Lens

A. Choose the correct answer:

1. What is the primary function of a lens in an optical system?

- A) To absorb light
- B) To magnify objects
- C) To focus or diverge light rays
- D) To create electricity

2. Which type of lens is used in a magnifying glass?

- A) Concave lens
- B) Convex lens
- C) Cylindrical lens
- D) Plane mirror

3. What happens when a convex lens is used to focus sunlight on a piece of paper?

- A) The light disperses
- B) The paper gets burnt due to concentrated heat
- C) The light gets absorbed completely
- D) The paper becomes transparent

B. Fill in the Blanks:

- 1. A _____ lens converges light rays, while a _____ lens diverges them.
- 2. The focal length of a lens depends on its ______ and ______.
- 3. The power of a lens is measured in ______.

C. Case Study:

A student named Raj conducted an experiment using two lenses: a convex lens and a concave lens. He placed a candle at different distances from both lenses and observed the formation of images.

- When he placed the candle far from the convex lens, the image was inverted and smaller.
- When he placed the candle very close to the convex lens, the image became magnified and upright.

• The concave lens always produced a small, upright, and virtual image regardless of the candle's position.

Questions & Answers:

- 1. What kind of images did Raj observe with the convex lens at different distances?
- 2. Why does the concave lens always form a virtual image?
- 3. What happens to the image formed by the convex lens when the object is placed at twice the focal length?
- 4. How does the focal length of a lens affect its ability to form images?

D. Short Answer Questions:

- 1. What is the difference between a convex lens and a concave lens?
- 2. Why are convex lenses used in cameras and microscopes?
- 3. How does a concave lens help correct myopia (nearsightedness)?

E. Long Answer Questions:

- 1. Explain the working of a convex lens and concave lens with the help of ray diagrams.
- 2. Discuss the applications of lenses in daily life, including their use in spectacles, microscopes, and telescopes.
- 3. Describe how the human eye functions like a lens system and explain common vision defects and their corrections.