

13.7

② Find the capacity in litres of a conical vessel with.

(i) Radius 7cm, Slant height 25cm

(ii) height 12cm, Slant height 13cm

(i) $\rightarrow$ radius = 7cm, slant height = 25cm

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

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

$$h^2 = 25^2 - 7^2$$

$$h^2 = 625 - 49$$

$$h^2 = 576$$

$$h = \sqrt{576} = 24$$

$$h = 24 \text{ cm}$$

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

$$= \frac{1}{3} \times \frac{22}{7} \times 7 \times 7 \times 24$$

$$= 22 \times 7 \times 8$$

$$= 154 \times 8$$

$$= 1232 \text{ cm}^3$$



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$$1000 \text{ cm}^3 = 1 \text{ litre}$$

$$\text{Capacity in litre} = \frac{1232}{1000} = 1.232 \text{ L}$$

Q.7 $\begin{matrix} \text{height} \\ \text{radius} = 12 \end{matrix}$, slant height = 13 cm

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

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

$$r^2 = 13^2 - 12^2$$

$$r^2 = 169 - 144$$

$$r^2 = 25$$

$$r = \sqrt{25}$$

$$r = 5 \text{ cm}$$

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

$$= \frac{1}{3} \times \frac{22}{7} \times 5 \times 5 \times 12$$

$$= \frac{22 \times 25 \times 4}{7}$$

$$= \frac{2200}{7} \text{ cm}^3$$

$$V = \frac{2200}{7} \div 1000$$

$$= \frac{2200}{7} \times \frac{1}{1000} = \frac{22}{70} = \frac{22}{7} \times \frac{1}{10}$$

$$= \frac{3.14}{10} = 0.314 \text{ litres.}$$

① Find the volume of the right circular cone with

(i) radius 6 cm, height 7 cm

(ii) radius 3.5 cm, height 12 cm.

→ (i) volume of cone = $\frac{1}{3} \times \pi r^2 h$

$$= \frac{1}{3} \times \frac{22}{7} \times 6 \times 6 \times 7$$

$$= 22 \times 2 \times 6$$

$$= 44 \times 6$$

$$= 264 \text{ cm}^3$$



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ii) volume of cone = $\frac{1}{3} \pi r^2 h$

$$= \frac{1}{3} \times \frac{22}{7} \times 3.5 \times 3.5 \times 12$$
$$= 154 \text{ cm}^3$$

③ The height of a cone is 15 cm.
If its volume is 1570 cm³, find
the radius of the base.
($\pi = 3.14$)

③ here, $h = 15$, volume $= 1570 \text{ cm}^3$
 $\pi = 3.14$

$$= \frac{1}{3} \pi r^2 h = 1570$$

$$= \frac{1}{3} \times 3.14 \times r^2 \times 15 = 1570$$



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$$r^2 = \frac{1570 \times 31}{3.14 \times 155}$$

$$r^2 = \frac{314}{3.14 \times 5}$$

$$r^2 = \frac{314 \times 100}{3.14 \times 100}$$

$$r^2 = \frac{100}{3.14}$$

$$r = \sqrt{100}$$

$$r = 10 \text{ cm}$$

⑥ A conical pit of top diameter 3.5m is 12m deep. What is its capacity in kilolitres?

→ here, $d = 3.5\text{m}$ & $r = \frac{3.5\text{m}}{2}$, $h = 12\text{m}$

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

$$= \frac{1}{3} \times \frac{22}{7} \times 1.75 \times 1.75 \times 12$$

Sulekha

$$= 38.5 \text{ m}^3$$

$$= 38.5 \text{ m}^3 = 38.5 \text{ kl} \quad (\text{m}^3 = \text{kl})$$