Brain International School
Vikas Puri, New Delhi

ASSIGNMENT NO. 1

SUBJECT: PHYSICS CLASS-X APRIL-MAY'2026

CHAPTER 09: LIGHT- REFLECTION AND REFRACTION

1. An optical device forms an erect image of an object placed in front of it. If the size of the image is one half that of the object, the optical device is a

   (a) concave mirror

   (b) convex mirror

   (c) plane mirror

   (d) convex lens.

2. When an object is kept within the focus of a concave mirror, an enlarged image is formed behind the mirror. This image is

   (a) real

   (b) virtual and inverted

   (c) inverted

   (d) virtual and erect

3. The magnification produced when an object is placed at a distance of 20 cm from a spherical mirror is +1/2. Where should the object be placed to reduce the magnification to +1/3?
4. A student has focused the image of an object of height 3 cm on a white screen using a concave mirror of focal length 12 cm. If the distance of the object from the mirror is 18 cm, find the values of the following:
   (i) distance of the image from the mirror.
   (ii) height of the image.
5. A concave mirror has a focal length of 20 cm. At what distance from the mirror should a 4 cm tall object be placed so that it forms an image at a distance of 30 cm from the mirror? Also calculate the size of the image formed.

For question numbers 6 and 7, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

a) Both A and R are true, and R is correct explanation of the assertion.

b) Both A and R are true, but R is not the correct explanation of the assertion.

c) A is true, but R is false.

d) A is false but R is true.

6. **Assertion**: Convex mirrors can produce both real and virtual images.
   Reason: Plane mirror always forms virtual image.
7. **Assertion:** The SI unit of power of lens is 'dioptre'.
   Reason: The power of a concave lens is positive and that of a convex lens is negative.

8. **Assertion (A):** Light travels in a straight line in a homogeneous medium.
   Reason (R): Light bends when it passes from one medium to another.

9. **Assertion (A):** The image formed by a plane mirror is always virtual and erect.
   Reason (R): The reflected rays actually meet behind the mirror.

10. **Assertion (A):** Convex lenses are used as magnifying glasses.
    Reason (R): Convex lenses diverge light rays.

11. **Assertion (A):** A convex mirror always forms a virtual, erect, and diminished image.
    Reason (R): Convex mirror diverges light rays.

12. **Assertion (A):** A concave mirror can form a real and inverted image.
    Reason (R): A concave mirror converges parallel rays of light.

13. An object is placed at 20 cm in front of a concave mirror of focal length 10 cm. Find image position.

14. Object at 30 cm, image at 15 cm in front of concave mirror. Find magnification.

15. Rahul uses a **concave mirror** while shaving. When he stands very close to the mirror, he sees a **large, erect image** of his face.

    Q1. Why does Rahul see an enlarged image?
    A. Object is beyond centre of curvature
    B. Object is at focus
    C. Object is between pole and focus
    D. Object is at infinity

    Q2. Nature of image formed is:
    A. Real and inverted
    B. Virtual and erect
    C. Real and erect
    D. Virtual and inverted

    Q3. Which mirror is used for shaving?
    A. Convex mirror
    B. Plane mirror
    C. Concave mirror
    D. None

    Q4. If Rahul moves away from the mirror, the image will:
    A. Always remain virtual
    B. Become real and inverted
    C. Disappear
    D. Become smaller and erect

16. A driver uses a **convex mirror** as a rear-view mirror in his car. He observes that vehicles behind appear smaller but more area is visible.

    Q1. Why are convex mirrors used as rear-view mirrors?
    A. They form real images
    B. They give wider field of view
    C. They enlarge objects
    D. They absorb light