Surface Area and volume of A Right Circular cone Ex 20.2 Q1

Answer :

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

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

(i) Substituting the values of $r = 6$ cm and $h = 7$ cm in the above equation and using $\pi = \frac{22}{7}$

Volume = $\frac{(22)(6)(6)(7)}{(3)(7)}$

= (22) (2) (6)

= 264

Hence the volume of the given cone with the specified dimensions is $\boxed{264 \text{ cm}^3}$

(ii) Substituting the values of $r = 3.5$ cm and $h = 12$ cm in the above equation and using $\pi = \frac{22}{7}$

Volume = $\frac{(22)(3.5)(3.5)(12)}{(3)(7)}$

= (22) (0.5) (3.5) (4)

= 154

Hence the volume of the given cone with the specified dimensions is $\boxed{154 \text{ cm}^3}$

(iii) In a cone, the vertical height 'h' is given as 21 cm and the slant height 'l' is given as 28 cm.
To find the base radius 'r' we use the relation between r, l and h.
We know that in a cone

$l^2 = r^2 + h^2$

$r^2 = l^2 - h^2$

$r = \sqrt{l^2 - h^2}$

$= \sqrt{28^2 - 21^2}$

$= \sqrt{784 - 441}$

$= \sqrt{343}$

Therefore the base radius is, $r = \sqrt{343}$ cm.

Substituting the values of $r = \sqrt{343}$ cm and $h = 21$ cm in the above equation and using $\pi = \frac{22}{7}$

Volume = $\frac{(22)(\sqrt{343})(\sqrt{343})(21)}{(3)(7)}$

= (22) (343)

= 7546

Hence the volume of the given cone with the specified dimensions is $\boxed{7546 \text{ cm}^3}$

Surface Area and volume of A Right Circular cone Ex 20.2 Q2

Answer :

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

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

(i) In a cone, the base radius 'r' is given as 7 cm and the slant height 'l' is given as 25 cm.

To find the base vertical height 'h' we use the relation between r, l and h.

We know that in a cone

$l^2 = r^2 + h^2$

$h^2 = l^2 - r^2$

$h = \sqrt{l^2 - r^2}$

$= \sqrt{25^2 - 7^2}$

$= \sqrt{625 - 49}$

$= \sqrt{576}$

$= 24$

Therefore the vertical height is, $h = 24$ cm.

Substituting the values of $r = 7$ cm and $h = 24$ cm in the above equation and using $\pi = \frac{22}{7}$

Volume $= \frac{(22)(7)(7)(24)}{(3)(7)}$

$= (22)\,(7)\,(8)$

$= 1232$

Hence the volume of the given cone with the specified dimensions is $\boxed{1232 \text{ cm}^3}$

(ii) In a cone, the vertical height 'h' is given as 12 cm and the slant height 'l' is given as 13 cm.

To find the base radius 'r' we use the relation between r, l and h.

We know that in a cone

$l^2 = r^2 + h^2$

$r^2 = l^2 - h^2$

$r = \sqrt{l^2 - h^2}$

$= \sqrt{13^2 - 12^2}$

$= \sqrt{169 - 144}$

$= \sqrt{25}$

$= 5$

Therefore the base radius is, $r = 5$ cm.

Substituting the values of $r = 5$ cm and $h = 12$ cm in the above equation and using $\pi = \frac{22}{7}$

Volume $= \frac{(22)(5)(5)(12)}{(3)(7)}$

$= 314.28$

Hence the volume of the given cone with the specified dimensions is $\boxed{314.28 \text{ cm}^3}$

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