

# **BRAIN INTERNATIONAL SCHOOL**

**PHYSICS ASSIGNMENT**

**CLASS X**

**july, 2024**

## **Light – Reflection & Refraction**

- Under which of the following conditions a concave mirror can form an image larger than the actual object?
  - When the object is kept at a distance equal to its radius of curvature
  - When object is kept at a distance less than its focal length
  - When object is placed between the focus and centre of curvature
  - When object is kept at a distance greater than its radius of curvature
- You are given water, mustard oil, glycerine and kerosene. In which of these media a ray of light incident obliquely at same angle would bend the most?
  - Kerosene
  - Water
  - Mustard oil
  - Glycerine
- A child is standing in front of a magic mirror. She finds the image of her head bigger, the middle portion of her body of the same size and that of the legs smaller. The following is the order of combinations for the magic mirror from the top.
  - Plane, convex and concave
  - Convex, concave and plane
  - Concave, plane and convex
  - Convex, plane and concave
- In which of the following, the image of an object placed at infinity will be highly diminished and point sized?
  - Concave mirror only
  - Convex mirror only
  - Convex lens only
  - Concave mirror, convex mirror, concave lens and convex lens
- The mirror having reflection surface curved outward
  - plane mirror
  - concave mirror
  - convex mirror
  - cylindrical mirror
- The mirror used as rear-view mirror in vehicles
  - convex mirror
  - plane mirror
  - cylindrical mirror
  - concave mirror
- The deviation of light ray from its path when it travels from one transparent medium to another transparent medium is called
  - reflection
  - refraction
  - dispersion
  - scattering

8. The image which is formed behind the mirror  
(a) real image  
(b) virtual image  
(c) blue image  
(d) partial image
9. **Assertion (A)** : The centre of curvature is not a part of the mirror. It lies outside its reflecting surface.  
**Reason (R)** : The reflecting surface of a spherical mirror forms a part of a sphere. This sphere has a centre.
10. **Assertion (A)** : A ray passing through the centre of curvature of a concave mirror after reflection, is reflected back along the same path.  
**Reason (R)** : The incident rays fall on the mirror along the normal to the reflecting surface.
11. **Assertion (A)** : Light does not travel in the same direction in all the media.  
**Reason (R)** : The speed of light does not change as it enters from one transparent medium to another.
12. **Assertion (A)** : A ray of light travelling from a rarer medium to a denser medium slows down and bends away from the normal. When it travels from a denser medium to a rarer medium, it speeds up and bends towards the normal.  
**Reason (R)** : The speed of light is higher in a rarer medium than a denser medium.
13. **Assertion (A)** : For observing traffic at back, the driver mirror is convex mirror.  
**Reason (R)** : A convex mirror has much larger field of view than a plane mirror.
14. **Assertion (A)** : Concave mirrors are used as make-up mirrors.  
**Reason (R)** : When the face is held within the focus of a concave mirror, then a diminished image of the face is seen in the concave mirror.
15. **Assertion (A)** : A person cannot see his image in a concave mirror, unless, he is standing beyond the center of curvature of the mirror.  
**Reason (R)** : In a concave mirror, image formed is real provided the object is situated beyond its focus.
16. An object is kept at 60 cm in front of a convex lens. Its real image is formed at 20 cm from the lens. Find the focal length and power of the lens.
17. The focal length of a convex lens is 20 cm. If an object of height 4 cm is placed at 30 cm from the lens, find the position, nature and size of the image.
18. The focal length of a convex lens is 20 cm. If an object of height 2 cm is placed at 30 cm from the lens, Find the magnification produced and height of the image.
19. When a pin of height 4 cm is fixed at 10 cm from a convex lens, the height of the virtual image formed is 16 cm. Find the focal length of the lens.
20. A convex lens forms a real image of pencil at a distance of 50 cm from the lens. The image formed is of the same size as the object. Find the focal length and power of the lens. At what distance is the pencil placed from the lens?