Exercise 19C

Question 4:

R = 20 cm, r = 8 cm and h = 16 cm

$$\therefore\ l = \sqrt{h^2 + (R-r)^2} = \sqrt{(16)^2 + (20-8)^2}$$

$$= \sqrt{256 + 144}\,\text{cm} = 20\,\text{cm}$$

Total surface area of container = $\pi l(R + r) + \pi r^2$

$$= \left[3.14 \times 20 \times (20 + 8) + 3.14 \times 8 \times 8\right]\text{cm}^2$$

$$= (3.14 \times 20 \times 28 + 3.14 \times 8 \times 8)\,\text{cm}^2$$

$$= (1758.4 + 200.96)\,\text{cm}^2$$

$$= 1959.36\ \text{cm}^2$$

Cost of metal sheet used = $\text{Rs}\left(1959.36 \times \frac{15}{100}\right) = \text{Rs. } 293.90$

Question 5:

R = 15 cm, r = 5 cm and h = 24 cm

$$\therefore\ l = \sqrt{h^2 + (R-r)^2} = \sqrt{(24)^2 + (10)^2}\,\text{cm}$$

$$= \sqrt{576 + 100}\,\text{cm} = \sqrt{676}\ \text{cm} = 26\,\text{cm}$$

(i) Volume of bucket = $\frac{1}{3}\pi h\left(R^2 + r^2 + Rr\right)$

$$= \frac{1}{3} \times 3.14 \times 24 \times \left[(15)^2 + (5)^2 + 15 \times 5\right]$$

$$= (25.12 \times 325)\,\text{cm}^3$$

$$= 8164\ \text{cm}^3 = 8.164\ \text{litres}$$

Cost of milk = Rs. (8.164 × 20) = Rs. 163.28

(ii) Total surface area of the bucket

$$= \pi l(R + r) + \pi r^2$$

$$= (3.14 \times 26 \times 20 \times 3.14 \times 5 \times 5)\,\text{cm}^2$$

$$= 1711.3\ \text{cm}^2$$

Cost of sheet = $\text{Rs}\left(\frac{1711.3 \times 10}{100}\right) = \text{Rs. } 171.13$

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