H Roll No. .....

TPH–201

B. TECH. (SECOND SEMESTER)
MID SEMESTER EXAMINATION, 2022

ENGINEERING PHYSICS

Time : $1\frac{1}{2}$ 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) Discuss Young's double slit experiment. Obtain the expression for maximum and minimum intensity. (CO1)

OR

(b) Biprism is kept 10 cm away from the slit illuminated by monochromatic light of $\lambda = 5896$ Å. The width of the fringes obtained on a screen placed at a distance of 90 cm from the biprism is 9.0×10^{-4} m. What is the distance between two coherent sources ? (CO1)

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2. (a) A parallel beam of sodium light is normally incident on a plane transmission grating having 4250 lines per cm and a second order spectral line is observed at angle of 30°. Calculate the wavelength of light. (CO1)

OR

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

3. (a) What is a grating ? Explain resolving power and dispersive power of a grating. Explain the spectra formed by a plane transmission grating. (CO1)

OR

(b) Two polaroids are adjusted so as to obtain maximum intensity. Through what angle should one polaroid be rotated to reduce the intensity to (i) half, (ii) one fourth. (CO2)

4. (a) What is Malus' law ? If the polarizing angle of a piece of glass for green light is 60°, calculate the angle of minimum deviation for a 60° prism made of same glass. (CO2)

OR

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

5. (a) What do you understand by quarter wave plate ? For calcite $\mu_e = 1.486$ and $\mu_o = 1.658$ for sodium light. Calculate the minimum thickness of the quarter wave plate for calcite. (CO2)

OR

(b) What is optical activity ? Distinguish between circularly and elliptically polarized light. (CO2)