

Q.1. An object is kept in front of a concave mirror of focal length of 15 cm. the image formed is 3 times the size of the object. Calculate the two possible distances of the object from the mirror.

Q.2. Refractive index of glass is 1.5 and that of water is 1.3. if the speed of light in water is  $2.25 \times 10^8$  m/s. What is the speed of light in glass?

Q.3. A light of wave length  $6000 \text{ \AA}$  in air enters a medium with refractive index 1.5. what will be the frequency and wave length of light in medium?

Q.4. Convex lens made up of glass of refractive index 1.5 is dipped in turn in

- (i) Medium A of  $n=1.65$
- ii) Medium B of  $n = 1.33$ .

Explain giving reasons Whether it will behave as a converging lens or diverging lens in each of the case.

Q.5. A convergent beam of light passes through a diverging lens of focal length 0.2 meters comes to focus at a distance 0.3 meters behind the lens find the position of the point at which the beam would converge in the absence of lens?

Q.6. A beam of light converges to a point P. A lens is placed in the path of convergent beam 12 cm from the point P. At what point the beam converges if the lens is (a) a concave lens of focal length 16 cm (b) a convex length of focal length 20 cm.

Q.7. A converging and a diverging of equal focal lengths are placed co-axially in Contact. Find the focal length and power of the combination.

Q.8. An object is placed in front of a concave mirror of radius of curvature 15cm at a distance of (a) 10cm. and (b) 5cm. Find the position, nature and magnification of the image in each case.

Q.9. An object is placed 15cm from a concave mirror of radius of curvature 60 cm. Find the position of image and its magnification?

Q.10. An object is kept at a distance of 5cm in front of a convex mirror of focal length 10cm. Give the position, magnification and the nature of the image formed.

Q.11. An object is placed at a distance of 50cm from a concave lens of focal length 20cm. Find the nature and position of the image.

Q.12. The power of a lens is 2.5 dioptre. What is the focal length and the type of lens?

Q.13. What is the power of a concave lens of focal length 50cm?

Q.14. Find the power of a concave lens of focal length 2m.

Q.15. Two lens of power +3.5D and -2.5D are placed in contact. find the power and focal length of the lens combination.

Q.16. A convex lens has a focal length of 20 cm. Calculate at what distance from the lens should an object be placed so that it forms an image at a distance of 40cm on the other side of the lens. State the nature of the image formed?

Q.17 A 10cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 30cm. The distance of the object from the line is 20cm. find the i) position ii) nature and iii) size of the image formed.

Q.18. Find the focal length of a line power is given as +2.0D.

Q.19. With respect to air the refractive index of ice and rock salt benzene are 1.31 and 1.54 respectively. Calculate the refractive index of rock salt with respect to ice.

Q.20. An object 5cm in length is placed at a distance of 20 cm in front of a convex mirror of radius of curvature 30cm. Find the position of the image, its nature and size.