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Subject: Physics **Worksheet No:** **Date :**

Name: **Topic :Ray Optics and Wave optics** **Std.:XII**

1. Show that a convex lens produces N times magnified image when the object distances from the lens, have magnitudes f_+f/N , where f is the magnitude of the focal length of the lens.
2. A converging and a diverging lens of equal focal lengths are placed coaxially in contact. Find the power and the focal length of the combination.
3. A concave lens is placed in water. Comment on the change in focal length and power of lens.
4. For the same angle of incidence the angles of refraction in three different medium A ,B ,and C are 15°,25°,35° respectively. In which medium the velocity of light is minimum?
5. A concave mirror is placed in water. Comment on the change in focal length and power of lens.
6. A converging lens has focal length of 20 cm in air. It is made of a material of refractive index 1.5. If it is immersed in water and then in a medium of refractive index 1.65, what will be the new focal length?
7. A convex lens of focal length f is cut into two halves such that one surface of each is plane. What is the focal length of each lens?
8. Two coherent sources whose intensity ratio is 81:1 produce interference fringes. Calculate the ratio of intensity of maxima and minima in fringe system.
9. In YDSE the slits are separated by a distance of 0.2mm. An interference pattern is produced on a screen 1.5 m away .The 4^{th} dark fringe is at a distance of 1.8 mm from the central maximum. Calculate the wavelength of light used .
10. In YDSE the width of fringes obtained with light of wavelength 6000°A is 2.0 mm.What will be the fringe width if the entire apparatus is immersed in a liquid of refractive index of 1.33?
11. A slit of width a is illuminated by light of wavelength 700 nm .What will be the value of slit of width a when (a)first minimum falls at an angle of diffraction 30° and (b) first maxima falls at an angle of diffraction 30°?
12. Can two 60 W bulbs be used as sources to produce interference pattern?
13. Draw graph to indicate law of malus .
14. Find the ratio of intensities at two points on a screen in YDSE when waves from the two slits have a path difference of 0 and λ/4.
15. Distinguish between interference and diffraction pattern.
16. Distinguish between refracting and reflecting telescope.