LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **PHYSICS**

FIFTH SEMESTER – **NOVEMBER 2019**

PH 5511 – OPTICS

Date: 31-10-2019 Dept. No. Max. : 100 Marks

Time: 01:00-04:00

PART – A

Answer **ALL** questions: **(10x2=20)**

1. What are nodal points and nodal planes?
2. What is an eyepiece?
3. Distinguish between the fringes produced by biprism and Lloyd's mirror.
4. How coherent source can be obtained in practice?
5. State Rayleigh's criterion for resolution.
6. Define dispersive power.
7. State Brewster's law.
8. Define specific rotation.
9. Explain second harmonic generation
10. What is stimulated emission?

PART – B

Answer any **FOUR** questions: **(4x7.5=30)**

11. Explain the construction and working of direct vision spectroscope.
12. Explain how white and dark interference fringes are formed using white light in Lloyd's single mirror experiment?
13. Obtain the expression for resolving power of a prism.
14. Write a note on Nicol prism.
15. Describe the working of Nd:YAG laser using energy level diagram.
16. Explain the construction and working of Huygen's eye piece.

PART – C

Answer any **FOUR** questions: **(4x12.5=50)**

17. Explain chromatic aberration? Derive an expression for longitudinal chromatic aberration for an object at infinity.
18. Describe a Michelson's interferometer. How can it be used for the measurement of wavelength of monochromatic light?
19. Discuss the Rayleigh's criterion for the limit of resolution. Obtain an expression for the resolving power of a plane transmission grating.
20. Describe the construction and working of Laurent's half shade polarimeter. Explain how it is used to determine the specific rotation of an optically active solution. (9.5+3)
21. With neat sketch explain theory of a Fresnel's biprism and how it is used to determine the wavelength of light.
22. Describe the construction and working of Carbon dioxide laser.

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