



Exercise 19C

Question 1:

Here $h = 42$ cm, $R = 16$ cm, and $r = 11$ cm

$$\begin{aligned}\text{Capacity} &= \frac{1}{3} \pi h (R^2 + r^2 + Rr) \text{ cm}^3 \\ &= \frac{1}{3} \times \frac{22}{7} \times 42 [(16)^2 + (11)^2 + 16 \times 11] \text{ cm}^3 \\ &= (44 \times 553) \text{ cm}^3 = 24332 \text{ cm}^3\end{aligned}$$

Question 2:

Here $R = 33$ cm, $r = 27$ cm and $l = 10$ cm

$$\begin{aligned}\therefore h &= \sqrt{l^2 - (R^2 - r^2)} \text{ cm} = \sqrt{(10)^2 - (33 - 27)^2} \text{ cm} \\ &= \sqrt{(10)^2 - (6)^2} = \sqrt{64} \text{ cm} = 8 \text{ cm}\end{aligned}$$

$$\begin{aligned}\text{Capacity of the frustum} &= \frac{1}{3} \pi h (R^2 + r^2 + Rr) \text{ cm}^3 \\ &= \frac{1}{3} \times \frac{22}{7} \times 8 [(33)^2 + (27)^2 + 33 \times 27] \text{ cm}^3 \\ &= (8.38 \times 2709) \text{ cm}^3 = 22701.4 \text{ cm}^3\end{aligned}$$

$$\begin{aligned}\text{Total surface area} &= [\pi R^2 + \pi r^2 + \pi l (R + r)] \text{ cm}^2 \\ &= \pi [R^2 + r^2 + l (R + r)] \text{ cm}^2 \\ &= \frac{22}{7} [(33)^2 + (27)^2 + 10 \times (33 + 27)] \text{ cm}^2 \\ &= \left(\frac{22}{7} \times 2418 \right) \text{ cm}^2 = 7599.43 \text{ cm}^2\end{aligned}$$

Question 3:

$$\text{Height} = 15 \text{ cm, } R = \frac{56}{2} = 28 \text{ cm and } r = \frac{42}{2} = 21 \text{ cm}$$

$$\begin{aligned}\text{Capacity of the bucket} &= \frac{1}{3} \pi h (R^2 + r^2 + Rr) \text{ cm}^3 \\ &= \frac{1}{3} \times \frac{22}{7} \times 15 [(28)^2 + (21)^2 + 28 \times 21] \text{ cm}^3 \\ &= (15.71 \times 1831) \text{ cm}^3 \\ &= (28482.23) \text{ cm}^3\end{aligned}$$

Quantity of water in bucket = 28.49 litres

***** END *****

