

Assignment

Paper: Waves and Optics Physics Practical

Class: B. Sc. Physics Hons. Semester 2 (Section A and Section B)

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Department: Physics

Instructions: 1. Answer any 15 questions.

2. Answers should be handwritten, and then either scanned or photos taken and converted to pdf form. Typed answer sheets shall not be accepted.

3. Please email your answer sheets by 23rd May, 2020, as follows:

1. Section A at the email I'd navinamehan@yahoo.co.in

2. Section B at the email I'd arpitaphy@gmail.com

Each question is of equal marks.

1. Explain briefly the functioning of a spectrometer with diagram. If each main scale division is $(1/2)$ degree and 60 V.S.D. coincide with 59 M.S.D., find the least count of the spectrometer.
2. In Melde's experiment, what is the mechanism for making the tuning fork vibrate?
3. What is the principle of functioning of a Mercury lamp.
4. What is the difference between a longitudinal wave and a transverse wave? Is light wave longitudinal or transverse? Explain briefly.
5. Why are different colours exhibited by a thin film when illuminated with white light?
6. What is the physical significance of 'refractive index'? What is its relation to the dielectric constant?
7. What is the full form of 'LASER'? How is it different from ordinary light?
8. How are Lissajous figures formed? What information can we get from them about the signals?
9. What is the meaning of 'coherence' of light? Why do we not get an interference pattern if light coming from the sources is not coherent?
10. What do you mean by 'spectrum' of light? Draw the form of the spectrum for a monochromatic source of light.
11. What are cathode rays? Describe briefly the functioning of a CRO with diagram.
12. What is meant by the resolving power of an optical instrument. On which factors does the resolving power of a grating depend?
13. In the experiment to find refractive index of prism, why is it essential to place the prism in the minimum deviation position?
14. What is the difference between an ordinary prism and a biprism? How can we distinguish between the two?
15. Define dispersive power. On what factors does the dispersive power of a prism depend?
16. Will the angle of minimum deviation of a prism change if it is immersed in water? Explain briefly.

17. What are Cauchy's constants? What are the limitations of Cauchy's equation?
18. Why are different colours exhibited by a thin film when illuminated with white light? What will happen if in the Newton's ring experiment, a few drops of a transparent liquid are introduced between the lens and the glass plate?
19. What is the effect of increasing the number of lines of a diffraction grating on the diffraction pattern?
20. Why is the spectrum of a prism more intense than that of a diffraction grating?