Chapter-1

Worksheet-1

Section 1

Q1. Define Light.

Q2. State laws of Reflection.

Q3. What do you mean by centre of curvature of a plane mirror?

Q4. What is a diverging mirror?

Q5. How is the image formed by concave mirror when,

a. Object is at centre of curvature (C)

b. Object is at Infinity.

c. Object is at Principal Focus (F)

d. Object is between Principal Focus (F) and Pole (P)

Q6. Explain the sign convention used for convex and concave mirror. How are they different?

Q7. Derive mirror formula.

Q8. What do you mean by Magnification? How it is different from Power?

Q9. What are the laws of Refraction? Explain the term ‘Refractive Index’.

Q10. What is lens formula? How it is different from mirror formula?

Section 2

Q11. An object is placed 20 cm in front of a plane mirror. The mirror is moved 2 cm towards the object. The distance between the positions of the original and final images seen in the mirror is:

a) 2 cm
b) 4 cm
c) 10 cm
d) 22 cm

Answer: b

Q12. A ray of light that strikes a plane mirror PQ at an angle of incidence of 30°, is reflected from the plane mirror and then strikes a second plane mirror QR placed at right angles to the first mirror. The angle of reflection at the second mirror is:

a) 30°
b) 45°
c) 60°
d) 90°

Answer: c

Q13. An object is placed at 100 mm in front of a concave mirror which produces an upright image (erect image). The radius of curvature of the mirror is:

a) Less than 100 mm
b) Between 100 mm and 200 mm
c) Exactly 200 mm
d) More than 200 mm

Answer: d

Q14. Which position of the object will produce a magnified virtual image, if a concave mirror of focal length 15 cm is being used?

a) 10 cm
b) 20 cm
c) 30 cm
d) 35 cm

Answer: a

Q15. A concave mirror produces a magnification of +4. The object is placed:

a) At the focus
b) Between focus and centre of curvature
c) Between focus and pole
d) Beyond the centre of curvature

Answer: c

Q16. Two big mirrors A and B are fitted side by side on a wall. A man is standing at such a distance from the wall that he can see the erect image of his face in both the mirrors. When the man starts walking towards the mirrors, he finds that the size of his face in mirror A goes on increasing but that in mirror B remains the same:

a) Mirror A is concave and mirror B is convex
b) Mirror A is plane and mirror B is concave
c) Mirror A is concave and mirror B is plane
d) Mirror A is convex and mirror B is concave

Answer: c

Q17. A ray of light is travelling in a direction perpendicular to the boundary of a parallel glass slab. The ray of light:

a) Is refracted towards the normal
b) Is refracted away from the normal

c) Is reflected along the same path
d) Does not get refracted

Answer: d

Q18. A ray of light passes from a medium X to another medium Y. No refraction of light occurs if the ray of light hits the boundary of medium Y at an angle of:

a) 120°
b) 90°
c) 45°
d) 0°

Answer: b

Q19. A lens of focal length 12 cm forms an erect image, three times the size of the object. The distance between the object and image is:

a) 8 cm
b) 16 cm
c) 24 cm
d) 36 cm

Answer: a

Q20. If an object is placed 21 cm from a converging lens, the image formed is slightly smaller than the object. If the object is placed at a distance of 19 cm from the lens, the image formed is slightly larger than the object. The approximate focal length of the lens is:

a) 20 cm
b) 18 cm
c) 10 cm
d) 5 cm

Answer: c