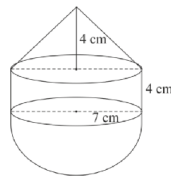


Assignment 1

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ICSE 2018 QUESTION 9 (C)

- (c) The following figure represents a solid consisting of a right circular cylinder with a hemisphere at one end and a cone at the other. Their common radius is 7 cm. The height of the cylinder and cone are each of 4 cm. Find the volume of the solid.



Solution :

Here,

Radius of cone = Radius of cylinder = Radius of hemisphere = 7 cm

Height of cone = Height of cylinder = 4 cm

Volume of the figure = Volume of cone + Volume of cylinder + Volume of hemisphere

$$\text{Volume of cone} = \frac{1}{3}\pi r^2 h \quad (1)$$

$$\text{Volume of cylinder} = \pi r^2 h \quad (2)$$

$$\text{Volume of hemisphere} = \frac{2}{3}\pi r^3 \quad (3)$$

∴ From the above equations,

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

$$\Rightarrow \text{Volume of the figure}$$

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

By substituting h and r ,

Volume of the figure

$$= \frac{2}{3}49(8 + 7)\pi$$

$$= 490\pi$$

$$\approx 1539.38 \text{ cm}^3$$