Graphic Era
HILL UNIVERSITY

Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

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Term Evaluation (Even) Semester Examination March 2025

Roll no..

Name of the Course: B.Tech.
Semester: II
Name of the Paper: Engineering Physics
Paper Code: TPH-201
Time: 1.5 hour

Maximum Marks: 50

Note:
- (i) Answer all the questions by choosing any one of the sub-questions
- (ii) Each question carries 10 marks.

Q1.   CO-1(10 Marks)
a. Calculate the separation between two consecutive bright or dark fringes in Young's double slit experiment.

OR

b. Determine the resultant path difference in the interference through a thin wedge-shaped film.

Q2.   CO-1 (10 Marks)
a. Calculate the diameter of the third and fourth dark Newton's ring for the incident wavelength 5000 Å and the radius of curvature of a convex lens is 100 cm.

OR

b. Discuss any method to determine the distance between two virtual sources in Fresnel's bi-prism experiment.

Q3.   CO-1(10 Marks)
a. Describe the diffraction due to Grating with the condition of maxima and minima.

OR

b. Light of wavelength 4500 Å falls normally on a slit of width $20 \times 10\text{-}5$ cm. Determine the angular position of the first two minima on either side of the central maximum.

Q4.   CO-2 (10 Marks)
a. Calculate the thickness of a doubly refracting crystal (DRC) required introducing a path difference of $\lambda/2$ between the ordinary and extraordinary rays. Given - $\lambda = 6000$ Å, $\mu_o = 1.56$ and $\mu_e = 1.40$.

OR

b. Define the specific rotation. Explain the working of Laurent's half-shade polarimeter.

Q5.   CO-2 (10 Marks)
a. Discuss the theory of production and detection of circularly polarized light.

OR

b. Calculate the specific rotation that rotates the plane of polarization 16^0 in a 25 % sugar solution of 28 cm length.