I. Multiple Choice Questions

1. Light travels in the form of:
   a) Transverse waves
   b) Longitudinal waves
   c) Particles
   d) Both a and b
2. The speed of light in a vacuum is approximately:
   a) 300,000 km/s
   b) 150,000 km/s
   c) 500,000 km/s
   d) 1,000,000 km/s
3. The phenomenon of light bending as it passes from one medium to another is called:
   a) Reflection
   b) Refraction
   c) Dispersion
   d) Diffusion
4. Which of the following colors has the longest wavelength?
   a) Red
   b) Green
   c) Blue
   d) Violet
5. When light strikes a smooth surface, it undergoes:
   a) Diffraction
   b) Reflection
   c) Refraction
   d) Dispersion
6. Which of the following is true about a concave mirror?
   a) It forms only virtual images
   b) It forms only real images
   c) It can form both real and virtual images
   d) It forms images with zero magnification
7. Which of the following is a transparent medium?
   a) Wood
   b) Air
   c) Aluminum
   d) Brick
8. What happens to light when it passes through a prism?
   a) It gets reflected
   b) It gets refracted and dispersed
   c) It gets absorbed
   d) It speeds up
9. A real image formed by a concave mirror is:
   a) Always inverted
   b) Always upright
   c) Always magnified
   d) Always virtual
10. The angle of incidence is equal to the angle of reflection. This law is known as:
    a) Law of Refraction
    b) Law of Reflection
    c) Law of Dispersion
    d) Law of Diffraction

II. Assertion and Reasoning –

a) Both Assertion and Reason are correct, and Reason is the correct explanation of Assertion.
b) Both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.
c) Assertion is correct, but Reason is incorrect.
d) Both Assertion and Reason are incorrect.

1. Assertion (A): A concave lens always forms a virtual image.
   Reason (R): A concave lens causes parallel rays to diverge.

2. Assertion (A): When light passes from air to water, it bends towards the normal.
   Reason (R): The speed of light is greater in water than in air.

III. Case-Based Questions

Case 1:

You are given a piece of glass and a prism. When you shine white light through the prism, it separates into different colors, creating a rainbow.

1. What is this phenomenon called?
2. Why does light separate into different colors?
3. How does this help us understand the nature of light?

Case 2:

You are using a magnifying glass to read a book. The image formed appears magnified.

1. What type of lens is the magnifying glass?
2. How does the lens form a magnified image?
3. What would happen if the object is placed at a different position from the focal point?