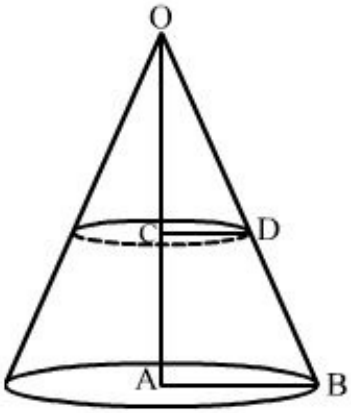
Surface Areas and Volumes Ex.16.3 Q18

Answer :



Let the height of the cone be *H*.

Now, the cone is divided into two parts by the parallel plane

$\therefore$ OC = CA

Now, In ΔOCD and OAB

$\angle OCD = OAB$ (Corresponding angles)

$\angle ODC = OBA$ (Corresponding angles)

By AA-similarity criterion $\Delta OCD \sim \Delta OAB$

$$\frac{\text{Volume of first part}}{\text{Volume of second part}} = \frac{\frac{1}{3}\pi(CD)^2(OC)}{\frac{1}{3}\pi CA\left[(AB)^2+(AB)(CD)+CD^2\right]}$$

$$= \frac{(5)^2}{\left[(10)^2+(10)(5)+5^2\right]}$$

$$= \frac{25}{100+50+25}$$

$$= \frac{25}{175}$$

$$= \frac{1}{7}$$

Surface Areas and Volumes Ex.16.3 Q19

Answer :

The slant height of the bucket is given by

$$l = \sqrt{h^2 + (R-r)^2}$$
$$= \sqrt{(24)^2 + (15-5)^2}$$
$$= \sqrt{576 + 100}$$
$$= \sqrt{676}$$
$$= 26 \text{ cm}$$

Surface area of bucket

= Curved surface area of bucket + Area of the smaller circlular base

$$= \pi l(R+r) + \pi r^2$$
$$= 3.14 \times 26 \times (15+5) + 3.14 \times 5 \times 5$$
$$= 1632.8 + 78.5$$
$$= 1711.3 \text{ cm}^2$$

Cost of metal sheet used = $\frac{10}{100} \times 1711.3 = \text{Rs } 171.13$

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