B.Sc. DEGREE EXAMINATION,NOVEMBER 2018
II Year III Semester
Core Major - Paper VI
OPTICS

Time : 3 Hours **Max.marks :60**

Section A $(10 \times 1 = 10)$ Marks

Answer any **TEN** questions

1. How will you test a surface for optical flatness?
2. Write the condition for constructive and destructive interference.
3. Light of wavelength 500nm is incident normally on a plane transmission grating. A second order spectral line is observed at an angle of 30°. Calculate the number of lines per metre on the grating surface.
4. What is a grating? Explain its construction.
5. State and explain Brewster's law.
6. What is double refraction? Describe how it is produced in a crystal.
7. Write about the camera lenses.
8. Define the term magnifying power.
9. Define acceptance angle.
10. List out the condition to be satisfied for total internal reflection?
11. Define optical activity.
12. What are coherent sources?

Section B $(5 \times 4 = 20)$ Marks

Answer any **FIVE** questions

13. What is air wedge? Explain the method of finding the diameter of a wire using Air Wedge.
14. What is resolving power? Explain Rayleigh criterion.
15. Describe how a Nicol prism can be used as a polarizer and analyser.
16. Describe the construction and working of refracting astronomical telescope.
17. What is an optical fibre? Describe the structure and principle involved in its working.
18. Explain the phenomena of double refraction on the basis of Huygen's theory in detail.
19. Give the theory of interference in thin film and explain the colour of thin films.

Section C $(3 \times 10 = 30)$ Marks

Answer any **THREE** questions

20. Describe the working of Michelson's interferometer and explain how it can be used for determine the wavelength of monochromatic source.

21. Discuss the theory of diffraction grating. Describe in detail how would use a transmission grating (normal incidence) to determine wavelength of light.

22. Describe Laurent's half shade polarimeter. Explain how it can be used to find the specific rotatory power of a sugar solution.

23. Give the construction and working of Ramsden eyepiece. How are chromatic and spherical aberration minimized in this eyepiece?

24. Deduce an expression for acceptance angle of an optical fiber.

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