^2 = 400$$

$$l = 20$$

$$\text{Area of walls, } 2lh + 2bh = \frac{64800}{240}$$

$$2lh + 2 \times \frac{l}{2} \times h = 270$$

$$3lh = 270$$

$$3 \times 20 \times h = 270$$

$$h = \frac{27}{6} = 4.5 \text{ m}$$

S19. Ans.(a)

Sol. Total surface area of remaining solid

= Curved surface area of cylinder + area of base + curved surface area of cone

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

$$= 440 \pi \text{ cm}^2$$

S20. Ans.(a)

Sol.

Let inner radius of pipe be r

$$440 = \frac{22}{7} \times r^2 \times 7 \times h$$

$$r = \sqrt{2} \text{ m}$$

S21. Ans.(c)

Sol.

$$\text{Volume of larger cube} = (3)^3 + (4)^3 + (5)^3$$

$$= 27 + 64 + 125$$

$$= 216$$

$$a^3 = 216$$

$$a = 6 \text{ cm}$$

side of larger cube = 6

$$\text{total surface area of larger cube} = 6a^2$$

$$= 6 \times (6)^2$$

$$= 216$$

Total surface area of smaller cubes

$$= 6 \times (3)^2 + 6(4)^2 + 6(5)^2$$

$$= 6 \times 9 + 6 \times 16 + 6 \times 25$$

$$= 54 + 96 + 150$$

$$= 300$$

$$\text{Ratio} = 300 : 216$$

$$\Rightarrow 25 : 18$$

S22. Ans.(c)

Sol.

Let h be the height of water level

$$\text{Volume of water} = \pi r^2 h$$

$$= \pi (3)^2 h$$

$$= 9\pi h$$

Let h_1 be the height of water level after dropping a sphere

$$\text{Volume of sphere} = \pi r^2 h_1 - \pi r^2 h$$

$$\frac{4}{3} \pi r^3 = 9\pi h_1 - 9\pi h$$

$$\frac{4}{3} \times \pi \times 1.5 \times 1.5 \times 1.5 = 9\pi(h_1 - h)$$

$$= \frac{125 \times 4}{1000} = (h_1 - h)$$

$$h_1 - h = \frac{500}{1000}$$

$$h_1 - h = \frac{1}{2}$$

S23. Ans.(a)

Sol.

Let radius of sphere be r

$$\text{Volume of sphere} = \frac{4}{3} \pi r^3$$

Length of cylindrical wire = 4m

Let radius of cylindrical wire $\rightarrow r_1$

$$2r = 10 \times 2r_1$$

$$r_1 = \frac{r}{10}$$

Volume of sphere = volume of cylindrical wire

$$\frac{4}{3} \pi r^3 = \pi r_1^2 h$$

$$\frac{4}{3} \pi r^3 = \pi \times \frac{r^2}{100} h$$

$$\frac{4}{3} \pi r^3 = \pi \times \frac{r^2}{100} \times h$$

$$r = \frac{3}{100} \text{ m}$$

$$= \frac{3}{100} \times 100 \text{ cm}$$

$$= 3 \text{ cm}$$

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S24. Ans.(a)**Sol.**

Volume of outer dimension of box

$$= 52 \times 40 \times 29 \text{ cm}^3$$

$$= 60320 \text{ cm}^3$$

Volume of inner dimension box

$$= (52 - 2 \times 2) (40 - 2 \times 2) (29 - 2)$$

$$= 48 \times 36 \times 27$$

$$= 46656$$

$$\text{Volume of open box} = 60320 - 46656 = 13664$$

Weight of the open box

$$= 13664 \times 0.5 \text{ g}$$

$$= 13664 \times \frac{5}{10000} \text{ kg}$$

$$= 6.832 \text{ kg}$$

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

Volume of sand in cylindrical bucket

$$= \pi r^2 h$$

$$= \pi \times (21)^2 \times 36$$

$$= \pi \times 441 \times 36$$

$$= 441 \times 36 \pi \text{ cm}^3$$

Volume of conical heap

$$= \frac{1}{3} \pi r^2 h = \frac{1}{3} \pi r^2 h = \frac{1}{3} \pi r^2 \times 12$$

$$= 4\pi r$$

Volume of sand in cylindrical vessel

= volume of conical heap

$$441 \times 36 \pi = 4\pi r^2$$

$$r = 21 \times 3$$

$$= 63 \text{ cm}$$

S26. Ans.(b)**Sol.**

In radius of hemispherical bowl = 4 cm

Thickness = 0.5 cm

Outer radius of hemispherical bowl = 4 + 0.5 cm

$$= 4.5 \text{ cm}$$

$$\text{Volume of hemispherical bowl} = \frac{2}{3} \pi (R_1^3 - R_2^3)$$

$$= \frac{2}{3} \pi [(4.5)^3 - (4)^3] = \frac{2}{3} \pi [91.125 - 64]$$

$$= \frac{2}{3} \pi [27.125] = \frac{2}{3} \times \frac{22}{7} \times 27.125$$

$$= \frac{2}{3} \times 22 \times 3.875$$

$$= 56.8383 \text{ cm}^3$$

$$\approx 56.83 \text{ cm}^3$$

S27. Ans.(d)

Sol.

Length of open box $48 - 16$

$= 32 \text{ cm}$

Breadth of open box $= 36 - 16$

$= 20 \text{ cm}$

Height of open box $= 8 \text{ cm}$

Volume of open box $= 32 \times 20 \times 8$

$= 5120 \text{ cm}^3$

S28. Ans.(b)

Sol.

$\ell + b + h = 19 \text{ cm}$..(i)

diagonal $= 11 \text{ cm}$

$$\sqrt{\ell^2 + b^2 + h^2} = 11$$

$$\ell^2 + b^2 + h^2 = 121 \text{ m}^2$$
 ... (ii)

squaring both sides on (i)

$$(\ell + b + h)^2 = (19)^2$$

$$\ell^2 + b^2 + h^2 + 2(\ell b + bh + \ell h) = 361$$
 ..(iii)

from (i) & (ii)

$$121 + 2(\ell b + bh + \ell h)$$

$$= 361$$

$$2(\ell b + bh + \ell h) = 361 - 121$$

$$\text{Total surface area of cuboid} = 2(\ell b + bh + \ell h)$$

$$= 361 - 121$$

$$= 240$$

$$\text{Cost of painting} = 240 \times 10$$

$$= 2400 \text{ Rs}$$

S29. Ans.(a)

Sol.

Let the height of room be h

Area of four walls $\Rightarrow 2h(\ell + b)$

$$2h(\ell + b) = \frac{340.20}{1.35}$$

$$2h(\ell + b) = 252 \text{ m}^2$$

$$h(\ell + b) = 126 \text{ m}^2$$

area of floor $= \ell \times b$

$$\ell \times b = \frac{9.80}{0.85} \text{ m}^2$$

$$\ell \times b = 108$$

$$\ell = 12 \text{ m}$$

$$b = \frac{108}{12} = 9 \text{ m}$$

$$h(\ell + b) = 126$$

$$h(9 + 12) = 126$$

$$h \times 21 = 126$$

$$h = 6 \text{ m}$$

S30. Ans.(c)

Sol.

Volume of cylinder = $\pi r^2 h$

$$= \pi \left(\frac{4.5}{2} \right)^2 \times 10$$

$$= \frac{10}{4} \times (4.5)^2 \times \pi$$

Volume of coin = $\pi r^2 h$

$$= \pi \times \frac{(1.5)^2}{4} \times (0.2)$$

$$\text{No. of coins required} = \frac{\frac{10}{4} \times (4.5)^2 \times \pi}{\pi \times \frac{(1.5)^2}{4} \times (0.2)}$$

$$= \frac{10 \times 4.5 \times 4.5}{1.5 \times 1.5 \times 0.2}$$
$$= 450$$

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