



Surface Area and volume of A Right Circular cylinder Ex 19.2 Q23

Answer :

Given data is as follows:

Diameter of cylinder = 56 cm

Dimensions of rectangular block = 32 cm × 22 cm × 14 cm

We have to find the raise in the level of water in the cylinder.

First let us find the radius of the cylinder. Diameter is given as 56 cm. Therefore,

$$r = 28 \text{ cm}$$

We know that the raise in the volume of water displaced in the cylinder will be equal to the volume of the rectangular block.

Let the raise in the level of water be h . Then we have,

Volume of cylinder of height h and radius 28 cm = Volume of the rectangular block

$$\frac{22}{7} \times 28 \times 28 \times h = 32 \times 22 \times 14$$

$$h = 4 \text{ cm}$$

Therefore the raise in the level of water when the rectangular block is immersed in the cylinder is 4 cm.

Surface Area and volume of A Right Circular cylinder Ex 19.2 Q24

Answer :

Given data is as follows:

Internal diameter = 10.4 cm

Thickness of the metal = 8 mm

Length of the pipe = 25 cm

We have to find the volume of the metal used in the pipe.

We know that,

$$\text{Volume of the hollow pipe} = \pi(R^2 - r^2)h$$

Given is the internal diameter which is equal to 10.4cm. Therefore,

$$r = \frac{10.4}{2}$$

$$r = 5.2 \text{ cm}$$

Also, thickness is given as 8 mm. Let us convert it to centimeters.

$$\text{Thickness} = 0.8 \text{ cm}$$

Now that we know the internal radius and the thickness of the pipe, we can easily find external radius ' R '.

$$R = 5.2 + 0.8$$

$$R = 6 \text{ cm}$$

Therefore,

$$\text{Volume of metal in the pipe} = \frac{22}{7} \times (6^2 - 5.2^2) \times 25$$

$$= 704 \text{ cm}^3$$

Therefore, the volume of metal present in the hollow pipe is 704 cm³

Surface Area and volume of A Right Circular cylinder Ex 19.2 Q25

Answer :

Given data is as follows:

$$r = 0.75 \text{ cm}$$

$$\text{Water flow rate} = 7 \text{ m/sec}$$

$$\text{Time} = 1 \text{ hour}$$

We have to find the volume of water the flows through the pipe for 1 hour.

Let us first convert water flow rate from m/sec to cm/sec, since radius of the pipe is in centimeters.

We have,

$$\text{Water flow rate} = 7 \text{ m/sec}$$

$$= 700 \text{ cm/sec}$$

Volume of water delivered by the pipe is equal to the volume of a cylinder with $h=7$ m and $r = 0.75$ cm. Therefore,

$$\text{Volume of water delivered in 1 second} = \frac{22}{7} \times 0.75 \times 0.75 \times 700$$

We have to find the volume of water delivered in 1 hour which is nothing but 3600 seconds.

Therefore, we have

$$\text{Volume of water delivered in 3600 seconds} = \frac{22}{7} \times 0.75 \times 0.75 \times 700 \times 3600$$

$$= 4455000 \text{ cm}^3$$

We know that $1000 \text{ cm}^3 = 1 \text{ liter}$

Therefore,

$$\text{Volume of water delivered in 1 hour} = 4455 \text{ liters}$$

Therefore, volume of water delivered by the pipe in 1 hour is equal to 4455 liters.

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