Exercise 13B

Question 7:

Curved surface area $= \dfrac{1}{3} \times$ (total surface area)

$$= \left(\dfrac{1}{3} \times 462\right) cm^2 = 154cm^2$$

(Total surface area)- (Curved surface area)
$$= (462-154)\, cm^2 = 308\, cm^2$$

$\Rightarrow \qquad \qquad 2\Pi r^2 = 308$

$\Rightarrow \qquad \qquad 2 \times \dfrac{22}{7} \times r^2 = 308$

$\Rightarrow \qquad \qquad r^2 = \dfrac{308 \times 7}{44} = 49$

$\Rightarrow \qquad \qquad r = \sqrt{49} = 7cm$

Now, curved surface area $= 2\Pi rh = 154\ cm^2$

$$= 2 \times \dfrac{22}{7} \times 7 \times h = 154\ cm^2$$

$$= h = \dfrac{154}{44} = 3.5cm$$

Now, r = 7 cm and h= 3.5 cm

Volume of the cylinder$=(\Pi r^2 h)$

$$= \left(\dfrac{22}{7} \times 7 \times 7 \times 3.5\right) cm^3$$

$$= 539 cm^3$$

$\therefore$ The volume of the cylinder = 539 cm³.

Question 8:

Curved surface area $= \dfrac{2}{3} \times$ (total surface area)

$$= \left(\dfrac{2}{3} \times 231\right) \text{cm}^2 = 154 \, \text{cm}^2$$

(Total surface area) - (Curved surface area)

$$= (231 - 154)\,\text{cm}^2 = 77\,\text{cm}^2$$

$$2\pi r^2 = 77\,\text{cm}^2$$

$$\Rightarrow \quad 2 \times \dfrac{22}{7} \times r^2 = 77$$

$$\Rightarrow \quad r^2 = \dfrac{77 \times 7}{44} = \dfrac{49}{4}$$

$$\Rightarrow \quad r = \sqrt{\dfrac{49}{4}} = \dfrac{7}{2}\,\text{cm}$$

Now, $\quad 2\pi rh = 154\,\text{cm}^2$

$$\Rightarrow \quad 2 \times \dfrac{22}{7} \times \dfrac{7}{2} \times h = 154\,\text{cm}^2$$

$$\Rightarrow \quad h = \dfrac{154}{22} = 7\,\text{cm}$$

Now, $r = \dfrac{7}{2}\,\text{cm}$ and $h = 7\,\text{cm}$

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

$$= \left(\dfrac{22}{7} \times \dfrac{7}{2} \times \dfrac{7}{2} \times 7\right)\text{cm}^3$$

$$= 269.5\,\text{cm}^3$$

Volume of the cylinder $= 269.5\,\text{cm}^3$

********** END *********