Light – Reflection and Refraction

ONE MARK QUESTION

1. Refractive index of water is 4/3 and that of the glass is 3/2 with regard to air. What is the refractive index of glass with respect to the water? What is the power of concave lens of focal length 200cm?
2. The radius of curvature of spherical mirror is 20cm.What is its focal length?
3. What is the angle of reflection when a ray of light fall normally on a plane mirror?
4. What is the magnification produced by the plane mirror?
5. What is the nature of image formed by concave mirror if magnification produce by mirror is +3.
6. If the speed of light in a medium id 2×10^8 m/s, then what is refractive index
7. The refractive index of diamond is 2.42. What is the meaning of this statement in relation to the speed of light?
8. What do you mean by Power of the lens?

TWO MARKS QUESTION

9. The power of the lens is -2D .What is the focal length and nature of the lens?
10. An object 2cm high produce areal image 3 cm high , when placed at a distance of 15cm from concave mirror. Calculate the position of the image..
11. The power of a focal length is – 4D.State the nature of lens and any two characteristics of the image formed by the lens.
12. State two examples based on phenomenon of refraction of light in everyday life situation.
13. Distinguish between real and virtual image.
14. Name the type of mirror used in the following situations:
    a) Headlights of car
    b) rear – view mirror of vehicles
15. An object is placed at a distance of 10 cm from convex mirror of focal length 15 cm. Find the position and nature of image.
16. Define: 1) Snell's law of refraction of light. 2) Pole of a concave mirror.
17. (a) we prefer to use a convex mirror as a rear view mirror in vehicles. Why ?
18. State a condition for no refraction of light when light enter from one medium to another.

THREE MARKS QUESTION

19. The refractive indices of alcohol and turpentine oil with respect to air are 1.36 and 1.47 respectively. Find the refractive index of turpentine oil with respect to alcohol. In which of the two media the speed of light will be more.
20. a)Define power of a lens and give its unit.
    b) A convex lens forms a real and inverted image of needle at a distance of 50cm from it. Where is the needle placed in front of this lens if the size of the image is equal to the size of the object? Also find power of the lens
21. Two thin lenses of focal lengths +20 cm and – 15 cm are kept in contact. What is the focal length and power of the combination?
22. An object 2 cm high is placed at a distance of 16 cm from a concave mirror which produces a real image 3cm high. (a) Find the position of the image (b) What is the focal length of mirror?
23. Using lens formulae, find the position of image, its nature
24. An object is placed at a distance of 10cm in front of convex mirror of focal length 15cm. find the nature and position of image.
25. Draw a ray diagram and show the image formed by a concave mirror when the object is kept at focus.
26. Two thin lenses of power +3.5D and -2.5 D are placed in contact. Find the power & focal length of lens combination ?
27. Define magnification. Write the sign convention used for expressing it. and find magnification formed by a concave lens of focal length 20cm and the object is at 15cm.
28. What is the lens formula? Write the sign convention for various mirror and lens.
29. Name the lens/ mirror in the following situations;
    i) Rear View mirror ii) magnifying Glass iii) Mirror with Dentist iv) Correction of Myopia

FIVE MARKS QUESTION

30. . Draw a ray diagram in each of the following cases to show the formation of an image, when an object is placed

    (a) Between optical centre and principal focus of a convex lens.

    b) Between F and 2F of concave lens

    c) At 2F of convex lens
31. Write the characteristic of image formed in each case.

32. A 1 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 20cm.The distance of the object from the lens is 15cm.Find the nature, position, size and magnification of the image.
33. Find the size, nature and position of image formed when an object of size 1 cm is placed at a distance of 15 cm from concave mirror of focal length 10 cm.
34. Draw the ray diagram for the different positions of the images formed by concave mirror.