Surface Areas and Volumes Ex.16.2 Q7

Answer :

To find the volume of the water left in the tube, we have to subtract the volume of the hemisphere and cone from volume of the cylinder.

For right circular cylinder, we have

$r = 5$ cm

$h = 9.8$ cm

The volume of the cylinder is

$$V_1 = \pi r^2 h$$
$$= \frac{22}{7} \times 5^2 \times 9.8$$
$$= 770 \text{ cm}^3$$

For hemisphere and cone, we have

$r = 3.5$ cm

$h = 5$ cm

Therefore the total volume of the cone and hemisphere is

$$V_2 = \frac{1}{3}\pi r^2 h + \frac{2}{3}\pi r^3$$
$$= \frac{1}{3} \times \frac{22}{7} \times 3.5^2 \times 5 + \frac{2}{3} \times \frac{22}{7} \times 3.5^3$$
$$= 154 \text{ cm}^3$$

The volume of the water left in the tube is

$$V = V_1 - V_2$$
$$= 770 - 154$$
$$= 616 \text{ cm}^3$$

Hence, the volume of the water left in the tube is $\boxed{V = 616 \text{ cm}^3}$

Surface Areas and Volumes Ex.16.2 Q8

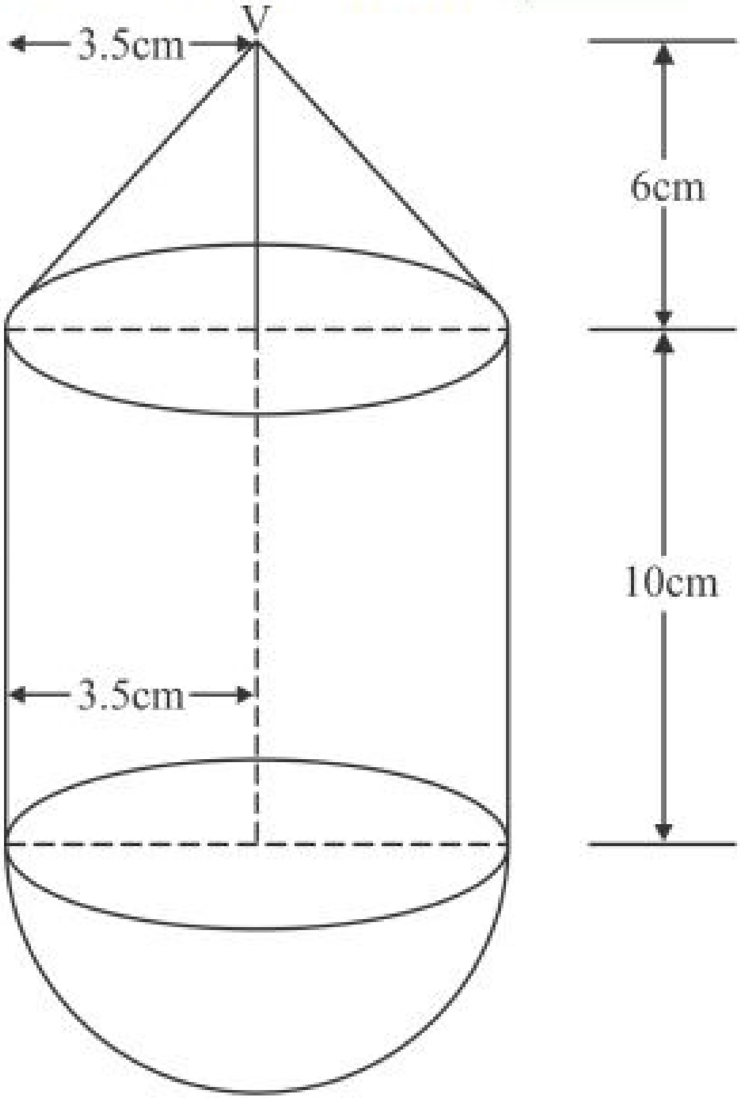
Answer :

Given that:

Radius of the cylindrical base $r = 20$ m

Height of the cylindrical portion $h_1 = 4.2$ m

Height of the conical portion $h_2 = 2.1$ m



The volume of the cylinder is given by the following formula

$$V_1 = \pi r^2 h_1$$
$$= \frac{22}{7} \times 20^2 \times 4.2$$
$$= 5280 \text{ m}^3$$

The volume of the conical portion is

$$V_1 = \frac{1}{3}\pi r^2 h_2$$
$$= \frac{1}{3} \times \frac{22}{7} \times 20^2 \times 2.1$$
$$= 880 \text{ m}^3$$

Therefore, the total volume of the circus tent is

$$V = V_1 + V_2$$
$$= 5280 + 880$$
$$= 6160 \text{ m}^3$$

Hence, the volume of the circus tent is $\boxed{V = 6160 \text{ m}^3}$

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