Exercise 19C

Question 1:

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

$$\text{Capacity} = \frac{1}{3}\pi h\left(R^2 + r^2 + Rr\right)\text{cm}^3$$

$$= \frac{1}{3} \times \frac{22}{7} \times 42\left[(16)^2 + (11)^2 + 16 \times 11\right]\text{cm}^3$$

$$= (44 \times 553)\text{cm}^3 = 24332\text{cm}^3$$

Question 2:

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

$$\therefore h = \sqrt{l^2 - \left(R^2 - r^2\right)}\ \text{cm} = \sqrt{(10)^2 - (33-27)^2}\ \text{cm}$$

$$= \sqrt{(10)^2 - (6)^2} = \sqrt{64}\,\text{cm} = 8\,\text{cm}$$

$$\text{Capacity of the frustum} = \frac{1}{3}\pi h\left(R^2 + r^2 + Rr\right)\text{cm}^3$$

$$= \frac{1}{3} \times \frac{22}{7} \times 8\left[(33)^2 + (27)^2 + 33 \times 27\right]\text{cm}^3$$

$$= (8.38 \times 2709)\text{cm}^3 = 22701.4\ \text{cm}^3$$

$$\text{Total surface area} = \left[\pi R^2 + \pi r^2 + \pi l(R + r)\right]\text{cm}^2$$

$$= \pi\left[R^2 + r^2 + l(R + r)\right]\text{cm}^2$$

$$= \frac{22}{7}\left[(33)^2 + (27)^2 + 10 \times (33 + 27)\right]\text{cm}^2$$

$$= \left(\frac{22}{7} \times 2418\right)\text{cm}^2 = 7599.43\,\text{cm}^2$$

Question 3:

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

$$\text{Capacity of the bucket} = \frac{1}{3}\pi h\left(R^2 + r^2 + Rr\right)\text{cm}^3$$

$$= \frac{1}{3} \times \frac{22}{7} \times 15\left[(28)^2 + (21)^2 + 28 \times 21\right]\text{cm}^3$$

$$= (15.71 \times 1831)\text{cm}^3$$

$$= (28482.23)\text{cm}^3$$

Quantity of water in bucket = 28.49 litres

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