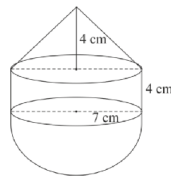


Assignment 1

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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 :

The various parameters considered in this problem are listed in Table (I)

Symbol	Formula/Value	Description
r	$7cm$	common radius
h	$4cm$	height of cone and cylinder
$V1$	$\frac{1}{3}\pi r^2 h$	Volume of cone
$V2$	$\pi r^2 h$	Volume of cylinder
$V3$	$\frac{1}{3}\pi r^3$	Volume of hemisphere
V	?	Volume of the figure

TABLE I

From the given information, the volume of the figure is equal to the sum of the volume of the cone, cylinder and hemisphere. Thus,

$$V = V1 + V2 + V3$$

$$\Rightarrow V = \frac{1}{3}\pi r^2 h + \pi r^2 h + \frac{2}{3}\pi r^3$$

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

By substituting h and r ,

Volume of the figure

$$\begin{aligned}
 &= \frac{2}{3}49(8 + 7)\pi \\
 &= 490\pi \\
 &\approx 1539.38cm^3
 \end{aligned}$$