

Student Name:**Date:****REFRACTION AND DISPERSION OF LIGHT****I. Multiple Choice Questions**

Select and write one most appropriate option out of the four options given for each of the questions 1-5.

1. We put a glass piece on a printed page. Image of prints on the page has same size. The piece is a
(a) glass slab (b) convex lens
(c) concave lens (d) prism.
2. A thick lens has less focal length. Its power is
(a) less (b) more
(c) zero (d) infinite.
3. The sign of the power of a concave lens is
(a) negative (b) positive
(c) negative if focal length is large
(d) positive or negative depending on the focal length.
4. Emergent ray is parallel to incident rays when glass slab is
(a) cylindrical (b) prism like
(c) rectangular (d) hexagonal.
5. A convex lens forms image at its focus. The incident rays are
(a) parallel (b) diverging
(c) converging (d) none of these.

II. Fill in the Blanks Type Questions

Fill in the blanks with a suitable word for each of the questions 6–10.

- 6. In refraction, a ray of light when it enters obliquely in some other medium.
- 7. If ${}^a n_g = 3/2$, then ${}^g n_a = \dots\dots\dots$
- 8. A ray of light passing through the optical centre of a lens goes
- 9. Image distance for the image on the right of the lens is
- 10. A lens is put over a printed page, if diminished image of the print is seen, then lens is

III. True or False

State whether the following statements are true or false for each of the questions 11–15.

- 11. Refraction takes place with change in medium.
- 12. In air, velocity of light increases to 1.0003 times that in vacuum.
- 13. In refraction from a rectangular glass slab, lateral displacement is directly proportional to slab thickness.
- 14. A convex lens makes real as well as a virtual image.
- 15. A concave lens makes a diminished as well as an enlarged image.

IV. Very Short Answer Type Questions

Answer each of the questions 16–20.

- 16. What is meant by refraction of light?

- 17. Is speed of light in vacuum a fundamental constant?

- _____
- _____
- _____
- 18.** Where does light travel faster, in optically denser or in optically rarer medium?

- _____
- _____
- _____
- _____
- 19.** What does optical density of a medium signify? Is optical density of a medium same as mass density of the medium?

- _____
- _____
- _____
- _____
- 20.** Is refractive index of a medium always constant?

V. Short Answer Type Questions

Answer each of the questions 21–25.

- 21.** Identify the device used as a spherical mirror or lens in following cases, when the image formed is virtual and erect in each case.
- (a) Object is placed between device and its focus, image formed is enlarged and behind it.
- (b) Object is placed between the focus and device, image formed is enlarged and on the same side as that of the object.

- 22.** A pencil when dipped in water in a glass tumbler appears to be bent at the interface of air and water. Will the pencil appear to be bent to the same extent, if instead of water we use liquids like, kerosene or turpentine. Support your answer with reason.

- 23.** Refractive index of diamond with respect to glass is 1.6 and absolute refractive index of glass is 1.5. Find out the absolute refractive index of diamond.

- 24.** How much time will light take to cross 2 mm thick glass pane if refractive index of glass is $3/2$?

- 25.** A concave lens of focal length 15 cm forms an image 10 cm from the lens. How far is the object placed from the lens? Draw the ray diagram.

Teacher's Signature