EXERCISE # 1

SUBJECTIVE QUESTIONS

Q.1 Suppose you are in a dark room. Can you see objects in the room? Can you see objects outside the room. Explain.

Q.2 Differentiate between regular and diffused reflection. Does diffused reflection mean the failure of the laws of reflection?

Q.3 Mention against each of the following whether regular or diffused reflection will take place when a beam of light strikes. Justify your answer in each case.

(a) Polished wooden table

(b) Chalk powder

(c) Cardboard surface

(d) Marble floor with water spread over it

(e) Mirror

(f) Piece of paper

Q.4 State the laws of reflection.

Q.5 Describe an activity to show that the incident ray, the reflected ray and the normal at the point of incidence lie in the same plane.

Q.6 Fill in the blanks in the following :

(a) A person 1 m in front of a plane mirror seems to be _____ m from his image.

(b) If you touch your _____ ear with right hand in front of a plane mirror it will be seen in the mirror that your right ear is touched with _____

(c) The size of the pupil becomes _____ when you see in dim light.

(d) Night birds have _____ cones than rods in their eyes..

Q.7 Describe the construction of a kaleidoscope.

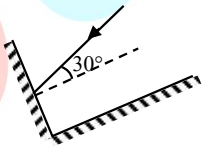
Q.8 Draw a labeled sketch of the human eye.

Q.9 Explain how you can take care of your eyes.

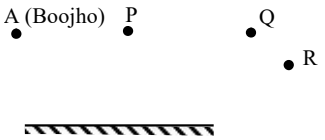
Q.10 What is the angle of incidence of a ray if the reflected ray is at an angle of 90° to the incident ray?

Q.11 How many images of a candle will be formed if it is placed between two parallel plane mirrors separated by 40 cm ?

Q.12 Two mirrors meet at right angles. A ray of light is incident on one at an angle of 30° as shown in figure draw the reflected ray from the second mirror.



Q.13 Boojho stands at A just on the side of a plane mirror as shown in figure. Can he see himself in the mirror? Also can he see the image of objects situated at P, Q and R?

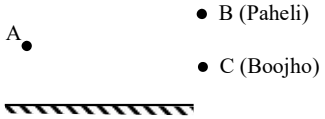


Q.14 (a) Find out the position of the image of an object situated at A in the plane mirror (Figure).

(b) Can Paheli at B see this image?

(c) Can Boojho at C see this image?

(d) When Paheli moves from B to C, where does the image of A move?



EXERCISE # 2

Single Correct Answer type Questions

REFLECTION

Q.1 A child walks towards a fixed plane mirror at a speed of 5 km h^{-1}. The velocity of the image with respect to mirror is -

(A) 5 km h^{-1} (B) –5 km h^{-1}

(C) 10 km h^{-1} (D) –10 km h^{-1}

Q.2 The letter that does not show lateral inversion-

(A) Z (B) M (C) O (D) W

Q.3 In a plane mirror, an object is 0.5 m in front of the mirror. The distance between object and image is -

(A) 0.5 m (B) 1 m

(C) 0.25 m (D) 0.75 m

Q.4 An object 0.5 m tall is in front of a plane mirror at a distance of 0.2 m. The size of the image formed is-

(A) 0.2 m (B) 0.5 m

(C) 0.1 m (D) 1 m

Q.5 A plane mirror is approaching you at 10 cm s^{-1}. Your image shall approach you with a speed of-

(A) + 10 cm s^{-1} (B) – 10 cm s^{-1}

(C) + 20 cm s^{-1} (D) – 20 cm s^{-1}

Q.6 A ray of light is incident on a plane mirror at an angle of incidence of 30°. The deviation produced by the mirror is-

(A) 30° (B) 60° (C) 90° (D) 120°

Q.7 A plane mirror reflects a pencil of light to form a real image. Then the pencil of light incident on the mirror is-

(A) parallel (B) convergent

(C) divergent (D) any of these

Q.8 Which of the following cannot produce a virtual image?

(A) Plane mirror

(B) Concave mirror

(C) Convex lens

(D) All of the above can produce a virtual image.

Q.9 How many images of himself does an observer see if two adjacent walls of rectangular room are mirror surfaced?

(A) 3 (B) 5

(C) 7 (D) 9

Q.10 The incident ray, reflected ray, and the normal at the point of incidence lie on the same

(A) line (B) point

(C) circle (D) plane

Q.11 Diffused reflection occurs if a ray of light is reflected by a

(A) concave mirror (B) plane mirror

(C) convex mirror (D) rough surface

Q.12 Sources of light are also called

(A) luminous objects

(B) non-luminous objects

(C) mirrors

(D) reflections

Q.13 When two plane mirrors are kept at 90º, we get

(A) only one image

(B) two images

(C) three images

(D) infinite number of images

Q.14 If two plane mirrors are placed parallel to each other and facing each other, then we get

(A) only one image

(B) two images

(C) three images

(D) infinite number of images

Q.15 The beautiful patterns that we obtain in a kaleidoscopes are because of
(A) dispersion
(B) spectrum
(C) multiple reflection
(D) diffused reflection

Q.16 Which of the following types of mirror is used in the solar cooker ?
(A) plane mirror (B) convex mirror
(C) concave mirror (D) None of these

Q.17 An incident ray makes an angle of 30º with a plane mirror. Then the angle of reflection is
(A) 30º (B) 60º
(C) 45º (D) None of these

Q.18 The reflection taking place from the walls of a building is called
(A) regular reflection
(B) diffused reflection
(C) multiple reflection
(D) None of these

Q.19 The reflection in which reflected rays travel as parallel beam is called
(A) regular reflection
(B) scattering
(C) multiple reflection
(D) None of these

Q.20 A ray of light which bounces off the surface of mirror is called
(A) normal (B) incident ray
(C) reflected ray (D) None of these

REFRACTION

Q.21 How will the image formed by a convex lens be affected, if the central portion of the lens is wrapped in black paper, as shown in the fig.

(A) No image will be formed
(B) Full image will be formed but it is less bright
(C) Full image will be formed but without the central portion
(D) Two images will be formed, one dur to each exposed half.

Q.22 An endoscope is employed by a physician to view the internal parts of a body organ. If is based on the principle of:
(A) refraction
(B) reflection
(C) total internal reflection
(D) dispersion

Q.23 The sun is visible to us a little before the actual sunrise and a little after the actual sunset. This is because of atmospheric.
(A) reflection (B) refraction
(C) scattering (D) diffraction

Q.24 Light of different colours propagates through air–
(A) With the velocity of air
(B) With different velocities
(C) With the velocity of sound
(D) Having the equal velocities

Q.25 A monochromatic beam of light passes from a denser medium into a rarer medium. As a result–
(A) Its velocity increases
(B) Its velocity decreases
(C) Its frequency decreases
(D) Its wavelength decreases

Q.26 When light passes from water to olive oil. The ray –
(A) Bends away from the normal
(B) Bends towards the normal
(C) Emerges undeviated
(D) Bends either away or toward the normal depending one whether, the surface separating the two media is plane or spherical.

Q.27 The wavelength of yellow line of sodium (D) in diamond, as compared to that is sugar is –
(A) Same
(B) More
(C) Less
(D) None

Q.28 The bending of light ray when passing from two optically different mediums is called
(A) Reflection (B) Refraction
(C) Polarization (D) Effervescence

Q.29 The twinkling of stars at night is caused by
(A) Reflection of light
(B) Refraction of light
(C) Dispersion of light
(D) Polarization of light

Q.30 The rainbow that appears in sky after the rains is caused by the ..... of light by water droplets present in upper atmosphere.
(A) Reflection of light
(B) Refraction of light
(C) Dispersion of light
(D) Polarization of light

Q.31 When an object is at infinity, the image by convex lens is formed at
(A) Focus
(B) Centre of curvature
(C) Beyond the centre of curvature
(D) Optical centre

Q.32 In visible spectrum, the ray of light with maximum wavelength is
(A) Violet rays (B) Green ray
(C) Blue ray (D) Red ray

Q.33 When a ray of light passes from a rare into a denser medium, its velocity
(A) Increases
(B) Decreases
(C) Remains the same
(D) None of these

Q.34 Dispersion is
(A)splitting of light into its constituent colours
(B) formation of many images
(C) formation of only two images
(D) a rainbow

Q.35 The difference in the colour of the eye is due to difference in
(A) retina (B) pupil
(C) iris (D) sclera

Q.36 The image of the object is always formed at the
(A) iris (B) retina
(C) pupil (D) lens

Q.37 Cataract is the condition that affects the
(A) lens (B) pupil
(C) retina (D) macula

ANSWER KEY

EXERCISE-2

Ques.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	B	B,C,D	B	B	D	D	B	D	A	D	D	A	C	D	C
Ques.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	A	A	B	A	C	B	C	B	D	A	B	C	B	B	C
Ques.	31	32	33	34	35	36	37								
Ans.	A	D	B	A	C	B	A								