Code No. 7107 / E / R

FACULTY OF SCIENCE

B.Sc. IV-Semester (CBCS) Examination, June 2018

Subject : Physics

Paper - IV : Optics

Time : 3 Hours Max. Marks: 80

SECTION – A (5 x 4 = 20 Marks)
(Short Answer Type)

Note : Answer any FIVE of the following questions.

1 What are the conditions necessary for observing interference fringes?
2 What is meant by phase change on reflection?
3 If white light is used in young's double slit experiment, what will happen to the interference bands?
4 Explain the Rayleigh criterion for resolution.
5 What are different types of polarizations?
6 What are Uniaxial and Biaxial Crystals?
7 Explain the methods for elimination of astigmatism.
8 Explain the advantages of fiber optic communications.

SECTION – B (4 x 15 = 60 Marks)
(Essay Answer Type)

Note: Answer all questions from the following.

9 (a) What are Newton's Rings? Derive an expression for the diameter of bright rings.

OR

(b) Describe Fresnel's Biprism method for the determination of the Wavelength of light.

10 (a) Discuss the Fraunhofer diffraction due to single slit.
In a grating spectrum which spectral line in fourth order will overlap with third order line of 5461°A.

OR

(b) Describe and explain the phenomenon of diffraction due to straight edge. Explain why the bands are neither equidistant not equality illuminated.

11 (a) Describe the construction and working of Nicol prism.

OR

(b) Describe the construction and working of Laurent's half shade Polarimeter.

12 (a) What is meant by spherical aberration? Explain how it is minimized by the co-axial lenses separated by distance.

OR

(b) Define numerical aperture and acceptance angle. Derive a relation between them.

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