B.Sc. DEGREE EXAMINATION, APRIL 2018.

II YEAR III SEMESTER

Core Major - Paper VI - OPTICS

Time : 3 Hours Max. Marks :60

SECTION A – (10 × 1 = 10 marks)

(Q. No. 1-12) Answer any *TEN* questions

1. What are coherent sources?
2. State superposition principle.
3. Give the reason for getting brilliant colours on thin oil films when a ray of white light falls on it.
4. Give Rayleigh criterion for resolution of optical instruments.
5. What is a zone plate?
6. State Brewster’s law.
7. What is double refraction?
8. What is meant by optical activity?
9. Draw the schematic diagram of Laurent’s half shade polarimeter.
10. Mention any two functions of field lens.
11. What is a wave guide?
12. Define acceptance angle.

SECTION B – (5 × 4 = 20 marks)

(Q. No. 13-19) Answer any *FIVE* questions

1. Explain how you will test the optical flatness of the given surface.
2. Distinguish between interference and diffraction fringes.
3. State and explain Brewster’s law.
4. Give the construction and working of prism binocular.
5. Explain the classification of optical fibres on the basis of material used and refractive index profile.
6. Explain about Nicol prism.
7. Explain how will you determine the thickness of the thin wire by forming wedge shaped air film.

SECTION C – (3 × 10 = 30 marks)

(Q. No. 20-24) Answer any *THREE* questions

1. Describe the construction and working of Michelson interferometer. Discuss the types of fringes formed.
2. Give the theory of plane transmission grating for normal incidence and describe how it is used to determine the wavelength of light.
3. Explain the Huygen’s theory of double refraction in uniaxial crystals.
4. Explain the construction and working of Ramsden’s eye-piece.
5. Derive an expression for numerical aperture and acceptance angle in optical fibres.