



Light Energy

1. What is Light?

Ans. Light is a form of energy which travels in straight line.

2. How can we see any object?

Ans: We see an object when light is falling on the object bounces off it and reaches our eyes. The light energy creates an image in the eyes, and the brain interprets it as the object seen.

3. What is called Reflection?

Ans. The phenomenon of light returning to the original medium after touching a surface is known as Reflection.

4. Reflection are how many types?

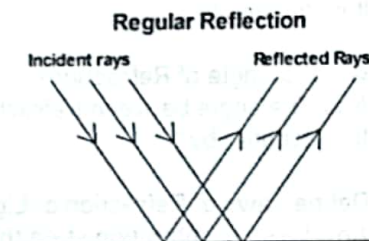
Ans. Reflection are two types:

- a. Regular Reflection
- b. Irregular or Diffused Reflection

5. What is Regular Reflection?

Ans. When a beam of parallel rays falls on a smooth and polished surface and is reflected from it, the rays remain parallel. This is called Regular Reflection.

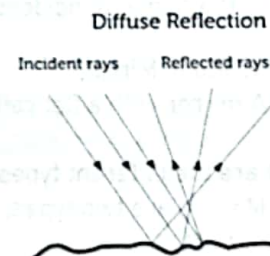
Ex: Reflection on a plain mirror is an example of Regular Reflection.



6. What is Irregular Reflection?

Ans. When a beam of parallel Rays falls on a rough and dull surface, the light rays are scattered in all direction. This is called Irregular or Diffused Reflection.

Ex: Reflection on Rough wall is an example of Irregular Reflection.



7. What is the difference between Regular and Irregular Reflection?

Ans.

Regular Reflection	Irregular Reflection
In regular reflection, all the light that falls on the reflecting surface is reflected in a definite direction.	In irregular reflection, all the light that falls on the reflecting surface is not reflected in a definite direction.
It takes place on a smooth highly polished surface.	It takes place on a rough and uneven surface.

8. What is Real Image?

Ans. An image that can be caught on a screen is known Real Image.

9. What is Virtual Image?

Ans. An image that cannot be caught on a screen is known as Virtual Image.

10. What is Incident ray?

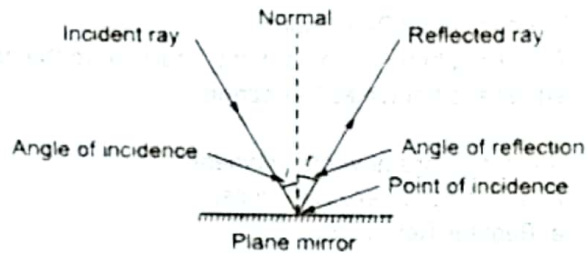
Ans. The ray of light falling on the surface separating the two media, is called Incident Ray.

11. What is Refracted Ray?

Ans. The ray of light is travelling in the other medium in the changed direction is called Refracted Ray.

12. What is Normal?

Ans. The perpendicular drawn on the surface separating the two media at the point where the incident ray strikes it i.e. at the point of incidence is called the Normal.



13. What is Angle of Incidence?

Ans. The angle between the incident ray and the normal is called Angle of Incidence. It is denoted by " i ".

14. What is Angle of Refraction?

Ans: The angle between Refracted Ray and the Normal is called Angle of Refraction. It is denoted by " r ".

15. Define Laws of Refraction of Light

Ans. Laws of refraction state that:

- The incident ray refracted ray, and the normal to the interface of two media at the point of incidence all lie on the same plane.
- The angle of incidence is equal to angle of reflection.

16. What is Plane Mirror?

Ans. A mirror with a flat reflecting surface is called Plane Mirror.

17. What are the different types of mirror?

Ans. Mirrors are two types:

- a. Convex Mirror.
- b. Concave Mirror.

18. What is Convex Mirror?

Ans. A mirror with its reflecting surface curved outwards is called Convex Mirror. It makes a parallel beam of light falling on it diverge. It is used as rear-view mirrors in vehicles.

19. What is Concave Mirror?

Ans. A mirror with its reflecting surface curved inwards is a Concave Mirror. It has the capability to converge a parallel beam of light to a point. It can form real image that can be captures on a screen.

20. What is Lateral Inversion?

Ans. The phenomenon by which left and right are interchanged is known as Lateral Inversion.

21. What are the characteristics of an image formed by a Plane Mirror?

Ans. The characteristics of an image formed by a plane mirror are

- a. The image formed by a plane mirror is erect.
- b. It is of the same size as the object.
- c. The image has its right and left sides reversed compared to the object. That is, the image is laterally inverted.
- d. The image is formed behind the mirror at the same distance as the object is in front of the mirror. i.e. the image distance and the object distance is same.
- e. The image formed by a mirror is a virtual image and cannot be captured on the screen.

22. What are the uses of Plane Mirror?

Ans. The reflection of sunlight from plane mirror is used in *Solar Cookers*. And the plane mirror is also used in *Kaleidoscope, Periscope*.

23. What is the speed of light?

Ans. Speed of Light in Vacuum is 3×10^8 m/s

Speed of Light in water is 2.25×10^8 m/s

Speed of Light in glass is 2×10^8 m/s

24. What are the causes behind Light Pollution?

Ans. Light Pollution is due to excessive use of artificial outdoor light at night including sky glow.

25. What are the effects of Light Pollutions?

Ans. Due to light pollution we cannot see the stars, Milky way at night.

Light pollution also disrupts the natural sleep- wake cycle of animals and disrupts the movement of animals at night.

It can also reduce low-light vision of eye, resulting in poor visibility at night.

26. What is Spectrum?

Ans. The band of colors are called Spectrum.

The colors are-

I. Violet [V]

II. Indigo [I]

III. Blue [B]

IV. Green [G]

V. Yellow [Y]

VI. Orange [O]

VII. Red [R]

27. What are Primary Colors?

Ans. The colors which cannot be obtained by mixing lights of the other colors are called Primary Colors

The primary colors are: Red, Green and Blue.

28. What are Secondary Colors?

Ans. Secondary Colors are the color of light obtained by mixing lights of any two primary Colors in equal proportion

Ex: Red + Green = Yellow

Red + Blue = Magenta

Blue + Green = Cyan

29. What do you mean Additive Color Mixing?

Ans. Any desired colors can be obtained by combining the three primary colors in suitable proportion. This process is called Additive Colors Mixing.

30. What are Complementary Colors?

Ans. A pair of Colors that on mixing produce white light are called Complementary Colors.

Ex: We can get White color by mixing Green and Magenta in equal amount. So Green and Magenta are complementary Colors.

31. Why can we see any object Colourful?

Ans. The colour of an opaque object is the colour of the light it reflects. The colour of a transparent object is the colour of the light it transmits or allows to pass through.

32. What happens when Light is falling on an Opaque Object?

Ans. When light is falling on an Opaque Object

- When an object reflects all the primary colours of the white light falling on it, it appears white.
- When an object absorbs all the primary colours of white light and reflects none, it appears black.
- When an object reflects on the primary colours and absorbs all other colours, it appears to be the reflected colours.
- If the object reflects two primary colours, it appears to be the secondary colour formed by those two primary colours.
- If the object reflects various component colours in different proportions, its colour is the resultant of their addition.

33. What happens when a coloured light is falling on an Opaque Object?

Ans. When a coloured light is falling on an Opaque Object it transmits same colour if the colour component is present in the light.

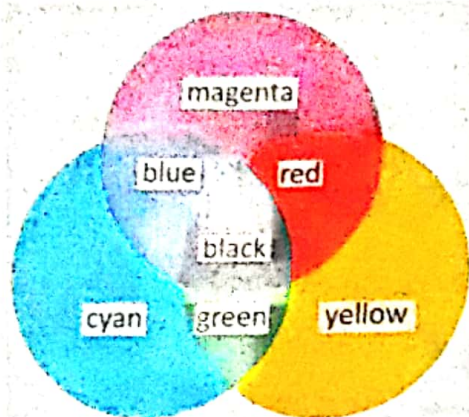
Ex: A Red Brick is viewed Red if it is seen in white (Red + Green + Blue), Yellow (Red + Green), Magenta (Red + Blue), and Red (Red) light.

A coloured object will appear black if that colour is not present in the light.

Ex: A Red Brick is viewed Black under Green Light (only Green), Blue Light (Only Blue), and Cyan Light (Green + Blue).

34. What is Filter?

Ans. A filter is a transparent sheet or plate of a particular color. It transmits that color and block all other colors.



A green filter allows only green light to pass through. A yellow filter passes yellow (Red+Green) and block blue. If two filters are combined, only the color can pass through both emerges from the combination.

35. What is Subtractive Color Mixing?

Ans. Starting with white, any desired color can be obtained by a suitable combination of Cyan, magenta and yellow filters that can pass their colors in the desired proportions. This process is called Subtractive color Mixing.

36. What are the applications of subtractive colour mixing?

Ans. Subtractive colour mixing is used in printing. An image is split into cyan, magenta, yellow and black areas. Parts in the four colours are printed one over the other on white paper to produce the final image with thousands of colours.