Surface Areas and Volumes Ex.16.1 Q38

Answer :

The dimension of the cuboid is $11\text{cm}\times 10\text{cm}\times 7\text{cm}$. Therefore, the volume of the cuboid is

$$V_1 = 11\times 10\times 7 = 770 \text{ cm}^3$$

The radius and thickness of each coin are $\frac{1.75}{2} = 0.875$ cm and 2mm = 0.2cm respectively. Therefore, the volume of each coin is

$$V_2 = \pi\times(0.875)^2\times 0.2 \text{ cm}^3$$

Since, the total volume of the melted coins is same as the volume of the cuboid; the number of required coins is

$$\begin{aligned}\frac{V_1}{V_2} &= \frac{770}{\pi\times(0.875)^2\times 0.2}\\ &= \frac{770\times 7}{22\times(0.875)^2\times 0.2}\\ &= 1600\end{aligned}$$

Surface Areas and Volumes Ex.16.1 Q39

Answer :

The inner radius of the well is 4m and the height is 14m. Therefore, the volume of the Earth taken out of it is

$$V_1 = \pi\times(4)^2\times 14 \text{ m}^3$$

The inner and outer radii of the embankment are 4m and 4+3=7m respectively. Let the height of the embankment be *h*. Therefore, the volume of the embankment is

$$V_2 = \pi\times\left\{(7)^2-(4)^2\right\}\times h \text{ m}^3$$

Since, the volume of the well is same as the volume of the embankment; we have

$$V_1 = V_2$$

$$\Rightarrow \pi\times(4)^2\times 14 = \pi\times\left\{(7)^2-(4)^2\right\}\times h$$

$$\Rightarrow h = \frac{(4)^2\times 14}{33}$$

$$\Rightarrow h = 6.78 \text{ m}$$

Hence, the height of the embankment is $\boxed{6.78 \text{ m}}$

Surface Areas and Volumes Ex.16.1 Q40

Answer :

The canal is 1.5 m wide and 6 m deep. The water is flowing in the canal at 10 km/hr. Hence, in 30 minutes, the length of the flowing standing water is

$$\begin{aligned}&= 10\times\frac{30}{60} \text{ km}\\ &= 5 \text{ km}\\ &= 5000 \text{ m}\end{aligned}$$

Therefore, the volume of the flowing water in 30 min is

$$V_1 = 5000\times 1.5\times 6 \text{ m}^3$$

Thus, the irrigated area in 30 min of 8 cm=0.08 m standing water is

$$\begin{aligned}&= \frac{5000\times 1.5\times 6}{0.08}\\ &= \boxed{562500 \text{ m}^2}\end{aligned}$$

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