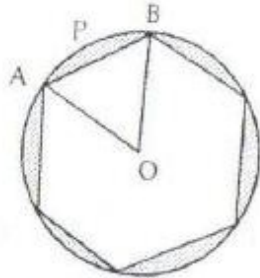




Question 52:



ABCDEF is a hexagon

$\therefore \angle AOB = 60^\circ$ , Radius = 35 cm

Area of sector AOB

$$= \pi r^2 \times \frac{60^\circ}{360^\circ} = \frac{\pi \times 35 \times 35}{6} \text{ cm}^2$$

$$= \frac{3.14 \times 35 \times 35}{6} \text{ cm}^2$$

$$= 641.083 \text{ cm}^2$$

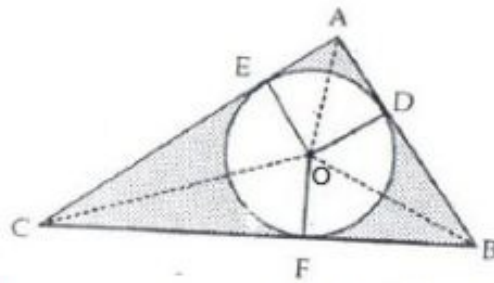
$$\text{Area of } \triangle AOB = \frac{\sqrt{3}}{4} \times r^2 = \frac{\sqrt{3}}{4} \times 35 \times 35 \text{ cm}^2$$

$$= 530.425 \text{ cm}^2$$

$$\text{Area of segment APB} = (641.083 - 530.425) \text{ cm}^2 = 110.658 \text{ cm}^2$$

$$\begin{aligned} \text{Area of design (shaded area)} &= 6 \times 110.658 \text{ cm}^2 = 663.948 \text{ cm}^2 \\ &= 663.95 \text{ cm}^2 \end{aligned}$$

Question 53:



In  $\triangle ABC$ ,  $\angle A = 90^\circ$ ,  $AB = 6\text{ cm}$ ,  $BC = 10\text{ cm}$

$$BC^2 = AC^2 + AB^2$$

$$\therefore AC^2 = BC^2 - AB^2 = 10^2 - 6^2 = 100 - 36 = 64$$

$$\therefore AC = 8\text{ cm}$$

$$\text{Area of } \triangle ABC = \frac{1}{2} \times AC \times AB = \frac{1}{2} \times 8 \times 6\text{ cm}^2 = 24\text{ cm}^2$$

Let  $r$  be the radius of circle of centre  $O$

$$\text{Area of } \triangle OCB = \frac{1}{2} \times 10 \times r\text{ cm}^2 = 5r\text{ cm}^2$$

$$\text{Area of } \triangle OAB = \frac{1}{2} \times 6 \times r\text{ cm}^2 = 3r\text{ cm}^2$$

$$\text{Area of } \triangle OCA = \frac{1}{2} \times 8 \times r\text{ cm}^2 = 4r\text{ cm}^2$$

$$\text{Area of } (\triangle OCB + \triangle OAB + \triangle OCA) = \text{Area of } \triangle ABC$$

$$\therefore 5r + 3r + 4r = 24$$

$$\text{or } 12r = 24 \therefore r = 2\text{ cm}$$

$$\therefore \text{Area of incircle} = \pi r^2 = 3.14 \times 2 \times 2\text{ cm}^2$$

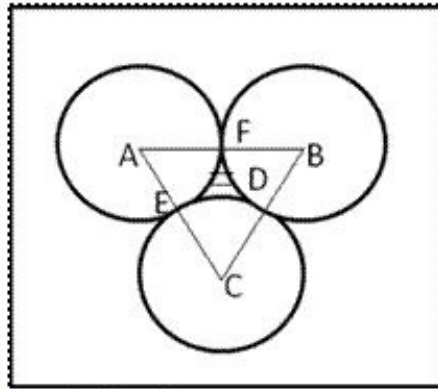
$$= 12.56\text{ cm}^2$$

$$\Rightarrow \text{Shaded area} = \text{Area of } \triangle ABC - \text{Area of incircle}$$

$$= (24 - 12.56)\text{ cm}^2 = 11.44\text{ cm}^2$$

Question 54:

Area of equilateral triangle ABC =  $49\sqrt{3} \text{ cm}^2$



Let  $a$  be its side

$$\therefore \frac{\sqrt{3}}{4} a^2 = 49\sqrt{3}$$

$$\text{or } a^2 = 49 \times 4$$

$$\therefore a = 7 \times 2$$

$$\Rightarrow a = 14 \text{ cm}$$

$$\text{Area of sector BDF} = \pi r^2 \times \frac{\theta}{360^\circ}$$

$$= \frac{22}{7} \times 7 \times 7 \times \frac{60}{360} \text{ cm}$$

$$= \frac{11 \times 7}{3} \text{ cm}^2 = \frac{77}{3} \text{ cm}^2$$

Area of sector BDF = Area of sector CDE = Area of sector AEF

Sum of area of all the sectors

$$= \frac{77}{3} \times 3 \text{ cm}^2 = 77 \text{ cm}^2$$

$\therefore$  Shaded area = Area of  $\triangle ABC$  - sum of area of all sectors

$$= 49\sqrt{3} - 77 \text{ cm}^2 = (84.77 - 77.00) \text{ cm}^2$$

$$= 7.77 \text{ cm}^2$$

\*\*\*\*\* END \*\*\*\*\*