

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

BTech-1 Semester (CSE/IT/ECE/CE)

COURSE CODE (CREDITS): 18B11PH111 (4)

MAX. MARKS: 15

COURSE NAME: Engineering Physics-1

COURSE INSTRUCTORS: PBB, SKK, VSA, SKT, HAZ, SBA, HSR MAX. TIME: 1 Hour

Note: (a) All questions are compulsory.

(b) Marks are indicated against each question in square brackets.

(c) The candidate is allowed to make suitable numeric assumptions wherever required for solving problems

Q1. At a certain point on the screen the path difference for two interfering rays is $\frac{1}{8}$ of wavelength. Find the ratio of intensity at this point to that at the centre of the bright fringe.

[2 marks] [CO-2]

Q2. Derive the expression for path difference for Young's Double Slit Experiment and obtain the expression for fringe width.

[2+1 marks] [CO-2]

Q3. The central bright fringe of the interference produced by light of wavelength 600 nm is shifted to the position of the fifth bright fringe by introducing a thin glass plate of refractive index 1.5. Calculate the thickness of the glass plate.

[2 marks] [CO-4]

Q4. White light is reflected normally from a uniform oil film having a refractive index of 1.33. An interference maximum for 600 nm and a minimum for 450 nm are observed. There are no minimum or maximum in between. Calculate the film thickness.

[2 marks] [CO-4]

Q5. Derive an expression for the angle of a wedge-shaped film.

[2 marks] [CO-2]

Q6. Two plane glass surfaces in contact along one edge are separated at the opposite edge by a thin wire. If 20 interference fringes are observed between these edges in light of wavelength 589 nm, what is the thickness of the wire?

[2 marks] [CO-4]

Q7. Derive the conditions of interference in a normal Newton's Ring setup if the glass plate is replaced by another plano-convex lens.

[2 marks] [CO-3]