H Roll No. .....

TPH–101

B. TECH. (FIRST SEMESTER)
MID SEMESTER
EXAMINATION, Nov., 2022
ENGINEERING PHYSICS

Time : 1:30 Hours

Maximum Marks : 50

Note : (i) Answer all the questions by choosing any ***one*** of the sub-questions.

(ii) Each sub-question carries 10 marks.

1. (a) What is interference of light ? How will you determine the wavelength of light using Fresnel's biprism ? (CO1)

OR

(b) In a Newton's ring system, the diameter of the 5th and 10th dark rings are 0.112 and 0.145 cm respectively. What is the diameter of the 15th dark ring. (CO1)

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2. (a) Discuss the formation of Newton's rings by reflected light. Describe the experiment arrangement. Why are Newton's rings circular ? (CO1)

OR

(b) Calculate the minimum number of lines in a grating which will just resolve the sodium lines in the first order spectrum. The wavelengths are 5890 and 5896 in angstrom. (CO1)

3. (a) Explain diffraction grating and prove that the secondary maxima are not visible in the spectrum produced by diffraction grating. (CO1)

OR

(b) Two Nicols are so arranged that the amount of light transmitted through them is maximum. What will be the percentage reduction in intensity of the incident light when analyzer is rotated through 30°. (CO2)

4. (a) Explain the phenomenon of polarization of light. How do you use the phenomenon of double refraction to produce a plane polarized light ? (CO2)

OR

(b) What do you understand by quarter wave plate ? For calcite μ_e = 1.486 and μ_e = 1.658 for sodium light. Calculate the minimum thickness of the quarterwave plate for calcite. (CO2)

5. (a) Define specific rotation. Describe the working of a half shade Polarimeter. How will you use it to find the specific rotation of sugar. (CO2)

OR

(b) Calculate the specific rotation if the plane of polarization is turned through 25°, traversing 20 cm length of 25% sugar solution. (CO2)