Surface Areas and Volumes Ex.16.1 Q32

Answer :

The radius of the right circular cylinder is 7cm and the height is 14cm. Therefore, the radius of the largest sphere curved out from the cylinder is the minimum of the radius and half the height of the cylinder, which is 7cm. Therefore, the volume of the sphere is

$$V=\frac{4}{3}\pi\times(7)^3$$
$$=1437.33 \text{ cm}^3$$

Surface Areas and Volumes Ex.16.1 Q33

Answer :

The radius of the copper sphere is 3cm. Therefore, the volume of the copper sphere is

$$V=\frac{4}{3}\pi\times(3)^3 \text{ cm}^3$$

The copper sphere is melted to produce a right circular cone. The height of the right circular cone is 3cm. Let the base-radius of the right circular cone is *r*. Then, the volume of the right circular cone is

$$V_1=\frac{1}{3}\pi\times(r)^2\times 3$$
$$=\pi\times r^2 \text{ cm}^3$$

Since, the sphere is melted to recast the cone; the volumes of the sphere and the cone are equal. Hence, we have

$$V=V_1$$
$$\Rightarrow \frac{4}{3}\pi\times(3)^3=\pi\times r^2$$
$$\Rightarrow 4\times(3)^2=r^2$$
$$\Rightarrow r=2\times 3$$
$$\Rightarrow r=6$$

Hence, the base-radius of the right circular cone is 6 cm.

Surface Areas and Volumes Ex.16.1 Q34

Answer :

The area of the base of the cuboid is 160 cm^2. After immersing three identical spheres the level of the water is increased by 2 cm. Therefore, the volume of the increased water is

$$V=160\times 2 \text{ cm}^3$$

Let the radius of each of the spheres is *r* cm. Then, the volume of each of the sphere is

$$V_1=\frac{4}{3}\pi\times(r)^3 \text{ cm}^3$$

The total volume of the three spheres is

$$V_2=3\times\frac{4}{3}\pi\times(r)^3=4\pi\times(r)^3 \text{ cm}^3$$

Since, the volume of the increased water is equal to the total volume of the three spheres; we have

$$V_2=V$$
$$\Rightarrow 4\pi\times(r)^3=160\times 2$$
$$\Rightarrow r^3=\frac{320\times 7}{4\times 22}$$
$$\Rightarrow r^3=25.45$$
$$\Rightarrow r=2.94$$

Hence, the radius of each of the sphere is 2.94 cm.

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