Surface Area and volume of A Right Circular cone Ex 20.2 Q12

Answer :

The largest cone that can be fitted into a cube will have its height and base diameter equal to the edge of the cube.

Here the edge of the cube is given as 14 cm.

So the dimensions of the cube with the maximum area would be 'h' = 14 cm and base radius 'r' = 7 cm.

The formula of the volume of a cone with base radius 'r' and vertical height 'h' is given as

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

Substituting the values of $r = 7$ cm and $h = 14$ cm in the above equation and using $\pi = \frac{22}{7}$

Volume = $\frac{(22)(7)(7)(14)}{(3)(7)}$

$= \frac{2156}{3}$

$= 718.66$

Hence the volume of the largest cone that can be fit into a cube with edge 14 cm is $\boxed{718.66\ \text{cm}^3}$

Surface Area and volume of A Right Circular cone Ex 20.2 Q13

Answer :

The formula of the volume of a cone with base radius 'r' and vertical height 'h' is given as

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

It is given that the diameter of the base is 28 cm. Hence the base radius 'r' = 14 cm. The volume of the cone is also given as 9856 cm^3

We can now find the height of the cone by using the formula for the volume of a cone.

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

$= \frac{(3)(9856)(7)}{(22)(14)(14)}$

$= 48$

Hence the height of the given cone is $\boxed{48\ \text{cm}}$

To find the slant height 'l' to be used in the formula for Curved Surface Area we use the following relation

Slant height, $l = \sqrt{r^2 + h^2}$

$= \sqrt{14^2 + 48^2}$

$= \sqrt{196 + 2304}$

$= \sqrt{2500}$

$= 50$

Hence the slant height l of the cone is $\boxed{50\ \text{cm}}$

The formula of the curved surface area of a cone with base radius 'r' and slant height 'l' is given as

Curved Surface Area = $\pi r l$

Now, substituting the values of $r = 14$ cm and slant height $l = 50$ cm and using $\pi = \frac{22}{7}$ in the formula of C.S.A,

Curved Surface Area = $\frac{(22)(14)(50)}{(7)}$

$= 2200$

Hence the curved surface area of the given cone is $\boxed{2200\ \text{cm}^2}$

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