



Surface Areas and Volumes Ex.16.2 Q15

Answer :

We have to find the volume of cork dust filled between the two vessels.

Radius of outer vessel (r_2) = 8 cm

Radius of inner vessel (r_1) = 7 cm

Height of the cylinder (h) = 42 cm

So, volume of cork dust filled between the two vessels,

$$= \pi h (r_2^2 - r_1^2)$$

$$= (3.14)(42)(64 - 49)$$

$$= 1978.2 \text{ cm}^2$$

$$= \boxed{1980 \text{ cm}^3}$$

Volume of cork dust filled between the two vessels is 1980 cm^3 .

Surface Areas and Volumes Ex.16.2 Q16

Answer :

We have to find the mass of the roller.

Radius of inner cylinder (r_1) = 27 cm

Radius of outer cylinder

$$(r_2) = (27 + 9) \text{ cm}$$

$$= 36 \text{ cm}$$

Length of the cylinder (h) = 100 cm

So, volume of iron,

$$= \pi h (r_2^2 - r_1^2)$$

$$= (3.14)(100)(1296 - 729)$$

$$= 178038 \text{ cm}^3$$

It is given that, 1 cm^3 of iron has a mass of 7.8 gm.

So the mass of iron used,

$$= (178038)(7.8) \text{ gm}$$

$$= 1388696.4 \text{ gm}$$

$$= \boxed{1388.7 \text{ kg}}$$

Surface Areas and Volumes Ex.16.2 Q17

Answer :

We have to find the inner surface area of a vessel which is in the form of a hemisphere mounted by a hollow cylinder.

Radius of hemisphere and cylinder (r) = 7 cm

Total height of vessel ($r + h$) = 13 cm

So, the inner surface area of a vessel,

$$\begin{aligned} &= 2\pi r(r + h) \\ &= 2\left(\frac{22}{7}\right)(7)(13) \text{ cm}^2 \\ &= \boxed{572 \text{ cm}^2} \end{aligned}$$

Surface Areas and Volumes Ex.16.2 Q18

Answer :

We have to find the total surface area of a toy which is a cone surmounted on a hemisphere.

Radius of hemisphere and the base of the cone (r) = 3.5 cm

Height of the cone,

$$\begin{aligned} (l) &= (15.5 - 3.5) \text{ cm} \\ &= 12 \text{ cm} \end{aligned}$$

So, total surface area of toy,

$$\begin{aligned} &= \pi r(l + 2r) \\ &= \left(\frac{22}{7}\right)(3.5)(12 + 7) \text{ cm}^2 \\ &= \boxed{209 \text{ cm}^2} \end{aligned}$$

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