SURFACE AREAS AND VOLUMES

SPHERE AND HEMISPHERE

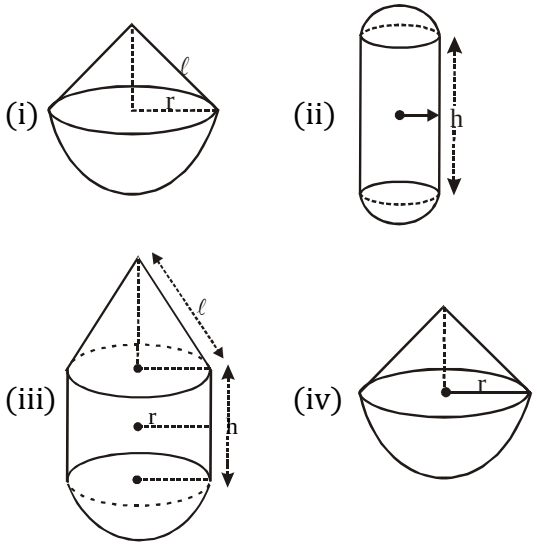
EXERCISE

Q.1 Find the total surface area of the hemisphere of radius 20 cm. (Take $\pi = 3.14$).

Q.2 The area of the flat surface of a hemisphere is 154 cm^2. Find its total surface area.

Q.3 The radius of a spherical balloon increases from 10 cm to 15 cm as air is being pumped into it. Find the ratio of surface areas of the balloon in the two cases.

Q.4 Find the formula for the total surface area of each figure given bellow :



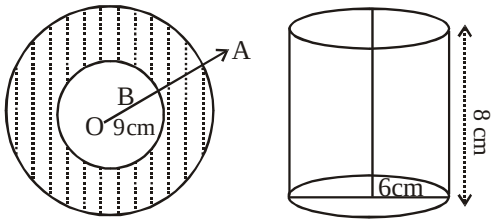
Q.5 The radius of a sphere increases by 25%. Find the percentage increase in its surface area.

Q.6 The diameter of a solid metallic ball is 8.4 cm. Find its mass, if density of its material is 6.8 gm per cm^3.

Q.7 The radii of two spheres are in the ratio 3 : 2. Find the ratio between their volumes.

Q.8 Three solid spheres of radii 1 cm, 6 cm and 8 cm are melted and recasted into a single sphere. Find the radius of the sphere obtained.

Q.9 A spherical shell of lead, whose external diameter is 18 cm, is melted and recast into a right circular cylinder, whose height is 8 cm and diameter 12 cm. Find the internal diameter of the shell.



Q.10 The radius of the internal and external surface of a metallic spherical shell are 3 cm and 5 cm respectively. It is melted and recast into a solid right circular cylinder of height $10\frac{2}{3}$ cm. Find the diameter of the base of the cylinder.

ANSWER KEY

1. 3768 cm^2

2. 462 cm^2

3. 4 : 9

4. (i) $2\pi r^2 + \pi r\lambda = \pi r\,(2r + \lambda)$

(ii) $2 \times 2\pi r^2 + 2\pi rh = 2\pi r\,(2r + h)$

(iii) $2\pi r^2 + 2\pi rh + \pi r\lambda = \pi r\,(2r + 2h + \lambda)$

(iv) $\pi r\left(2r+\sqrt{h^2+r^2}\right)$

5. 56.25%

6. 2.111 kg (App.)

7. 27 : 8

8. R = 9 cm.

9. 16 cm

10. 7 cm