

Subject Title: Optics

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**Unit-1 Interference**

- 1 What is coherence? What are the types of coherence. Explain Lloyd's mirror experiment.
- 2 What are the conditions for Interference of light ? Determine the thickness of a material Fresnel's using biprism?
- 3 Explain oblique incidence of a plane wave on a thin film due to reflected light (cosine law).
- 4 Describe Michelson's Interferometer with a neat diagram and explain types of fringes.
- 5 Explain Newton's rings in reflected light with & without contact between lens and glass plate?
- 6 Describe in brief the determination wavelength of monochromatic light, difference in wavelength of sodium light & thickness of a thin transparent plate.

**Unit 2- Diffraction**

- 7 Write the differences between Fraunhofer & Fresnel' diffraction?
- 8 Explain diffraction of grating by Fraunhofer diffraction pattern with single, double, N slits?
- 9 Explain Resolving power of grating & determination of wavelength in normal and oblique incidence methods.
- 10 Explain the concept of Fresnel's half period zones & phase reversal zone plate.
- 11 Describe diffraction at straight edge & difference between Interference and diffraction.

**Unit 3- Polarisation**

- 12 Explain polarisation by reflection & refraction & methods of polarisation.
- 13 Explain Brewster's law and show that the angle of polarisation(P) is equal to refractive index( $\mu$ ).
- 14 Explain about Nicol's prism as a polariser and analyser?
- 15 Explain the construction and working of Babinet's compensation?
- 16 Explain Laurent's half-shade polarimeter?

**Unit 4- Aberrations and Fiber optics**

- 17 Explain spherical aberration and method of minimising the spherical aberrations.
- 18 Explain in detail about chromatic aberration?
- 19 Explain different types of optical fibres? Explain their advantages & disadvantages.
- 20 Explain rays and modes in an optical fibre?
- 21 Explain briefly about astigmatism and how can we remove it?