Chapter 13

Surface Areas and Volumes

- 1. Surface Area of a Cuboid and a Cube
- 2. Surface Area of a Right Circular Cylinder
- 3. Surface Area of a Right Circular Cone
- 4. Surface Area of a Sphere
- 5. Volume of a Cuboid
- 6. Volume of a Cylinder
- 7. Volume of a Right Circular Cone
- 8. Volume of a Sphere

• Polyhedrons Shapes:

- (i) **Cube**:
 - Cube whose edge = a
 - Diagonal of Cube = $\sqrt{3}a$

Lateral Surface Area of Cube = $4a^2$

- Total Surface Area of Cube = $6a^2$
- Volume of Cube = a^3
- (ii) **Cuboid**:
 - Cuboid whose length = l, breadth = b and height = h

Diagonal of Cuboid = $\sqrt{l^2 + b^2 + h^2}$

- Lateral Surface Area of Cuboid = 2(l + b) h
- Total Surface Area of Cuboid = 2(lb + bh + hl)
- Volume of Cuboid = *l*bh
- Non-polyhedrons:

(i) **Cylinder**:

Cylinder whose radius = r, height = h Curved Surface Area of Cylinder = $2\pi rh$ Total Surface Area of Cylinder = $2\pi rh(r+h)$ Volume of Cylinder = $\pi r^2 h$

(ii) **Cone**:

Cone having height = h, radius = r and slant height = l

Slant height of Cone (*l*) = $\sqrt{r^2 + h^2}$

Curved Surface Area of Cone = πrl

Total Surface Area of Cone = $\pi r(r+l)$

Volume of Cone =
$$\frac{1}{3}\pi r^2 h$$

(iii) Sphere:

Sphere whose radius = r

Surface Area of a Sphere = $4\pi r^2$

Volume of Sphere = $\frac{4}{3}\pi r^3$

(iv) Hemisphere:

Hemisphere whose radius = r

Curved Surface Area of Hemisphere = $2\pi r^2$

Total Surface Area of Hemisphere = $3\pi r^2$

Volume of Hemisphere = $\frac{2}{3}\pi r^3$