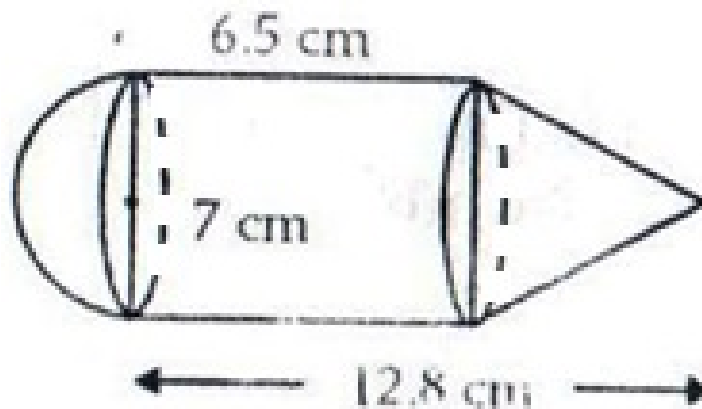Question 11:
Radius of hemisphere = 10.5 cm
Height of cylinder = (14.5 - 10.5) cm = 4 cm
Radius of cylinder = 10.5 cm
Capacity = Volume of cylinder + Volume of hemisphere

$$= \left(\pi r^2 h + \frac{2}{3}\pi r^3\right) cm^3 = \pi r^2\left(h + \frac{2}{3}r\right) cm^3$$

$$= \left[\frac{22}{7} \times 10.5 \times 10.5 \times \left(4 + \frac{2}{3} \times 10.5\right)\right] cm^3$$

$$= (346.5 \times 11) cm^2 = 3811.5 cm^2$$

Question 12:

Height of cylinder = 6.5 cm
Height of cone = h_2 = (12.8-6.5) cm = 6.3 cm
Radius of cylinder = radius of cone
= radius of hemisphere
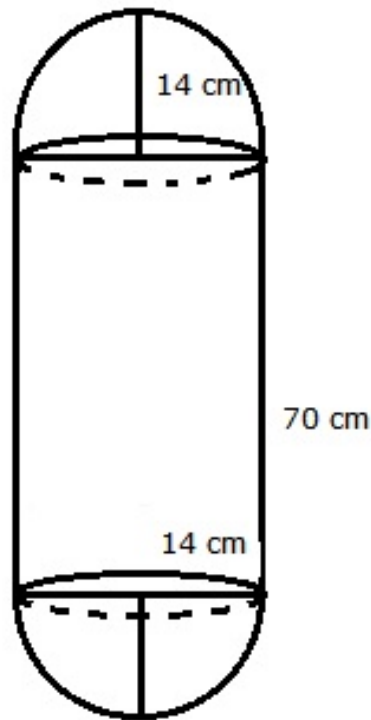= 7/2 cm
Volume of solid = Volume of cylinder + Volume of cone + Volume of hemisphere

$$= \pi r^2 h_1 + \frac{1}{3}\pi r^2 h_2 + \frac{2}{3}\pi r^3 = \pi r^2\left(h_1 + \frac{1}{3}h_2 + \frac{2}{3}r\right)$$

$$= \left[\frac{22}{7} \times 3.5 \times 3.5 \times \left(6.5 + 6.3 \times \frac{1}{3} + \frac{2}{3} \times 3.5\right)\right]$$

$$= \left[(38.5) \times (6.5 + 2.1 + 2.33)\right] cm^3$$

$$= (38.5 \times 10.93) cm^3 = 420.80 \ cm^3$$

Question 13:

Radius of each hemispherical end = 28/2 = 14 cm
Height of each hemispherical part = Its Radius
Height of cylindrical part = (98 – 2 × 14) = 70 cm
Area of surface to be polished = 2(curved surface area of hemisphere) + (curved surface area of cylinder)

$$= \left[2\left(2\pi r^2\right) + 2\pi rh \right] \text{sq.unit}$$

$$= 2\pi r \left(2r + h\right) \text{cm}^2$$

$$= 2 \times \frac{22}{7} \times 14 \times \left[2 \times 14 + 70\right] \text{cm}^2$$

$$= \left(88 \times 98\right) = 8624 \text{ cm}^2$$

Cost of polishing the surface of the solid
= Rs. (0.15 × 8624)
= Rs. 1293. 60

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