

Light - 10

- * Light : \rightarrow
- ① Light is a form of energy that enables us to see things.
 - ② Light travels in straight lines.
 - ③ Light enables us to see object from which it comes or from which it is reflected.
 - ④ Light has dual nature such that wave as well as particle.
 - ⑤ When light falls on a surface, following may happen -
 - (i) Reflection (bounces back)
 - (ii) Refraction (Passes through or bends)
 - (iii) Absorption (gets absorbed)

\Rightarrow Ray of light : \rightarrow A line drawn in the direction of propagation of light is called a ray of light.

\Rightarrow Beam of light \rightarrow A group of rays of light emitted by a source of light is called a beam of light.



A light beam has three types:-

- (a) Parallel beam \rightarrow A group of light rays parallel to each other is known as parallel beam of light.
- (b) Convergent beam \rightarrow A group of light rays meeting at a point is called convergent beam of light.

(1) (2)
(c) Divergent beam \rightarrow A group of light rays spreading out from a source of light is called divergent beam of light.

* Luminous objects \rightarrow Those objects which emit their own light are called luminous objects.

Example:- Sun, stars, electric bulb, tube light, torch, candle.

* Non-luminous object \rightarrow Those objects which do not emit light themselves but only reflect the light which falls on them are called non-luminous objects.

Example:- Flower, chair, table, book, diamond etc.

* Nature of light \rightarrow (i) Wave theory of light
(ii) Particle theory of light

(1) According to wave theory:-

(a) Light consists of electromagnetic waves which do not require a material medium for their propagation.

(b) The wavelength of visible light waves is very small ($4 \times 10^{-7} \text{ m}$ to $8 \times 10^{-7} \text{ m}$)

(c) The speed of light waves is very high ($3 \times 10^8 \text{ m per second in vacuum}$)

(ii) According to particle theory:-

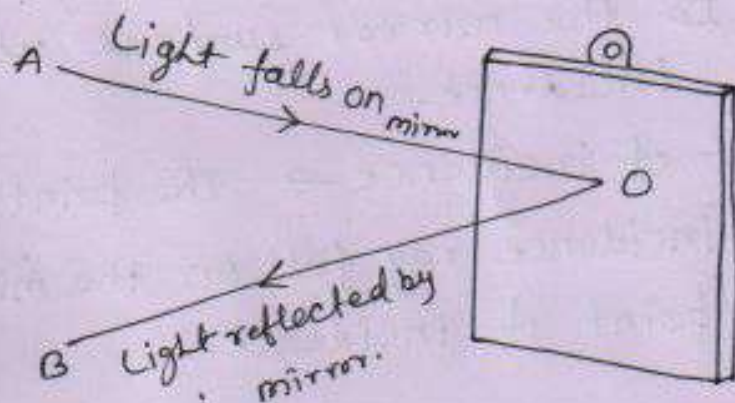
(3)

Light is composed of particles which travel in a straight line at very high speed.

* Reflection of light:- Light which goes back after reflection is called reflected light.

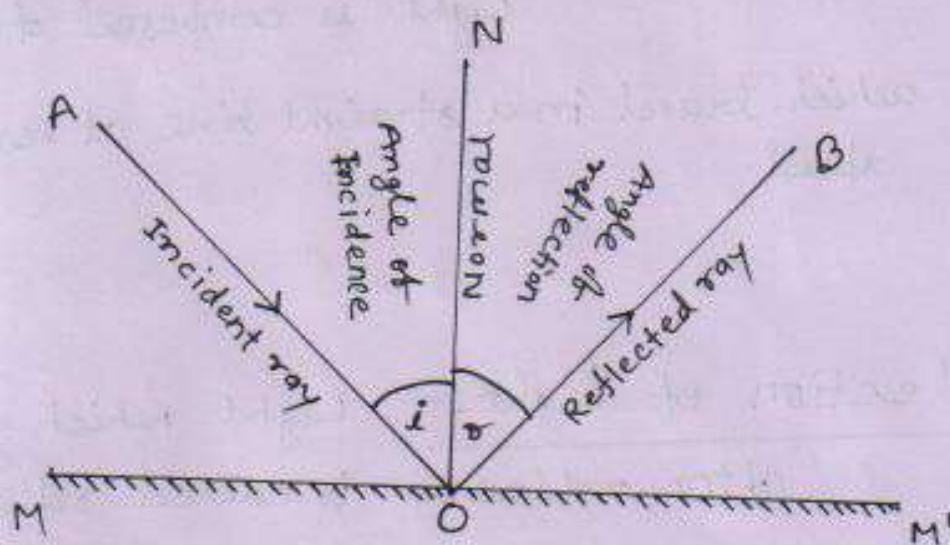
=> Bouncing back of light when it strikes on a polished surface like mirror

=> The process of sending back the light rays which fall on the surface of an object is called reflection of light.



* Reflection of light from Plane Mirror

(4)



- \Rightarrow Incident ray \rightarrow The ray of light which falls on the mirror surface is called the incident ray
- \Rightarrow Reflected ray \rightarrow The ray of light which is sent back by the mirror is called the reflected ray.
- \Rightarrow Normal \rightarrow The normal is a line at right angle to the mirror surface at the point of incidence.
- \Rightarrow Point of incidence \rightarrow The point at which the incidence ray fall on the mirror is called the point of incidence.
- \Rightarrow Angle of incidence \rightarrow The angle of incidence is the angle made by the incident ray with normal at the point of incidence. It is denoted by 'i'.
- \Rightarrow Angle of Reflection \rightarrow The angle of reflection is the angle made by the reflected ray with the normal at the point of incidence.