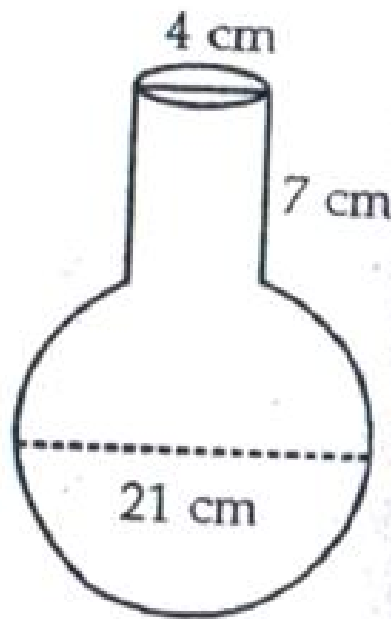




Exercise 19A

Question 16:



Diameter of spherical part of vessel = 21 cm

Its radius =  $\frac{21}{2}$  cm

Its volume =  $\frac{4}{3} \pi r^3$

$$= \frac{4}{3} \times \frac{22}{7} \times \frac{21}{2} \times \frac{21}{2} \times \frac{21}{2}$$

$$= 11 \times 21 \times 21 \text{ cm}^3 = 4851 \text{ cm}^3$$

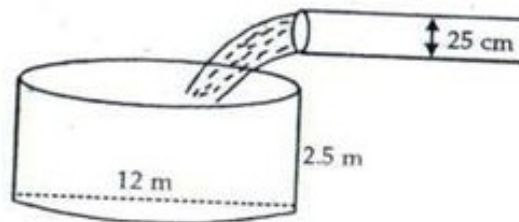
Volume of cylindrical part of vessel

$$= \pi r^2 h = \frac{22}{7} \times 2 \times 2 \times 7 \text{ cm}^3$$

$$= 88 \text{ cm}^3$$

$\therefore$  Volume of whole vessel =  $(4851 + 88) \text{ cm}^3 = 4939 \text{ cm}^3$

Question 17:



Height of cylindrical tank = 2.5 m

Its diameter = 12 m, Radius = 6 m

$$\text{Volume of tank} = \pi r^2 h = \frac{22}{7} \times 6 \times 6 \times 2.5 \text{ m}^3 = \frac{1980}{7} \text{ m}^3$$

Water is flowing at the rate of 3.6 km/hr = 3600 m/hr

Diameter of pipe = 25 cm, radius = 0.125 m

Volume of water flowing per hour

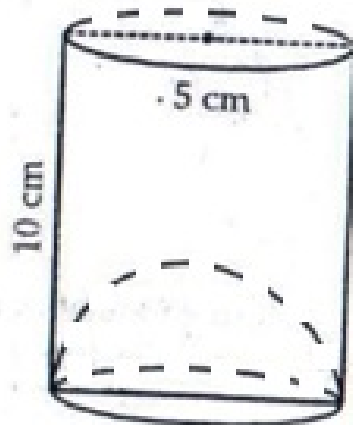
$$= \frac{22}{7} \times 0.125 \times 0.125 \times 3600 \text{ m}^3$$

$$= \frac{22 \times 3600}{7 \times 8 \times 8} \text{ m}^3 = \frac{2475}{14} \text{ m}^3$$

$$\begin{aligned} \text{Time taken to fill the tank} &= \frac{1980}{7} \div \frac{2475}{14} \text{ hr} \\ &= \frac{1980}{7} \times \frac{14}{2475} \text{ hr} = \frac{792}{495} \text{ hr} \\ &= 1.36 \text{ hr} = 1 \text{ hr } 36 \text{ min.} \end{aligned}$$

$$\text{Water charges} = \text{Rs. } \frac{1980}{7} \times 0.07 = \text{Rs. } 19.80$$

Question 18:



Diameter of cylinder = 5 cm

Radius = 2.5 cm

Height of cylinder = 10 cm

$$\text{Volume of cylinder} = \pi r^2 h \text{ cu.units} = 3.14 \times 2.5 \times 2.5 \times 10 \text{ cm}^3 = 196.25 \text{ cm}^3$$

Apparent capacity of glass = 196.25

Radius of hemisphere = 2.5 cm

Volume of hemisphere

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

$$= \frac{2}{3} \times 3.14 \times 2.5 \times 2.5 \times 2.5 \text{ cm}^3$$

$$= 32.708 \text{ cm}^3$$

$$\text{Actual capacity of glass} = (196.25 - 32.608) \text{ cm}^3 = 163.54 \text{ cm}^3$$

\*\*\*\*\* END \*\*\*\*\*

