



Exercise 13D

Question 5:

Surface area of sphere = $(4\pi r^2)$

$$\therefore (4\pi r^2) = (576\pi)$$

$$[\text{Surface area} = 576\pi \text{ cm}^2]$$

$$\Rightarrow r^2 = \frac{(576\pi)}{(4\pi)}$$

$$\Rightarrow r = \sqrt{144} = 12 \text{ cm}$$

$$\therefore \text{Volume of the sphere} = \left(\frac{4}{3}\pi r^3\right)$$

$$= \left(\frac{4}{3} \times \pi \times 12 \times 12 \times 12\right) \text{ cm}^3$$

$$= (2304\pi) \text{ cm}^3$$

$$\therefore \text{Volume of the sphere} = (2304\pi) \text{ cm}^3$$

Question 6:

Outer diameter of spherical shell = 12 cm

$$\text{radius} = 6 \text{ cm} \quad \left[\text{radius} = \frac{D}{2}\right]$$

Outer diameter of spherical shell = 8 cm

radius = 4 cm

$$\text{Now, Volume of the outer shell} = \left(\frac{4}{3}\pi r^3\right)$$

$$= \left(\frac{4}{3} \times \frac{22}{7} \times 6 \times 6 \times 6\right) \text{ cm}^3$$

$$= 905.15 \text{ cm}^3$$

$$\therefore \text{Volume of the inner shell} = \left(\frac{4}{3}\pi r^3\right)$$

$$= \left(\frac{4}{3} \times \frac{22}{7} \times 4 \times 4 \times 4\right) \text{ cm}^3$$

$$= 268.20 \text{ cm}^3$$

$$\therefore \text{Volume of metal contained in the shell} = (\text{Volume of outer})$$

$$- (\text{Volume of inner})$$

$$= (905.15 - 268.20) \text{ cm}^3$$

$$= 636.95 \text{ cm}^3$$

$$\therefore \text{Outer surface area} = 4\pi r^2$$

$$= \left(4 \times \frac{22}{7} \times 6 \times 6\right) \text{ cm}^2$$

$$= 452.57 \text{ cm}^2$$

***** END *****

