Multiple Choice Questions

1. **A plane mirror forms an image that is**
   (a) Real and inverted
   (b) Virtual and erect
   (c) Real and erect
   (d) Virtual and inverted

2. **The image formed by a plane mirror is always**
   (a) Smaller than the object
   (b) Larger than the object
   (c) Equal in size to the object
   (d) Highly magnified

3. **Which type of mirror is used as a rear-view mirror in vehicles?**
   (a) Concave mirror
   (b) Plane mirror
   (c) Convex mirror
   (d) Cylindrical mirror

4. **A concave mirror can form**
   (a) Only virtual images
   (b) Only real images
   (c) Both real and virtual images
   (d) Only enlarged images

5. **When light falls on a mirror, the bouncing back of light is called**
   (a) Refraction
   (b) Dispersion
   (c) Reflection
   (d) Scattering

6. **The point where parallel rays meet after reflection from a concave mirror is called**
   (a) Centre of curvature
   (b) Principal focus
   (c) Optical centre
   (d) Pole

7. **Which mirror always forms a diminished image?**
   (a) Plane mirror
   (b) Concave mirror
   (c) Convex mirror
   (d) Parabolic mirror

8. **A convex lens is also known as a**
   (a) Diverging lens
   (b) Converging lens
   (c) Cylindrical lens
   (d) Plano mirror

9. **The bending of light when it passes from one medium to another is called**
   (a) Reflection
   (b) Refraction
   (c) Absorption
   (d) Diffusion

10. **Which lens is used to correct short-sightedness?**
(a) Convex lens
(b) Concave lens
(c) Plane lens
(d) Cylindrical lens

Fill in the blanks :

11. The line perpendicular to the mirror surface at the point of incidence is called the _____.

12. The distance between the pole and the principal focus of a mirror is called the _____ length.

True / False

13. A convex mirror always forms a virtual and erect image.

14. A concave lens can form a real image on a screen.

Very Short Type Questions

15. What is reflection of light?

16. What is a convex lens?

Short Type Questions

17. Why are convex mirrors used as rear-view mirrors in vehicles?

18. What is lateral inversion? Explain with an example.

Essay Type Questions

19. Describe the image formation by a concave mirror for different positions of an object.

20. Explain the types of lenses and their uses in daily life.

HOTS

21. **Assertion (A):** Convex mirrors are preferred as rear-view mirrors in vehicles.
Reason (R): Convex mirrors provide a wider field of view and form erect, diminished images.
Choose the correct option:
a) Both A and R are true and R is the correct explanation of A
b) Both A and R are true but R is not the correct explanation
c) A is true but R is false
d) A is false but R is true

1. **(b)** Virtual and erect
2. **(c)** Equal in size to the object
3. **(c)** Convex mirror
4. **(c)** Both real and virtual images
5. **(c)** Reflection
6. **(b)** Principal focus
7. **(c)** Convex mirror
8. **(b)** Converging lens
9. **(b)** Refraction
10. **(b)** Concave lens
11. Normal
12. Focal
13. True
14. False
15. Reflection of light is the bouncing back of light rays when they strike a smooth surface like a mirror.
16. A convex lens is a lens that is thicker at the centre and converges parallel rays of light to a point.
17. Convex mirrors are used as rear-view mirrors because they provide a wider field of view. They form erect and diminished images, allowing the driver to see more area behind the vehicle clearly and safely.
18. Lateral inversion is the sideways reversal of an image formed by a plane mirror. For example, when we raise our right hand, the image appears to raise its left hand.
19. A concave mirror is a spherical mirror whose reflecting surface is curved inward. The nature and position of the image formed by a concave mirror depend on the position of the object with respect to the pole (P), focus (F), and centre of curvature (C) of the mirror.

1. Object at infinity
When the object is placed very far away, the rays coming from it are parallel to the principal axis. After reflection, these rays meet at the focus.
The image is formed at the focus, is real, inverted, and highly diminished.
2. Object beyond the centre of curvature (beyond C)
When the object is placed beyond C, the image is formed between C and F.
The image is real, inverted, and diminished.
3. Object at the centre of curvature (at C)
When the object is placed at C, the image is formed at C itself.
The image is real, inverted, and of the same size as the object.
4. Object between C and F
When the object lies between C and F, the image is formed beyond C.
The image is real, inverted, and enlarged.
5. Object at the focus (at F)
When the object is placed at F, the reflected rays become parallel and do not meet.
The image is formed at infinity, and it is highly enlarged, real, and inverted.
6. Object between focus and pole (between F and P)
When the object is placed between F and P, the image is formed behind the mirror.
The image is virtual, erect, and enlarged.

20. A lens is a transparent object made of glass or plastic, bounded by two surfaces, at least one of which is curved. Lenses are mainly of two types: convex lens and concave lens.

1. Convex Lens (Converging Lens)

A convex lens is thicker at the centre and thinner at the edges. It converges parallel rays of light to a point called the principal focus.

Uses of convex lens:

- Used in magnifying glasses to see small objects clearly
- Used in cameras to form images
- Used in microscopes and telescopes
- Used in spectacles to correct long-sightedness (hypermetropia)

2. Concave Lens (Diverging Lens)

A concave lens is thinner at the centre and thicker at the edges. It spreads or diverges light rays.

Uses of concave lens:

- Used in spectacles to correct short-sightedness (myopia)
- Used in peepholes of doors to see a wide area
- Used in binoculars and telescopes along with convex lenses.

21. Correct Answer: (a)

Explanation:

The assertion is true because convex mirrors are used in vehicles. The reason is also true because convex mirrors give a wider field of view and form erect, diminished images, which helps drivers see more area behind them. The reason correctly explains the assertion.