

PHYSICS CHAPTER 5

1) List common characteristics of light?

- ❖ Common characteristics of light are:
 - ✓ Light is an invisible energy which on rebounding from the surface of matter cause sensation of vision.
 - ✓ Light travels along a straight-line path.
 - ✓ Light produces shadows, when obstructed by opaque objects. ✓ The velocity of light in vacuum is $3 \times 10^8 \text{ m/s}$.

2) Define reflection of light?

- ❖ Reflection of light is the bouncing back of light rays from a surface.

3) What are the kinds of reflection?

- ❖ There are two kinds of reflection and they are: ✓ Regular reflection or specular reflection ✓ Irregular reflection or diffused reflection 4) Define regular reflection?

- ❖ Regular (Specular) reflection is the reflection of light from a smooth surface.

5) Define irregular reflection?

- ❖ Irregular (Diffused) reflection is the reflection of light that occurs on rough surface.

6) List terms associated with reflection of light?

- ❖ Terms associated with reflection of light:
 - ✓ Mirror
 - ✓ Incident ray
 - ✓ Reflected ray
 - ✓ Point of incident

- ✓ Normal
- ✓ Angle of incident ✓ Angle of reflection

7) Define mirror?

- ❖ Mirror is a smooth and highly polished reflecting surface.

8) What are the kinds of mirror?

- ❖ There are two kinds of mirror
 - ✓ Plane mirror

✓ Curved mirror 9) Define plane mirror?

- ❖ Plane mirror is a highly polished plane surface.

10) Define curved mirror?

- ❖ Curved mirror is a highly polished curved surface.

11) What are the other names of curved mirror?

- ❖ The other names of curved mirror are spherical mirror, parabolic mirror.

12) How many surfaces have all mirrors? And what are they ?

- ❖ All mirrors have two surfaces. They are:
 - ✓ Polished surface.
 - ✓ Reflecting surface.

13) Define incident ray?

- ❖ Incident ray is a ray of light which falls on a mirror or any polished surface.

14) Define reflected ray?

- ❖ Reflected ray is a ray of light which bounces off the mirror surface after reflection.

15) What is a point of incident?

- ❖ Point of incidence is the point on the mirror surface where an incident ray strikes.

16) What is the normal?

- ❖ Normal is a perpendicular drawn on the mirror surface at the point of incidence.

17) Define angle of incident?

- ❖ Angle of incidence is the angle that the incident ray makes with the normal.

18) What is the angle of reflection?

- ❖ Angle of reflection is the angle that the reflected ray makes with the normal.

19) Define reflex angle of incident?

- ❖ Reflex angle of incident is the angle that the incident ray makes with plane mirror.

20) Define reflex angle of reflection?

- ❖ Reflex angle of reflection is the angle that the reflected ray makes with plane mirror.

21) State the laws of reflection?

- ❖ Laws of reflection
 - ✓ First law of reflection: The angle of incidence is always equal to angle of reflection. $\angle i = \angle r$
 - ✓ Second law of reflection: At the point of incidence, the incident ray, the reflected ray and the normal lie in the same plane.

22) What is the normal incidence?

- ❖ Normal incidence is when a ray of light strikes a plane mirror at an angle 90° , i.e., its path coincides with normal, the normal incidence takes place.

23) What are the characteristics of normal incidence?

- ❖ Characteristics of normal incidence:
 - ✓ As the incident ray coincides with normal, therefore, angle of incidence $\angle i$ is zero.

- ✓ As the $\angle i = \angle r$, therefore, angle of reflection $\angle r$ is zero. ✓ The incident ray of light retraces its path in opposite direction, ✓ The angle between the incidence and reflected ray is zero.

24) Define image?

- ❖ When the rays of light diverging from a point, after reflection or refraction, either actually meet at some other point or appear to meet at some other point, then that point is called image of the object.

25) What are the kinds of images?

- ❖ There can be two kinds of images:
 - ✓ Virtual image. ✓
 - Real image.

26) Define virtual image?

- ❖ When the rays of light diverging from a point, after reflection or refraction appear to diverge from another point, then the image so formed is called virtual image.

27) Define real image?

- ❖ When the rays of light diverging from a point, after reflection or refraction actually converge at some other point, then the image so formed is called real image.

28) Differentiate between virtual image and real image?

❖ The differences between virtual image and real image		
Virtual image		Real image
1	The rays of light after reflection or refraction appear to meet at some other point or appear to diverge from some other point.	The rays of light after reflection or refraction actually meet at some other point.
2	It cannot be taken on a screen.	It can always be taken on a screen.
3	It is always erect, but laterally inverted.	It is always inverted.

29) Define lateral?

- ❖ The phenomenon due to which the image of an object turns through an angle of 180° through vertical axis rather than horizontal axis, such that the right side of the image appears as left or vice versa is called **lateral**.

30) What are the characteristics of an image formed in plane mirror?

- ❖ Characteristics of an image formed in plane mirror ✓
 - Image is virtual, *i.e.*, it cannot be taken on screen.
 - ✓ Image is erect.
 - ✓ Image is of same size as the size of object. Thus, magnification of image is one
 - ✓ Here, it is important to remember that magnification is the ratio of the size of an image to the size of an object.
 - ✓ Image is laterally inverted, *i.e.*, the left side of object appears as right side of the image.
 - ✓ Image is formed as far behind the plane mirror as the object is in front of it.

31) Define spherical mirror ?

- ❖ Spherical mirror is a mirror which is made from a part of a hollow sphere.

32) Define concave mirror ?

- ❖ Concave mirror is a mirror which is polished from the outer side of a hollow sphere, such that the reflecting side is towards its hollow side.

33) Define convex mirror ?

- ❖ Convex mirror is a mirror which is polished on the hollow side of the sphere, such that the reflecting surface is towards its bulging side.

34) What is the pole ?

- ❖ Pole is the midpoint of a spherical mirror.

35) What is the center of curvature ?

- ❖ Center of curvature is the centre of the hollow sphere, of which the spherical mirror is a part.

36) What is the principle axis ?

- ❖ Principle axis is an imaginary line passing through the pole and the centre of curvature of a spherical mirror.

37) What is the linear aperture ?

- ❖ Linear aperture is the diameter of a spherical mirror
- 38) What is the principle focus ?
- ❖ Principle focus is a point on the principal axis, where a parallel beam of light after reflection, either actually meets or appears to meet.

39) Define focal length ?

- ❖ Focal length is the linear distance between the pole and the principal focus.

40) Define radius of curvature ?

- ❖ Radius of curvature is the linear distance between the pole and the centre of curvature.

41) Define focal plane ?

- ❖ Focal plane is an imaginary plane passing through principal focus, such that it is at right angles to principal axis.

42) Why the other positions are not possible for formation of the image in convex mirror ?

- ❖ Because the focus and the centre of curvature are behind the reflecting surface of the convex mirror.

43) List uses of concave mirror ?

- ❖ Uses of concave mirror are:
 - ✓ It is used as a **shaving mirror**.
 - ✓ It is used as a **reflector** in the head lights of automobiles.
 - ✓ It is used by doctors to focus a parallel beam of light on a small area.
 - ✓ Concave mirror is used as a reflector in dish type solar cookers and solar furnace.

44) List uses of convex mirror ?

- ❖ Uses of convex mirror are:
 - ✓ It is used as a rear view mirror in automobiles.
 - ✓ It is used as a reflector for street lights.