

CLASS X SAMPLE PAPER SCIENCE

Reflection and Refraction

Q.1) The wavelength of visible light is in the range (1 mark)

- (a) 4×10^{-7} m to 8×10^{-7} m
- (b) 4×10^7 m to 8×10^7 m
- (c) 4×10^3 m to 8×10^3 m
- (d) 2×10^{-3} m to 3×10^{-4} m

(Q.2) What is the property of image formed by a concave lens?(1mark)

(Q.3) Name the three primary colors? (1 mark)

(Q.4) For which color the refractive index of material is maximum? (1 mark)

(Q.5) What color we obtain when we mix red and green? (1 mark)

(Q.6) What happens to the light when it travels from denser to rarer medium? (1 mark)

(Q.7) Where will the image be formed when an object is placed between the pole and focus point of the mirror? (1 mark)

(Q.8) Can an enlarged image be formed by a convex mirror? (1 mark)

(Q.9) Will the focal length of an image change, when it is placed in water? (1 mark)

(Q.10) Can total internal reflection take place when light travels from rarer to denser medium? (1 mark)

(Q.11) A convex lens has a focal length of 50cm.What is its power? (1 mark)

(Q.12) An object placed at F of a convex lens will produce an image (1 mark)

(a) At F

- (b) Highly diminished
- (c) Real and Inverted
- (d) Virtual

(Q.13) Mirrors used in vehicle headlights are: (1 mark)

- (a) Concave mirrors
- (b) Convex mirrors
- (c) Plane mirrors
- (d) Any spherical mirror

(Q.14) Dispersion of light by a glass prism takes place because of (1 mark)

- (a) Difference in time period of the constituents of light.
- (b) Difference in speeds of various constituents of white light.
- (c) Scattering of light by the surface of the glass prism.
- (d) Due to total internal reflection

(Q.15) Negative value of focal length of a spherical mirror indicates that it is(1 mark)

- (a) Concave mirror
- (b) Convex mirror
- (c) Plane mirror
- (d) Convex mirror of small focal length

(Q.16) Light is a form of _____ radiation (1 mark)

- (a) Electrical
- (b) Mechanical
- (c) Longitudinal
- (d) Electromagnetic

(Q.17) A _____ image can be obtained on a screen. (1 mark)

- (a) Real
- (b) Virtual
- (c) Erect
- (d) Inverted

(Q.18) Refraction of light can take place at the boundary of (1 mark)

- (a) Transparent media
- (b) Opaque media
- (c) Any medium
- (d) Rarer medium

(Q.19) According to the laws of reflection (1 mark)

- (a) Angle $i =$ Angle r
- (b) Sine $i =$ sine r
- (c) Sine $i /$ Sine $r =$ constant
- (d) $\tan i = \tan r$

(Q.20) An object placed at F of a concave mirror will produce an image (1 mark)

- (a) At focus
- (b) Diminished
- (c) Real and Inverted
- (d) Virtual

(Q.21) An object placed at infinity of a concave mirror will produce an image (1 mark)

- (a) Behind the mirror
- (b) Diminished
- (c) Virtual and erect
- (d) Enlarge

(Q.22) An object placed at F of a concave lens will produce an image (1 mark)

- (a) On opposite side of the object
- (b) Enlarge
- (c) Virtual and erect
- (d) Real and inverted

(Q.23) An object placed at $2F$ of a convex lens will produce an image (1 mark)

- (a) At $2F$
- (b) Enlarge
- (c) Real and Inverted
- (d) Virtual

(Q.24) An object placed between F and $2F$ of a convex lens will produce an image (1 mark)

- (a) Virtual
- (b) Diminished
- (c) Real and Inverted
- (d) Erect

(Q.25) According to the laws of refraction (Snell's law) (1 mark)

- (a) Angle $i =$ Angle r
- (b) Sine $i =$ sine r
- (c) Sine $i /$ Sine $r =$ constant
- (d) $\tan i = \tan r$

(Q.26) Absolute Refractive index of a substance is (1 mark)

- (a) Speed of light in vacuum / Speed of light in the medium
- (b) Speed of light in water / Speed of light in the medium
- (c) Speed of light in the medium / Speed of light in air
- (d) Speed of light in medium/speed of light in wet

(Q.27) According to Cartesian Sign Convention (1 mark)

- (a) Object distance is always negative
- (b) Object distance is always positive
- (c) Image distance is always negative
- (d) Image distance is always positive

(Q.28) Magnification produced by a concave mirror is (1 mark)

- (a) Negative for a real image and Positive for a virtual image
- (b) Only positive
- (c) It produces no magnification
- (d) Only negative

(Q.29) A ray of light propagates from an optically denser medium to an optically rarer medium. (1 mark)

- (a) It will bend towards the normal after refraction.
- (b) It will bend away from the normal after refraction.
- (c) It will continue to go on the same path after refraction.
- (d) It will refract making an angle of refraction equal to the angle of incidence.

(Q.30) Radius of curvature of a spherical mirror (or lens) is (1 mark)

- (a) Half of its focal length
- (b) Double of its focal length
- (c) Equal to its focal length
- (d) There is no relation

(Q.31) The distance between a spherical lens and the image is – 15 cm. The lens is (1 mark)

- (a) Concave lens
- (b) Convex lens
- (c) Either of the two irrespective of the object distance
- (d) Either Concave lens or Convex lens with object between O and F

(Q.32) Power of a lens is (1 mark)

- (a) Equal to its focal length
- (b) Reciprocal of the focal length (in meters)
- (c) Square of its focal length

(d) Reciprocal of its radius of curvature

(Q.33) Lens formula is expressed as (1 mark)

- (a) $1/v - 1/u = 1/f$
- (b) $1/v + 1/u = 1/f$
- (c) $1/u - 1/v = 1/f$
- (d) $u + v = f$

(Q.34) The color of an object is determined by (1 mark)

- (a) The color of light reflected by it.
- (b) The color of light absorbed by it.
- (c) The color of light incident on it only.
- (d) The color of light transmitted by it.

(Q.35) The three primary colors are (1 mark)

- (a) Red, Blue and Green
- (b) Red, Yellow and Blue
- (c) Red, White and Blue
- (d) Violet, Green and Red

(Q.36) Convex lenses are also called (1 mark)

- (a) Converging lenses
- (b) Diverging lenses
- (c) Circular lenses
- (d) Plane lenses

(Q.37) Laws of reflection are applicable to: (1 mark)

- (a) Spherical reflecting surfaces
- (b) Plane reflecting surfaces
- (c) All types of reflecting surfaces
- (d) Spherical and plane reflecting surfaces

(Q.38) In which case the image formed by a concave mirror is of the same size as the object? (1 mark)

- (a) When object is placed at infinity
- (b) When object lies at C
- (c) When object lies at F
- (d) When object lies between C and F

(Q.39) Magnitude of magnification less than 1 indicates: (1 mark)

- (a) Size of image $>$ Size of object

- (b) Size of image = Size of object
- (c) Size of image < Size of object
- (d) Size of image is independent of size of object

(Q.40) A lens with power -4 D is a: (1 mark)

- (a) Convex lens of focal length -4 m
- (b) Convex lens of focal length -0.25 m
- (c) Concave lens of focal length -4 m
- (d) Concave lens of focal length -0.25 m

(Q.41) The refractive index of diamond is 2.42. What is the meaning of this statement? (2 Marks)

(Q.42) What do you understand by the principal focus of a concave mirror? (2 Marks)

(Q.43) Why do we prefer a convex mirror as a rear-view mirror in vehicles (2 Marks)

(Q.44) Define reflection of light. (2 Marks)

(Q.45) Find the power of a concave lens of focal length 2 m . (2 Marks)

(Q.46) Find the focal length of a convex mirror where radius of curvature is 32 cm . (2 Marks)

(Q.47) What are the uses of a concave mirror? (3 Marks)

(Q.48) What is the difference between real and virtual images? (3 Marks)

(Q.49) A doctor has prescribed a corrective lens of power $+1.5\text{ D}$. Find the focal length of the lens. Is the prescribed lens diverging or converging? (3 Marks)

(Q.50) What is refraction of light? Write a law of refraction. (3 Marks)

(Q.51) Light enters from air to glass having refraction index 1.50. What is the speed of light in the glass? The speed of light in vacuum is $3 \times 10^8\text{ ms}^{-1}$. (3 Marks)

(Q.52) An object is placed at a distance of 10 cm from a convex mirror of focal length 15 cm . Find the position and nature of the image. (5 Marks)

(Q.53) An object 5 cm in length is held 25 cm away from a converging lens of focal length 10 cm . Draw the ray diagram and find the position, size and nature of the image formed. (5 Marks)

(Q.54) An object is placed at 10cm in front of a concave mirror of focal length 15cm. Find the position, nature and size of the image.