BHARATH COACHING CENTRE

10th CBSE | Light | Total: 50

Science | Time: 1.30 hrs

SECTION – A 5 x 1 = 5

1. State the relation between object distance, image distance and focal length of the spherical mirror.
2. Write two uses of convex mirror.
3. Why does a ray of light bend from its path when it travels from one medium to other?
4. Why is the refractive index of atmosphere different at different altitude?
5. Write the relationship between SI unit of power of lens and SI unit of focal length.

SECTION – B 5 x 2 = 10

6. List four characters of images formed by plane mirrors.
7. A shaving mirror has a radius of curvature of 30 cm. A man sees his image 2.5 times the size of his face. How far is the mirror from his face?
8. How can you identify the three types of mirror without touching?
9. State the laws of refraction of light.
10. Define the term magnification. Write the formula for magnification of mirror and lens explaining the symbols used in the formula.

SECTION – C 5 x 3 = 15

11. Name the type of mirror used (i) by dentist (ii) in solar furnaces. Give two reasons why such mirrors are used in each case.
12. Write any three differences between a real image and virtual image.
13. A concave mirror produces three times enlarged real image of an object placed at 12 cm in front of it. Calculate the radius of curvature of the mirror.
14. A concave lens of power -2.0 D,is used to form an image of an object of size 9 cm kept at a distance of 25 cm from it. Find the nature, size and position of the image formed.
15. Define refractive index of a medium. Differentiate between relative and absolute refractive refractive indices.

SECTION – D 4 x 5 = 20

16. State snell's law of refraction of light. Write an expression to relate refractive index of a medium with speed of light in vaccum.
17. (a) Define the following terms for a convex lens:
    Aperture, optical center.
    State the condition for a lens to be considered as thin lens.
    (b) With the help of ray diagrams differentiate between converging and diverging lens.
    (c) When sun rays are focused on a paper by convex lens, it starts burning. Explain why it so happens with figure.

18. (a) Draw a ray diagram to show refraction of light through a glass slab and label on it the following:
    (i) Incident ray (ii) refracted ray (iii) emergent ray
    (iv) Lateral shift (displacement)
    (b) Define power of a lens and state its SI unit.
19. (a) Explain why a real image can be projected in a screen but a virtual image cannot.
    (b) (i) Give two circumstances in which a concave mirror is larger than the object placed In front of it. Illustrate your answer by drawing labeled ray diagram for both.
    (ii) Which one of these circumstances enables a concave mirror to be used as a shaving mirror.