Class – 7 – Ch – 15 Light

Short question and answer

II. Very short answer type questions

Give one word for the following.

Q.1 A mirror whose reflecting surface is the inner surface of a sphere

Ans: Concave mirror – A mirror whose reflecting surface is the inner surface of a sphere.

Q.2 A lens that is thicker at the edges than at the middle

Ans: Concave lens – A lens that is thicker at the edges than at the middle.

Q.3 An image that is upside down

Ans: Inverted image – An image that is upside down.

Q.4 A band of colours that is formed when white light is passed through a prism

Ans: Spectrum – A band of colours that is formed when white light is passed through a prism.

Q.5 The property of our eyes that makes us perceive a rotating coloured disc as white

Ans: Persistence of vision – The property of our eyes that makes us perceive a rotating coloured disc as white.

III. Short answer type questions

Q.1 Here are a few words and numbers. Write down how they will look in a plane mirror.

a. AMBULANCE b. LEFT c. 12345678 d. 8888

Ans: a. AMBULANCE → ƎƆИ∀⅃∩qW∀

(***Note:*** *This is how it is written on real ambulances so drivers can read it correctly in rear-view mirrors.*)

b. LEFT → ⊥⅁Ǝ⅃

c. 12345678 → 87654321

d. 8888 → 8888

(*Symmetrical digits like 8 look the same in a mirror.*)

Q.2 If sunlight is streaming in through a window in a room, how could we make it fall on a wall which is on the same side as the window?

Ans: Redirecting Sunlight

If sunlight is streaming in through a window, and you want to make it fall on a wall on the same side as the window:

a) Use a plane mirror to reflect the light.
b) Position the mirror so that it reflects the sunlight toward the desired wall, making use of the law of reflection.

Q.3 How can we find out if an image formed (either by a mirror or a lens) is real or virtual?

Ans: To find out whether an image is real or virtual:

a) Try to capture it on a screen:
b) Real image: Can be formed on a screen.
c) Virtual image: Cannot be projected on a screen.
d) You can also check the orientation:
e) Real images are usually inverted.
f) Virtual images are upright.
g) Use of Convex Mirrors in Cars

Q.4 Why are convex mirrors used as car wing mirrors?

a) Use of Convex Mirrors in Cars
b) To find out whether an image is real or virtual:
c) Convex mirrors are used as car wing mirrors because:
d) They provide a wider field of view than plane mirrors, allowing drivers to see more of the road and traffic behind.
e) They form virtual, upright, and diminished images, making it easier to judge the presence and movement of other vehicles.

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Long question and answer

IV. Long answer type questions

Q.1 What is the difference between the reflection from a regular surface and that form an irregular surface?

Feature	Regular Reflection	Irregular (Diffused) Reflection
Surface	Smooth and polished (e.g., mirror)	Rough and uneven (e.g., wall)
Direction of reflection	All reflected rays are parallel	Reflected rays scatter in different directions
Image formation	Forms a clear image	Does not form a clear image
Example	Plane mirror	Paper, unpolished wood

Q.2 You are given a plane mirror, convex mirror, concave mirror, convex lens and a concave lens. Give two methods by which you can form diminished images of an object and two methods by which you can form enlarged images.

Ans: To form diminished images:

a) Convex Mirror – Always forms a diminished, virtual image.

b) Concave Lens – Always forms a diminished, virtual image.

To form enlarged images:

a) Concave Mirror – Forms a real, enlarged image when the object is between the focus and center of curvature; virtual, enlarged image when the object is between the pole and focus.

b) Convex Lens – Forms a real, enlarged image when the object is between focus and 2F; virtual, enlarged image when the object is between the lens and focus.

Q.3 What is a Newton's disc? What is it used to demonstrate? Explain how.

Ans: A Newton's Disc is a circular disc divided into segments painted in the seven colours of the rainbow (VIBGYOR).

a) When the disc is rotated rapidly, it appears white to the human eye.

b) This demonstrates the concept of persistence of vision and that white light is made up of all seven colours of the visible spectrum.

c) It shows that mixing all the colours of the rainbow in the right proportions gives white light.

Activity

a) Let us understand rectilinear propagation of light with the help of the following activity.

Aim: a) To verify that light travels in a straight line

Materials needed: A flexible rubber or plastic tube/straw of length 10 inches (used for drinking cold drinks), and a light bulb/candle/ lamp

Method:

a) Hold the tube absolutely straight and point one open end to the source of light.

b) Put your eye to the other hole. What do you see?

c) Now, bend the tube and look through the hole. What do you see this time?

Observation: When the tube is held straight, the source of light can be seen. However, when the tube is bent, the source of light cannot be seen.

Conclusion: This indicates that light travels in a straight line.