

LIGHT

Definition

1. **Light:** Light is a form of energy that our eyes can detect.
Ray of light that travels in a straight line is called rectilinear propagation of light.
2. **Reflection of light:** It is the bouncing back of light on a smooth reflecting surface.
3. **Mirror:** It is a shiny polished surface.
4. **Virtual Image:** An image which cannot be taken on a screen.
5. **Real Image:** An image which can be taken on a screen.
6. **Lateral Inversion:** Left side on an object appears as right side in an image and right side of an object appears as left side in the image
7. **Concave Mirror:** It is a spherical mirror whose reflecting surface is inwards.
8. **Convex Mirror:** It is a spherical mirror whose reflecting surface is outwards.

Question and Answers

1. Difference between real image and virtual image

Real Image	Virtual Image
Formed when light rays actually meet.	Formed when light rays appear to meet.
Can be viewed on the screen	Cannot be viewed on the screen
It is always inverted	It is always erect
Formed by concave mirror	Formed by concave, convex or plane mirror

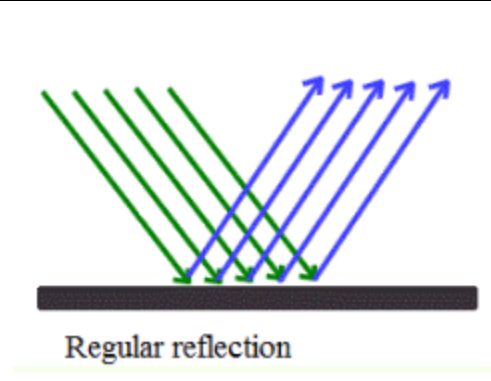
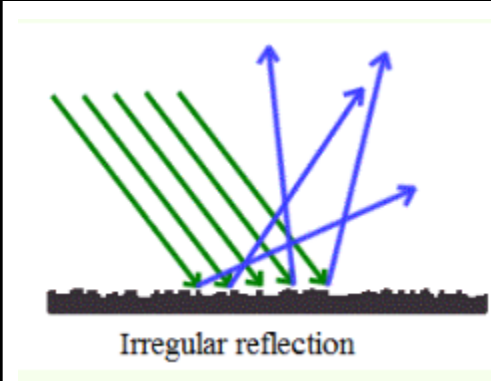
2. What is concave mirror (RV/IE/ED)

- It is polished on the outer surface.
- Reflecting surface is inwards.
- Images can be real or virtual.
- Images can be inverted or erect.
- The size of the image can be enlarged or diminished.

3. State the properties of convex mirror(UV-TAKEN)

- It is polished on the inner surface.
- Reflecting surface is outwards.
- Images are always upright and virtual.
- Images can be caught on the screen.

4. Difference between regular and irregular reflection

Regular Reflection	Irregular reflection
When parallel light rays fall on a smooth surface and reflection is in same direction	When parallel light rays fall on a rough surface and reflection is in a different direction.
 <p>Regular reflection</p>	 <p>Irregular reflection</p>

5. What is the use of convex mirror

- Convex mirrors are used in the shops to have a clear view of the inside of the shop.
- Big convex mirrors are fixed at the turnings in roads to avoid accidents.
- They are also used in the buses so that the driver can see the passengers coming downstairs.
- They are used as rear-view mirrors in cars, scooters, buses and trucks. The drivers look into the rear-view mirror (convex mirrors) to see the traffic on the road behind them.

6. You are provided with a

i) plane mirror

ii) concave mirror

iii) convex mirror

How will you distinguish between them without touching?

i) plane mirror :

- Image is the same size and upright.
- Size does not change when the object is moved.

ii) Concave mirror :

- If the object is close, the image is virtual, upright, and magnified.
- If the object is far away, the image is real, inverted, and diminished.

iii) Convex mirror:

- The image is always virtual, upright, and diminished.

7. Rear view images of bikes carry a warning message “Objects in the rear view mirror are closer than they appear” Why ?

This is a safety warning message to the driver because the vehicles appear small and far away in the mirror but they are actually close by .

8. Give 2 uses of each plane, concave and convex mirror

Plane mirrors:

- Used at homes.
- Used by barbers

Concave:

- Used in headlights of cars.
- Used by dentist.
- Used as make up mirrors and shaving mirrors.

Convex:

- They are used as rear-view mirrors in cars, scooters, buses and trucks.
- Convex mirrors are used in the shops to have a clear view of inside of the shop.

9. State 3 characteristic of image formed by a plane mirror.

- The image is virtual
- The image is of the same size as the object.
- The image is laterally inverted (left and right appear flipped).

10. What mirror is used in

- a) **Searchlight** - Concave
- b) **Side view mirror in car** - Convex
- c) **Shaving mirror** - Concave
- d) **Vigilance mirror in big ships** - Convex

11. Difference between convex and concave mirror

<u>Concave mirror</u>	<u>Convex mirror</u>
It is also called converging mirror	It is also called diverging mirror
It is polished on the outer surface	It is polished on the inner surface
Used in : car headlight, used by dentist	Used in : rear view glass in cars

Fill ups

1. An image formed by a **concave mirror** cannot be caught on the screen.
2. An image formed by a **convex mirror** is always virtual and smaller.
3. An image which is obtained on the screen is called a **real image**.
4. A virtual image larger than the object can be obtained by **concave mirror**.
5. We can see the image of an object if the light is reflected from **highly polished surface**.
6. A virtual image formed by a plane mirror is **erect**.
7. Light travels in a **straight line**
8. The light travelling towards an object is called **incident rays**.
9. The light rays that hit the object and bounce back are called **reflected rays**.
10. Two types of reflection are **regular reflection** and **irregular reflection**.
11. Reflection formed by a smooth surface is called **regular reflection**.
12. Reflection formed by a rough surface is called **irregular reflection**.
13. In **regular reflection** images are sharp and clear
14. In **irregular reflection** images are not sharp and clear
15. An image which can be obtained on the screen is called **real image**
16. An image which cannot be obtained on the screen is called a **virtual image**.
17. Virtual images are **erect**.
18. Real images are **inverted**.
19. Two types of spherical mirror are **concave mirror and convex mirror**.
20. If the outer curved surface is polished and the inner curved surface is reflected in a mirror it is called a **concave mirror**.
21. If the inner curved surface is polished and the outer curved surface is reflected in a mirror it is called **convex mirror**.
22. In a **concave mirror** the images are real, inverted and bigger.
23. In **convex mirror** the images are virtual, erect and smaller.
24. A concave mirror is also called a **converging mirror**.
25. A convex mirror is also called a **diverging mirror**.