Class 8 light and vision: Reflection and refraction Solved Test Paper-02

Question 1: Define the principal focus of a concave mirror.

Solution: Light rays that are parallel to the principal axis of a concave mirror converge at a specific point on its principal axis after reflecting from the mirror. This point is known as the principal focus of the concave mirror

Question 2: The radius of curvature of a spherical mirror is 20 cm. What is its focal length?

Solution: Focal length =R/2=20cm /2 = 10cm

Question 3: Why do we prefer a convex mirror as a rear-view mirror in vehicles?

Solution: We prefer a convex mirror as a rear-view mirror in vehicles because it gives a wider field of view, which allows the driver to see most of the traffic behind him. Convex mirrors always form a virtual, erect, and diminished image of the objects placed in front of it.

Question 4: The image formed by a concave mirror is observed to be virtual, erect and larger than the object. Where should be the position of the object?

Solution: When an object is placed between the pole and focus of a concave mirror virtual, erect, and larger than the object image is formed.

Question 5: Where should an object is placed in front of a convex lens to get a real image of the size of the object?

Solution: An object is placed at the centre of curvature in front of a convex lens to get a real image of the equal size of the object at the centre of curvature.

Question 6: A spherical mirror and a thin spherical lens have each a focal length of -15 cm. The mirror and the lens are likely to be------------

Solution: Concave in nature because the focal length of a concave mirror and a concave lens are taken as negative.

Question 7: Why the stars appear to twinkle?

Solution: The twinkling of a star is due to the atmospheric refraction of star's light.

Question 8: What is the power of a plane glass plate?   **Solution:** Zero.

Question 9: An object is placed at the focus of a concave lens. Where will its image be formed?

Solution: The rays will appear to come from infinity. Therefore, a virtual image will be formed at infinity.

Question 10: What is the unit of power of a lens?

Solution: Dioptre.

Question 11: If an object is placed at a distance of 10cm in front of a plane mirror, how far would it be from its image?

Solution: The object would be at a distance of 20cm from its image.

Question 12: Name the physical quantity which remains the same when light goes from one medium to another?

Ans: Frequency of light.

Question 13: What is the focal length of a plane mirror?

Solution: Infinite.

Question 14: What is the angle of incidence, when a ray of light falls on the spherical mirror from its centre of curvature?

Ans: The angle of incidence is zero, when a ray of light falls on the spherical mirror from its centre of curvature.

Question 15: .A ray of light enters from water to glass.Refractive index of glass with respect to water is 1.12. Find absolute refractive index of water if absolute refractive index of glass is 1.5.

Solution: Taking water as "medium1" and glass as "medium2",

Absolute refractive index of water, $\eta_1 = ?$

Absolute refractive index of glass, $\eta_2 = 1.5$

$\eta_{21} = 1.12$_____(given)

$\therefore \eta_2/\eta_1 = 1.12 \quad \Rightarrow \quad \therefore \eta_1 = \eta_2/1.12 \qquad \Rightarrow \quad \therefore \eta_1 = (1.5)/(1.12) = 1.34$
Hence, absolute refractive index of water = 1.34