LIGHT

- Form of energy that gives the sensation of vision.
- It is a transverse wave.
- Obeys the laws of reflection.
- Reflection-can be defined as bouncing back of light from a surface in the same medium.

Some Basic Concepts

- The ray which falls on any reflecting surface is called incident ray whereas the ray which bounces back from the reflecting surface is called the reflected ray.
- Normal Ray:It is the ray that is perpendicular to the reflecting surface.
- The angle formed between the incident ray and the normal at the point of incidence is called angle of incidence (<i) whereas the angle formed between the reflected ray and the normal is called the angle of reflection(<r) .

Laws of reflection

- First law – the incident ray, the reflected ray and the normal (at the point of incidence),all lie on the same plane.
- Second law- the angle of reflection [r] is always equal to the angle of incidence [i].

Types of images

- Real image- When a beam of light from an object actually meet at a point after reflection from a mirror, then the image formed is a real image. Such an image can be obtained on a screen.
- Virtual image- When a beam of light from an object appears to meet at a point after reflection, then the image is called as a virtual image. It can’t be obtained on a screen.

Characteristics of image formed by plane mirror

- The image of a real object is always virtual. Such an image cannot be taken on a screen.
- The image formed in it is always erect i.e. upside of the image is upside of the object and vice-versa.
- The size is always the same as that of the object.
- The image is as far behind the mirror, as the object is in front of the mirror.
- The image is laterally inverted i.e. the left side of the object becomes the right side of the image and vice-versa.

Spherical mirrors

- A spherical mirror is a part of a hollow sphere of glass and their reflecting surfaces are spherical.
- It is of two types-

1) Concave /Converging mirror-It is one whose reflecting surface is towards the centre of the sphere of which the mirror is a part.
2) Convex/Diverging mirror- it is the one whose reflecting surface s away from the Centre of the sphere of which the mirror is a part.

Some Definitions

- Centre of Curvature(C) :-It is the centre of the hollow sphere of glass of which the spherical mirror is a part.
- Radius of Curvature (R) :-It is the radius of the spherical glass of which the mirror is a part.
- Pole (P) :- It is the centre of the mirror (and not of the hollow sphere of glass)

Definitions continued

- Principal axis:-It is the straight line passing through the centre of curvature and pole of the spherical mirror ,produced on both sides.
- Aperture:-It is the diameter of reflecting surface of the mirror.
- Principal focus of concave mirror:-It is the point on principal axis of the mirror,on which rays of light incident on the mirror in a direction parallel to the principal axis ,actually meet after reflection from the mirror.

Definitions continued

- Principal focus of convex mirror.-It is a point on principal axis of the mirror, from which, rays of light incident on the mirror in a direction parallel to principal axis, appear to diverge after reflection from the mirror.
- Focal Length(f):-It is the distance of principal focus of the mirror from the pole of the mirror.

Assignment

- Define transverse wave.
- Draw well labelled diagram to depict laws of reflection through a mirror.
- List alternative names of concave and convex mirrors .Also give reason why they are given those names?
- Draw diagrams to show pole,radius and centre of curvature ,focal length and principal axis of both types of spherical mirrors.
- List differences between real image and virtual image.