

**Quant Mega Quiz for SSC CHSL (Solutions)**

**S1. Ans.(c)**

**Sol.**

$$\text{Muslim} + \text{Hindu} + \text{Sikh} = 44 + 28 + 10 = 82\%$$

$$\text{Remaining} = 100 - 82 = 18\%$$

Remaining Students

$$= 850 \times \frac{18}{100}$$

$$= 17 \times 9$$

$$= 153$$

**S2. Ans.(c)**

**Sol.**

$$\frac{\text{Sum}}{11} = x$$

$$\text{Sum}_9 + 18 + 20 = 11x$$

$$\text{Sum}_9 + 38 = 11x$$

$$\text{Sum}_9 = 11x - 38 \text{ years}$$

$$\frac{\text{Sum}_{11}}{11} = x + 2 \text{ month}$$

$$\text{Sum}_9 + 2 \text{ new player} = 11x + 22$$

$$11x - 38 \text{ years} + 2 \text{ new player} = 11x + 22 \text{ months}$$

$$\text{Sum of ages of 2 new player} = 38 \text{ years} \quad 22 \text{ months}$$

$$\text{Average of 2 new players} = 19 \text{ years} \quad 11 \text{ months}$$

**S3. Ans.(a)**

**Sol.**

Let there are x no. of coins of each type

$$100x + 50x + 25x = 3500$$

$$175x = 3500$$

$$x = \frac{3500}{175}$$

$$= 20 \text{ coins}$$

**S4. Ans.(a)**

**Sol.**

Alcohol : Water

Vessel I    25    :    75

              1    :    3

$$\text{Alcohol} = 2 \times \frac{1}{4} = \frac{1}{2}$$

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$$\text{Water} = 2 \times \frac{3}{4} = \frac{3}{2}$$

Alcohol : Water

$$\begin{array}{l} \text{Vessel II} \quad 40 \quad : \quad 60 \\ \quad \quad \quad 2 \quad \quad : \quad 3 \end{array}$$

$$\text{Alcohol} = 6 \times \frac{2}{5} = \frac{12}{5}$$

$$\text{Water} = 6 \times \frac{3}{5} = \frac{18}{5}$$

In 10 litres

$$\text{Alcohol} = \frac{1}{2} + \frac{12}{5} = \frac{5 + 24}{10} = \frac{29}{10}$$

$$\text{Water} = \frac{3}{2} + \frac{18}{5} + 2 = 2 + \frac{15 + 36}{10} = \frac{51 + 20}{10} = \frac{71}{10}$$

$$\text{Concentration of Alcohol} = \frac{29}{10} \times 100 = 29\%$$

**S5. Ans.(a)**

**Sol.**

$$\begin{aligned} x &= \frac{1}{2 + \sqrt{3}} = \frac{1}{2 + \sqrt{3}} \times \frac{2 - \sqrt{3}}{2 - \sqrt{3}} \\ &= 2 - \sqrt{3} \end{aligned}$$

$$\begin{aligned} y &= \frac{1}{2 - \sqrt{3}} = \frac{1}{2 - \sqrt{3}} \times \frac{2 + \sqrt{3}}{2 + \sqrt{3}} \\ &= 2 + \sqrt{3} \end{aligned}$$

$$\begin{aligned} 8xy(x^2 + y^2) &= 8(2 - \sqrt{3})(2 + \sqrt{3}) [4 + 3 - 4\sqrt{3} + 4 + 3 + 4\sqrt{3}] \\ &= 8(4 - 3)(14) \\ &= 112 \end{aligned}$$

**S6. Ans.(a)**

**Sol.**

$$\text{C.P of 5 kg Butter} = 300$$

$$\text{S.P of 4 kg Butter} = 300 \times \frac{90}{100} = 270 \text{ Rs.}$$

$$\text{Price/kg} = \frac{270}{4} = 67.5 \text{ Rs.}$$

**S7. Ans.(b)**

**Sol.**

$$\text{Strength of women} = 311250 \times \frac{43}{83} = 161250$$

$$\text{Literate women} = 161250 \times \frac{24}{100} = 38700$$

$$\text{Strength of men} = 311250 \times \frac{40}{83} = 150000$$

$$\text{Literate man} = 150000 \times \frac{90}{100} = 135000$$

$$\text{Total literate} = 135000 + 38700 = 173700 \text{ Rs}$$

**S8. Ans.(c)**

**Sol.**

$$400 = P + \frac{P \times 10 \times T}{100}$$

$$400 = P \left(1 + \frac{T}{10}\right) \quad \dots (i)$$

$$200 = P + \frac{P \times 4 \times T}{100}$$

$$200 = P \left(1 + \frac{T}{25}\right)$$

$$\frac{400}{200} = \frac{P \left(1 + \frac{T}{10}\right)}{P \left(1 + \frac{T}{25}\right)}$$

$$2 + \frac{2T}{25} = 1 + \frac{T}{10}$$

$$1 = \frac{T}{10} - \frac{2T}{25}$$

$$1 = \frac{5T - 4T}{50}$$

$$T = 50 \text{ years}$$

**S9. Ans.(d)**

**Sol.**

$$\text{Rate} = 10\%$$

$$= \frac{10}{100} = \frac{1}{10}$$

$$\text{Time} = 3 \text{ years}$$

$$\text{Let principle be } \Rightarrow (10)^3 \Rightarrow 1000$$

$$\text{S. Interest for 3 years} = \frac{1000 \times 10 \times 3}{100} = 300$$

$$\text{C.I for 1 year} = \frac{1000}{10} = 100$$

$$\text{C.I for 2nd year} = \frac{1000}{10} + \frac{100}{10} = 100 + 10 = 110$$

$$\text{C.I for 3rd year} = \frac{1000}{10} + \frac{110}{10} + \frac{100}{10} = 111 + 10 = 121$$

$$\text{Total C.I for 3 years} = 100 + 110 + 121 = 331$$

$$\text{Difference} = 331 - 300 = 31$$

$$31r \Rightarrow 15.50$$

$$1r \Rightarrow 0.5$$

$$\text{Sum} = 1000 \times 0.5 = 500 \text{ Rs.}$$

**S10. Ans.(a)**

**Sol.**

They will cross in

$$= \frac{190 + 210}{40 + 32}$$

$$= \frac{400}{72 \times \frac{5}{18}}$$

$$= 20 \text{ seconds}$$

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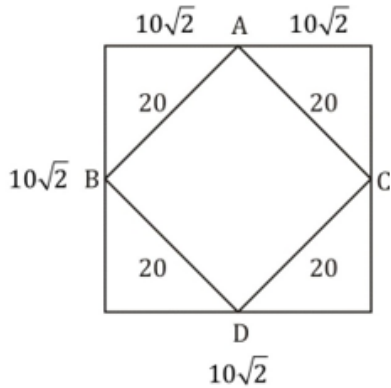
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**S11. Ans.(a)**

**Sol.**



The length of rope of goat =  $10\sqrt{2}$  m

Then the two goats will graze an area

= Area of a semicircle with radius  $10\sqrt{2}$  m.

So total area grazed =  $\frac{\pi r^2}{2} \Rightarrow 100\pi \text{ m}^2$

**S12. Ans.(a)**

**Sol.**

Let, the radius of circular paper sheet be r cm.

Then,  $2\pi r = 352$

Or,  $r = 56$  cm

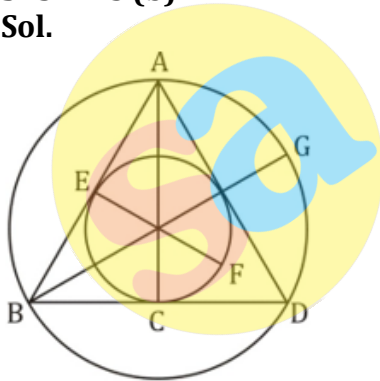
Radius of each circular plate =  $\frac{56}{2} = 28$

Hence, circumference of each circular plate

=  $2 \times \frac{22}{7} \times 28 = 176$  cm

**S13. Ans.(b)**

**Sol.**



Let the side of equilateral triangle =  $a$

Then height =  $\frac{\sqrt{3}a}{2}$

Diameter of inner circle =  $2 \left( \frac{1}{3} \times \frac{\sqrt{3}a}{2} \right) = \frac{a}{\sqrt{3}}$

Diameter of outer circle =  $2 \left( \frac{2}{3} \times \frac{\sqrt{3}a}{2} \right) = \frac{2a}{\sqrt{3}}$

Ratio =  $\frac{a}{\sqrt{3}} : \frac{2a}{\sqrt{3}} : \frac{\sqrt{3}a}{2}$

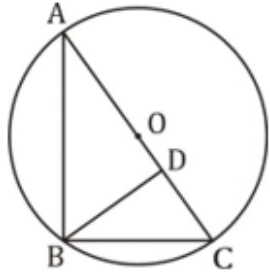
$\Rightarrow$  Ratio =  $2 : 4 : 3$

**S14. Ans.(a)**

**Sol.** We know that the circumcentre of a right angled triangle is the midpoint of its hypotenuse and the circumradius is half of the hypotenuse.

Let ABC be the given triangle with right angle at B. Let O be the mid point of the hypotenuse AC. Let BD be the perpendicular from B on AC. Then,

$$AC = 2(OA) = 2 \times 5 = 10 \text{ cm.}$$



$$BD = 4 \text{ cm (Given)}$$

$$\therefore \text{Area of } \Delta ABC = \frac{1}{2} \times AC \times BD$$

$$= \frac{1}{2} \times 10 \times 4 = 20 \text{ cm}^2$$

Hence, options (a) is true.

**S15. Ans.(a)**

**Sol.**

Let  $r$  be the radius of the circle. Then Circumference

$$= 44 \text{ cm}$$

$$\Rightarrow 2\pi r = 44 \text{ cm}$$

$$\Rightarrow \text{or, } 2 \times \frac{22}{7} \times r = 44 \text{ cm}$$

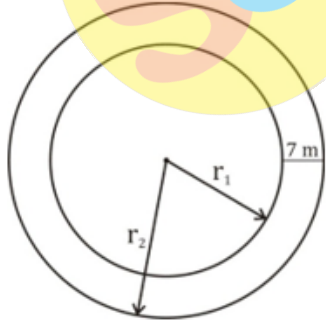
$$\therefore r = \frac{44 \times 7}{44} \text{ cm} = 7 \text{ cm.}$$

$$\therefore \text{Area of circle} = \pi r^2 = \left(\frac{22}{7} \times 7 \times 7\right) \text{ cm}^2 = 154 \text{ cm}^2.$$

**S16. Ans.(a)**

**Sol.**

Let the radius of inner circle be  $r_1$



$$\therefore 2\pi r_1 = 704$$

$$\therefore r = \frac{704}{2\pi} = \frac{704 \times 7}{2 \times 22} = 112 \text{ m.}$$

Let the radius of outer circle =  $r_2$

$$\therefore r_2 = r_1 + 7 = 112 + 7 = 119 \text{ m.}$$

$$\therefore \text{Area of the path} = \pi r_2^2 - \pi r_1^2$$

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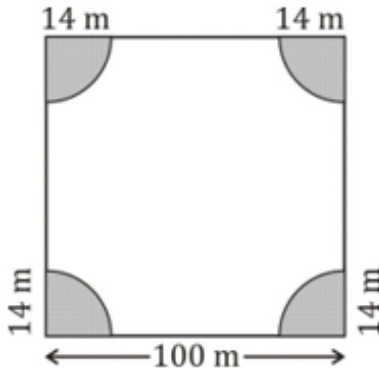
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$$\begin{aligned}
 &= \pi(r_2^2 - r_1^2) = \pi(r_2 + r_1)(r_2 - r_1) && \text{(Remember)} \\
 &= \frac{22}{7} \times (119 + 112)(119 - 112) \\
 &= \frac{22}{7} \times 231 \times 7 \\
 &= 5082 \text{ m}^2
 \end{aligned}$$

**S17. Ans.(d)**

**Sol.**



Area of each quadrant of radius 14 m

$$= \frac{1}{4} \pi r^2 = \frac{1}{4} \times \pi \times 14^2$$

$$\therefore \text{Area of 4 quadrants} = \pi \times 14^2$$

$$= \frac{22}{7} \times 14 \times 14 = 616 \text{ m}^2$$

Area of Square Park having side 100 m long

$$= 100 \times 100 \text{ m}^2 = 10,000 \text{ m}^2$$

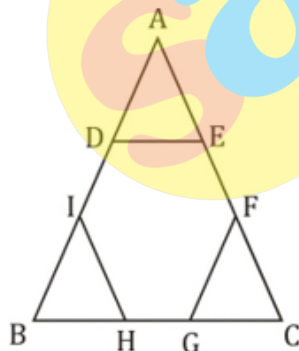
$\therefore$  Area of the remaining part of the park

$$= 10,000 - 616 = 9384 \text{ m}^2$$

Hence, option (d) is true.

**S18. Ans.(c)**

**Sol.**



Side of the regular hexagon

$$= \frac{1}{3} \times 6 = 2 \text{ cm.}$$

$$\therefore \text{Area of the hexagon} = \frac{3\sqrt{3}}{2} a^2$$

$$= \frac{3\sqrt{3}}{2} \times 2 \times 2 = 6\sqrt{3} \text{ sq. cm.}$$

**S19. Ans.(c)**

**Sol.**

Side of the square =  $\sqrt{121} = 11$  cm

$\therefore$  Length of the wire =  $4 \times \text{side} = 4 \times 11$   
= 44 cm

Now the wire is bent into the form of a circle.

If the radius of the circle be  $r$  cm, then,

$\therefore 2\pi r = 44$

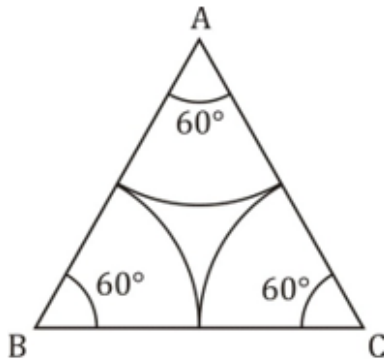
$\Rightarrow r = \frac{44}{2\pi} = \frac{44 \times 7}{2 \times 22} = 7$  cm

$\therefore$  Area of the circle =  $\pi r^2$

=  $\frac{22}{7} \times 7 \times 7 = 154$  cm<sup>2</sup>

**S20. Ans.(c)**

**Sol.**



Each angle of the triangle =  $60^\circ$

Required area of the three sectors

$$= 3 \times \frac{60}{360} \times \pi(1)^2$$
$$= \frac{\pi}{2} \text{ cm}^2$$

**S21. Ans.(b)**

**Sol.** The wall clocks gains 6 min in 36 hours, while table watch loses 2 min. in 36 hour.

$\therefore$  difference of 8 min in  $\frac{3}{2}$  days

$\therefore$  difference of 12 hours is in =  $\frac{3}{2} \times \frac{1}{8} \times 12 \times 60 = 135$  day

**S22. Ans.(d)**

**Sol.**

Ratio of profit = 5 : 2

$$\text{A's share} = \frac{5}{7} \times \frac{4x}{5} + \frac{x}{5} = \frac{27x}{35}$$

$$\text{B's share} = \frac{2}{7} \times \frac{4x}{5} = \frac{8x}{35}$$

$$\text{Diff.} = \frac{19x}{35} = 38000$$

$$x = 70000$$

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**S23. Ans.(d)**

**Sol.**

$$B's\ 3\ days\ work = \frac{3}{15} = \frac{1}{5}$$

$$Remaining\ work = 1 - \frac{1}{5} = \frac{4}{5}$$

$$Time\ taken\ by\ A\ in\ finishing\ the\ remaining\ work = 35 \times \frac{4}{5} = 28\ days$$

**S24. Ans.(c)**

**Sol.**

$$Part\ of\ tank\ filled\ by\ both\ pipes\ in\ 1\ hour = \frac{1}{2} + \frac{1}{6} = \frac{2}{3}$$

$$Time\ taken\ to\ fill\ \frac{2}{3}\ parts = 60\ min$$

$$Time\ taken\ to\ fill\ \frac{1}{2}\ part = \frac{60 \times 3}{2} \times \frac{1}{2} = 45\ min.$$

So, tank will be filled at 11 : 45 am

**S25. Ans.(a)**

**Sol.**

$$Time\ taken\ by\ pipe\ B = 2x\ hours$$

$$Time\ taken\ by\ pipe\ A = x\ hours$$

$$Time\ taken\ by\ pipe\ C = \frac{2}{\frac{1}{2x} + \frac{1}{x}} = \frac{4x}{3}\ hours$$

$$\frac{1}{x} + \frac{1}{2x} + \frac{3}{4x} = \frac{1}{6 + \frac{40}{60}} = \frac{3}{20}$$

$$9 \times 20 = 4x \times 3$$

$$x = 15\ hours$$

**S26. Ans.(d)**

**Sol.**

$$Time\ taken\ by\ B\ in\ completing\ the\ work = 12 \times \frac{100}{160} = \frac{15}{2}\ days$$

$$(A + B)'s\ 1\ days\ work = \frac{1}{12} + \frac{2}{15} = \frac{13}{60}$$

The work will be complete in  $\frac{60}{13}$  days.

**S27. Ans.(b)**

**Sol.**

$$(2M + 4B) \times 10 = (4M + 5B) \times 6$$

$$2M = 5B$$

$$5B = 2 \times 40$$

$$1B = \frac{2 \times 40}{5} = 16$$

$$Req.\ ratio = 40 : 16 = 5 : 2$$



S28. Ans.(a)

Sol.

$$\begin{array}{ccc} & 60 & \\ & / \quad | \quad \backslash & \\ 2 & & 3 \quad 6 \\ / & & / \quad \backslash \\ 30 & 20 & 10 \\ A & B & C \end{array} \Rightarrow \left. \begin{array}{l} A + B = 5 \\ A + C = 8 \end{array} \right\} = 13$$

$$\begin{aligned} \text{Double days work} &= \frac{60}{13} = 4 \text{ \& } \\ \text{total Days} &\Rightarrow 4 \times 2 + 1 + \frac{3}{8} \Rightarrow 9 \frac{3}{8} \text{ days} \end{aligned}$$

S29. Ans.(a)

Sol.

$$\text{Marked price} = \frac{846 \times 100 \times 100}{94 \times 80} = 1125$$

S30. Ans.(c)

Sol.

$$\text{Successive discount} = \left( 20 + \frac{25}{4} - \frac{20 \times 25}{400} \right) \%$$

$$= 25 \%$$

$$x \times \frac{75}{100} = 120$$

$$x = 160$$

$$\text{Required percent} = 60 \%$$

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