Long Answer Questions

Q.1. What is rectilinear propagation of light? How will you prove it?

Ans. Light travels in a straight line. This is called rectilinear propagation of light.

Activity:

- Take a straight straw and look at the light rays through it.
- Take another straw which is bent and try to look at the light rays through it. You will observe that when the straw was straight you could see the light and when the straw was bent you could not see the light.
- This means that we cannot bend the ray of light to travel through the bent straw.
- Thus, this activity proves that light travels in a straight line.

Q.2. You are given three mirrors of different types. How will you identify each one of them?

[NCERT Exemplar]

Ans. The three different types of mirrors can be identified by forming the images.

- Plane mirror forms an erect image which is of the same size as the object. The image formed by plane mirror cannot by obtained on a screen, i.e, it is virtual.
- Concave mirror forms both real and virtual images. The image can be smaller or larger in size than the object.
- Convex mirror always produces virtual and upright images. The size of the image is always smaller than the object.

Q.3. Distinguish between the following.

Q. Real image and Virtual image

Ans.

S. No.	Real image	Virtual image
(i)	The reflected rays actually meet after reflection.	The reflected rays do not meet but appear to come from a point.
(ii)	It can be obtained on a screen.	It cannot be obtained on a screen.
(iii)	It is formed in front of the mirror.	It is formed behind the mirror.

Q. Convergent beam and Divergent beam

Ans.

S. No.	Convergent beam	Divergent beam
(i) (ii)	It is a beam of light which comes together as if to meet or join. Beams converge in convex lenses and concave mirrors.	It is a beam which proceeds in different directions from a point. Beams diverge in concave lenses and convex mirrors.

Q.4. Explain the reflection of light on white paper screen with the help of an activity.

Ans. Activity:

- Place a concave mirror fixed on a stand, on a table. Make a screen of about 15 cm × 10 cm using white paper pasted on a cardboard.
- Keep a lighted candle at a distance of 50 cm from the mirror, on a table.
- Try to obtain the image of the flame on the screen, by moving the screen till a sharp image of the flame is obtained.
- Next, move the candle towards the mirror and place it at different distances from it, so as to obtain the image on the screen.
- You will observe that the image formed by a concave mirror can be smaller or larger in size than the object or may be real or virtual.

Q.5. With the help of Newton's disc, prove that seven colours of the rainbow can be recombined and produce white light.

Ans. Activity:

- Take a circular cardboard. Split the disc into seven equal sections.
- Colour the first section with violet, the second with indigo, the third with blue, and so on in the order of VIBGYOR in an anticlockwise direction.
- Drill a suitable hole in the centre of the disc.
- Take a piece of round wood as a spindle. Cut the length as required. Glue the spindle into the hole.
- Now, spin the coloured disc very quickly. Your eyes would see all the colours at once and disc would appear to be white.