Roll No. ..... **Total No. of Pages : 2**

PC 11462-NH

BS/2111

OPTICS—II

Semester—III

Time Allowed : Three Hours] [Maximum Marks : 30

Note :– The candidates are required to attempt any *two* questions each from Sections A and B. Section C will be compulsory. Attempt any *five* questions from Section C.

SECTION—A

1. Write the principle, construction and working of Fabry Perot Interferometer. 5

2. Describe the principle, construction and formation of Newton Rings for reflected system. Write one of its applications. 5

3. What is meant by thin film interference ? Discuss its role in anti-reflection and high reflection dielectric coatings. 5

4. Write the principle, construction and working of Michelson's Interferometer. 5

SECTION—B

5. Discuss in detail Huygen's theory of double refraction. 5

6. Discuss Fraunhoffer diffraction for a rectangular and circular slit. 5

7. What is resolving power ? Derive expressions for resolving power of telescope and diffraction grating. 5

8. What is a Plane Diffraction grating ? Find the liner and angular dispersive power of diffraction grating. 5

SECTION—C

9. Attempt any *five* questions :

   (i) What is Birefringence ?

   (ii) Describe Rayleigh's criterion of resolution.

   (iii) Why an extended source is required for obtaining interference by division of amplitude method ?

   (iv) Why diffraction of sound waves is more evident than that of light waves in our daily life ?

   (v) Explain the terms : coherence length, coherence time and coherence area.

   (vi) State Malu's Law. What fraction of light will be emerged for $\theta = 60°$?

   (vii) What is the difference between a Zone plate and a conventional lens ? 5×2=10