Chapter – 16
Light

Light: The natural agent that stimulates sight and makes things visible. Light is reflected from all surfaces. It is a form of energy.

Objects that give out light on their own are called luminous objects. Objects that do not give out light on their own are called non-luminous objects. They just reflect light that falls on them. When light reflected from an object enters into our eyes, the object becomes visible to us.

Reflection of Light: Bouncing back of light after striking a shiny or polished surface, in the same medium, is called reflection.

Types of Reflection:

(i) **Regular Reflection:** When a beam of parallel light rays is incident on a smooth and plane surface, the reflected rays will also be parallel. This type of reflection is called Regular Reflection. The reflection from a plane mirror is an example of regular reflection.

(ii) **Diffused or Irregular Reflection:** When light is incident upon a rough or uneven surface, it is reflected in many directions due to presence of irregularities on that surface.

If a reflected light ray is reflected again on being incident on another surface, it is termed multiple reflections. Multiple reflections are used in periscopes. Periscopes are used in submarines, war tanks and by soldiers in bunkers to see objects that are not visible directly. In a kaleidoscope, beautiful patterns are formed due to multiple reflections.

Laws of reflection

- The angle of incidence is equal to the angle of reflection.
- Incident ray, reflected ray and the normal drawn at the point of incidence to the reflecting surface, lie in the same plane.

Lateral inversion is the effect produced by a plane mirror in reversing images from left to right. For e.g. our left hand will appear as right and vice versa.

The image formed by a plane mirror is:

- of the same size as that of the object
- left-right inverted
- erect and virtual
- formed behind the mirror at the same distance as the distance of the object in front of the mirror

Two mirrors inclined to each other give multiple images.
Sunlight, called white light, consists of seven colours.
Splitting of light into its constituent colours is known as **dispersion.**
A normal eye can see nearby and distant objects clearly.

Visually challenged persons can read and write using **Braille system**.
Visually challenged persons develop their other senses more sharply to improve their interaction with their environment.

Parts of Human Eye:
(i) **Cornea**: Transparent bulge on the front surface of the eyeball which protects the eye and helps in refraction of light.
(ii) **Iris**: Coloured diaphragm behind the cornea which controls the amount of light entering the eye.
(iii) **Pupil**: Dark hole in the middle of iris through which light enters the eye.
(iv) **Eye lens**: Transparent, crystalline structure behind pupil and iris.
(v) **Ciliary muscles**: Hole the eye lens in position and control the focal length of the eye lens.
(vi) **Retina**: Surface of the rear part of the eyeball where the light entering the eye is focused.
(vii) **Rods and Cones**: Rod cells respond to the brightness of light while cone cells respond to colours.
(viii) **Blind spot**: It is the least sensitive point where no rods and cones are present.
(ix) The space between the cornea and the eye lens is filled with **aqueous humour**.
(x) The space between the eye lens and the retina is filled with **vitreous humour**.