CHAPTER-16.
LIGHT

NOTES:

What makes things visible

- Eyes alone cannot see any object. It is only when light from an object enters our eyes that we see the object.
- The light may have been emitted by the object, or may have been reflected from all surfaces.

Laws of Reflection

- **Incident ray:** The light ray, which strikes any surfaces is called the incident ray.
- **Reflected ray:** The ray that comes back from the surface after reflection is known as the reflected ray.
- **Normal at the point of incidence**: A line drawn perpendicular to the surface at the point of incidence is called normal at the point of incidence.
- **Angle of incidence** (∠ i): The angle between the normal and incident ray is called the angle of incidence.
- **Angle of reflection** (∠r): The angle between the normal and the reflected ray is known as the angle of reflection.
- **Laws of reflection** : The two laws of reflection are as follows-
    i. The angle of incidence is always equal to the angle of reflection.
    ii. The incident ray, the normal at the point of incidence and reflected ray all lie in the same plane.
- **Lateral inversion :** In an image formed by a mirror, the left of the object appears on the right and right appears on the left. This known as lateral inversion.

Regular and Diffused Reflection

- **Diffused reflection:** When all the parallel rays reflected from a rough or irregular surface are not parallel, the reflection is known as diffused or irregular reflection.
- **Plane of incidence**: The plane that contains both the incident ray and the normal to the plane is called the plane of incidence.
- **Illuminated objects**: The objects which shine in the light of other objects are called illuminated objects.
- **Luminous object:** The objects which emits their own light are called luminous objects.
- **Periscope:** It is a device which is used to see objects which are not in the direct line of light. This is used in submarines, tanks and also by soldiers in bunkers to see things outside.
- Two mirrors inclined to each other give **multiple images.**
- Kaleidoscope: Device based on the principle of multiple reflections in inclined mirrors. Beautiful patterns are formed due to multiple reflections.
- Dispersion of light: Splitting of light into its constituent colours is known as dispersion of light.
- Sunlight known as white light consists of seven colours.

What is inside our eyes?

- Human eye.
  i. It has roughly spherical shape.
  ii. Important parts of the eye are cornea, iris, pupil, lens, retina and optic nerve.
  iii. Cornea- It is the transparent front part of the eye
  iv. Pupil- It is the small opening in the iris.
  v. Iris- It is the part of eye which give it its distinctive colour. It controls the size of pupil
  vi. Lens- it focuses light on the back of the eye called retina.
  vii. Retina- It is the site of the formation of image.
  viii. Optic nerve- It carries the image formed on retina to the brain.

- Blind spot: At the junction of optic nerve and the retina, there are no sensory cells, so no vision is possible at that spot. This is called blind spot.
- Most comfortable distance at which one can read with a normal eye is about 25cm
- Impression of an image persists for about $1/16^{th}$ of the second on retina.
- A normal eye can see nearby and distant objects clearly.
- Visually impaired persons can read and write using the Braille system.
- **Braille system:** It is the most popular resource for reading and writing for visually challenged persons developed by Louise Braille.
- There is Braille code for common languages, mathematics and scientific notation

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