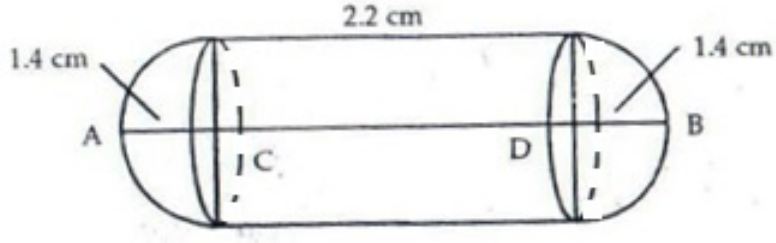
Exercise 19A

Question 8:



Diameter of cylindrical gulabjamun = 2.8 cm
Its radius = 1.4 cm
Total height of gulabjamun = AC + CD + DB = 5 cm
1.4 + CD + 1.4 = 5
2.8 + CD = 5
CD = 2.2 cm
Height of cylindrical part h = 2.2 cm
Volume of 1 gulabjamun = Volume of cylindrical part + Volume of two hemispherical parts

$$= \pi r^2 h + \frac{2}{3}\pi r^2 + \frac{2}{3}\pi r^3$$

$$= \pi r^2 h + \frac{4}{3}\pi r^3 = \pi r^2\left(h + \frac{4}{3}r\right)$$

$$= \frac{22}{7} \times 1.4 \times 1.4 \times \left(2.2 + \frac{4}{3} \times 1.4\right)$$

$$= 22 \times 0.2 \times 1.4 \times (2.2 + 1.87)$$

$$= 4.4 \times 1.4 \times 4.07 = 25.07 \text{ cm}^3$$

Volume of 45 gulabjamuns = 45 × 25.07 cm^3
Quantity of syrup = 30% of volume of gulabjamuns
= 0.3 × 45 × 25.07 = 338.46 cm^3

Question 9:

Diameter = 7cm, radius = $\frac{7}{2}$ cm = 3.5 cm

Height of cone = 14.5 cm - 3.5 cm = 11 cm

$$l = \sqrt{\left(\frac{7}{2}\right)^2 + (11)^2}\ \text{cm} = \sqrt{\frac{49}{4} + 121}\ \text{cm} = \sqrt{\frac{533}{4}}\ \text{cm}$$

$$l = \frac{23.08}{2}\ \text{cm} = 11.54\text{cm}$$

$$\text{Volume of toy} = \frac{2}{3}\pi r^3 + \frac{1}{3}\pi r^2 h$$

$$= \left[\frac{1}{3}\pi r^2 (2r + h)\right]$$

$$\text{where } r = \frac{7}{2} \text{ and } h = 11$$

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

$$= (12.83 \times 18)\,\text{cm}^3 = 230.94\text{cm}^3$$

$$\text{Total surface area of toy} = \left(2\pi r^2 + \pi r l\right)\text{cm}^2 = \pi r (2r + l)\,\text{cm}^2$$

$$= \frac{22}{7} \times \frac{7}{2} \times \left(2 \times \frac{7}{2} + 11.54\right)\text{cm}^2$$

$$= (11 \times 18.54)\,\text{cm}^2 = 203.94\ \text{cm}^2$$

Question 10:

Diameter of cylinder = 24 m

Radius of cylinder = $\frac{24}{2}$ cm = 12 cm

Height of the cylinder = 11 m

Height of cone = (16 × 11) cm = 5 cm

Slant height of the cone l = $\sqrt{r^2 + h^2} = \sqrt{144 + 25}$ m = 13 m

Area of canvas required = (curved surface area of the cylindrical part) + (curved surface area of the conical part)

$$= (2\pi rh + \pi rl)\,\text{m}^2 = \pi r (2h + l)\,\text{m}^2$$

$$= \left[\frac{22}{7} \times 12 \times (2 \times 11 + 13)\right]\text{m}^2$$

$$= \left(\frac{22}{7} \times 12 \times 35\right)\text{m}^2 = 1320\ \text{m}^2$$

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