

[Ans 21]

Length of tank = 150m

breadth = 100m

height of water in tank = 7m

$$\begin{aligned}\text{Volume of water in tank} &= l \times b \times h \\ &= 150 \times 100 \times 7 \text{ m}^3 \\ &= 105000 \text{ m}^3\end{aligned}$$

Cross-section of rectangular pipe

$$= 5 \text{ dm} \times 3.5 \text{ dm}$$

$$= \frac{5}{10} \text{ m} \times \frac{3.5}{10} \text{ m}$$

Length of water flow

$$= \frac{\text{Volume of water}}{\text{Area of cross-section}}$$

$$= \frac{105000 \times 100 \times 10}{5 \times 3.5} \text{ m}$$

$$= \frac{105000 \times 100 \times 10}{5 \times 35} \text{ m}$$

$$= 600000 \text{ m}$$

$$= \frac{600000}{1000}$$

$$= 600 \text{ km}$$

Speed of water flow = 15 km/hr

$$\text{Time taken} = \frac{600}{15}$$

$$= 40 \text{ hr}$$

[Ans 22] Length of water tank = 25 m
height = 7.5 m

Volume of water taken = 540 m³

height of water level = 1.8 m

[i] width of the tank = b

Volume of water = $l \times b \times h$

$$540 = 25 \times b \times 1.8$$

$$b = \frac{540}{25 \times 1.8}$$

$$= \frac{540 \times 10}{25 \times 1.8}$$

$$= 12 \text{ m}$$

[ii] Volume of the tank = $l \times b \times h$

$$= 25 \times 12 \times 7.5 \text{ m}^3$$

$$= 2250 \text{ m}^3$$

[Ans 23] Length of swimming pool = 30m
breadth = 12m

Depth of its end = 1.5m and 3.5m

$$\begin{aligned}\text{Volume of water} &= \left[\frac{1}{2} (1.5 + 3.5) \times 30 \right] \times 12 \text{ m}^3 \\ &= \frac{1}{2} \times 5 \times 30 \times 12 \text{ m}^3 \\ &= 900 \text{ m}^3\end{aligned}$$

Capacity of water in litres

$$= 900 \times 1000 \text{ litres}$$

$$[1 \text{ m}^3 = 1000 \text{ li}]$$

$$= 900000 \text{ litres}$$

[Ans 24]

From C, Draw $CF \parallel AB$

$$\text{then } CF = AB = 13 \text{ cm}$$

$$AF = CB = 8 \text{ cm}$$

$$EF = EA - FA$$

$$= 12 - 8$$

$$= 4 \text{ cm}$$

[1] Area of figure ABCDE (cross-section)

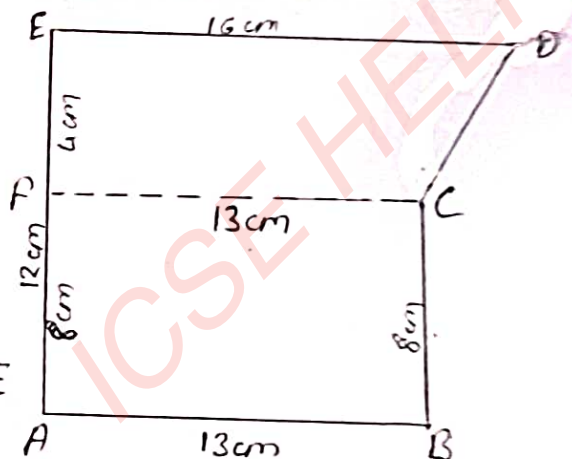
= area of rectangular ABCF +
area of trapezium FCDE

$$= 13 \text{ cm} \times 8 \text{ cm} + \frac{1}{2} (13 + 16) \times 4 \text{ cm}^2$$

$$= 104 + 29 \times 2$$

$$= 104 + 58$$

$$= 162 \text{ cm}^2$$



[ii]

$$\begin{aligned}\text{Length of the piece} &= 2\text{m} \\ &= 200\text{cm}\end{aligned}$$

$$\begin{aligned}\text{Volume of the metal piece} &= \text{Area} \times \text{Length} \\ &= 162 \times 200\text{cm}^3 \\ &= 32400\text{cm}^3 \\ &= \frac{32400}{100 \times 100} \\ &= 3.24\text{m}^3\end{aligned}$$

[iii]

$$\text{Weight of } 1\text{cm}^3 \text{ metal} = 6.5\text{g}$$

$$\begin{aligned}\text{Total weight of the metal piece} &= 32400 \times 6.5\text{g} \\ &= 210600\text{g} \\ &= 211\text{Kg (Approx)}\end{aligned}$$

[Ans 25]

[i] Area of the cross-section which is in form of trapezium

$$= \frac{1}{2} (1.9\text{m} + 0.9) \times 5\text{m}$$

$$= \frac{1}{2} \times 2.8 \times 5\text{m}$$

$$= 7\text{m}^2$$

[ii] Length of the cross-section = 20m

$$\text{Volume} = \text{Area} \times \text{Length}$$

$$= 7 \times 20$$

$$= 140\text{m}^3$$

[Ans 26]

Side of square plate = x cm

Thickness = 1 mm

Total weight = 5.44 Kg

Weight of $1 \text{ cm}^3 = 8.5 \text{ g}$

Total volume of the plate

$$= \frac{5.44 \times 1000}{8.5} \text{ cm}^3$$

$$= 640 \text{ cm}^3$$

According to the condition

$$x \times x \times \frac{1}{10} = 640$$

$$\Rightarrow x^2 = 6400$$

$$\Rightarrow x = \sqrt{6400}$$

$$= 80 \text{ cm}$$

[Ans 27]

Area of cross-section of rectangular pipe = 5.4 cm^2

Speed of water pumped out = 27 kmph

Time = 1 min

Length of water flow = $\frac{27}{60} \times 1000 \text{ m}$
 $= 450 \text{ m}$

Volume of water = Area $\times$ Length

$$= 450 \times \frac{5.4}{100 \times 100} \text{ m}^3$$

$$= \frac{450 \times 54}{100 \times 100 \times 100} \text{ m}^3$$

$$= \frac{24300}{100000} \text{ m}^3$$

$$= \frac{243}{1000} \text{ m}^3$$

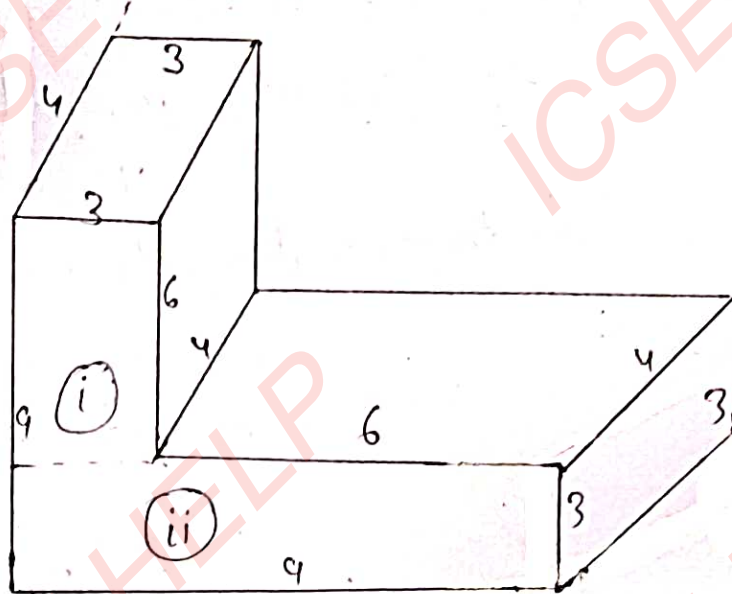
Volume of water in litres

$$= \frac{243}{1000} \times 1000$$

$$[1 \text{ m}^3 = 1000 \text{ litres}]$$

$$= 243 \text{ litres}$$

[Ans 28]



In the figure, where dimensions are

(i) $(2 \times 6 \times 3) \text{ cm}$

(ii) $(4 \times 3 \times 9) \text{ cm}$

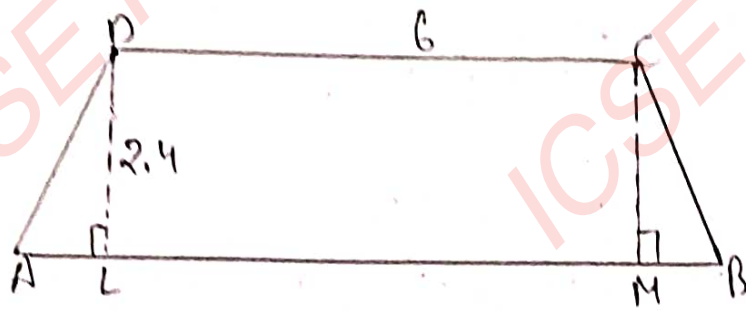
Total volume of solid

$$= (4 \times 6 \times 3) \text{ cm}^3 + (4 \times 3 \times 9) \text{ cm}^3$$

$$= 72 + 108$$

$$= 180 \text{ cm}^3$$

[Ans 29]



[i] The cross-section of a tunnel is trapezium shaped ABCD in which -

$$AB = 8\text{m}, DC = 6\text{m}$$

$$AL = BM.$$

Height is 2.4m
Length is 40m

[ii] Area of floor of the given tunnel = $l \times b = 40 \times 8$
 $= 320\text{m}^2$

Rate of cost of paving = Rs. 16 per m^2

$$\text{Total Cost} = 320 \times 16 = \text{Rs. } 5120$$

[11]

$$AL = BM = \frac{8.6}{2} = \frac{2}{2} = 1m$$

in right $\triangle ADL$,

$$AD^2 = AL^2 + DL^2$$

$$= (1)^2 + (2 \times 4)^2 = 1 + 5.76 = 6.76 = (2.6)^2$$

$$AD = 2.6m$$

Perimeter of cross section of tunnel =

$$8 + 2.6 + 2.6 + 6$$

$$= 19.2m$$

Surface area of the tunnel

$$= 19.2 \times 40 - 40 \times 8$$

$$= 768 - 320 = 448m^2$$

Rate of
Painting = Rs. 5 per m^2

$$\text{Total Cost. of painting} = Rs. 5 \times 448 = Rs. 2240$$

X - The End - X