

Roll Number:

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2024

B.Tech-I Semester (BT/BI)

COURSE CODE(CREDITS): 18B11PH1112 (04)

MAX. MARKS: 15

COURSE NAME: Basic Engineering Physics -I

COURSE INSTRUCTORS: Dr. Ragini Raj Singh

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

Q.1. What are the conditions to get sustained interference pattern?

[CO: 1; Marks: 2]

Q.2. Derive the relation to find out thickness of the thin glass sheet by the method of lateral displacement of fringes?

[CO: 1; Marks: 2]

Q.3. Why the diameters of the rings does not increase in the same proportion as the order of the ring?

[CO: 1; Marks: 2]

Q.4. Derive the relation for interference maxima and minima in Newton's ring experiment.

[CO: 2; Marks: 2]

Q.5. The path difference between the two interfering rays at a point on the screen is $\frac{1}{4}$ th of the wavelength. Find the ratio of the intensity at this point to that at the centre of the bright fringe.

[CO: 2; Marks: 2]

Q.6. A thin film of soap solution is illuminated by white light at an angle of incidence $i = \sin^{-1}(\frac{4}{3})$. In reflected light two dark consecutive overlapping fringes are observed corresponding to wavelength 7.1×10^{-7} and 7×10^{-7} m. The refractive index of the soap solution is $\frac{4}{3}$. Calculate the thickness of the film.

[CO: 2; Marks: 2.5]

Q.7. In Newton's ring experiment, the diameter of 4th ring and 13th rings are 0.4 and 0.7 cm, respectively. Find the diameter of the 20th dark ring.

[CO: 3; Marks: 2.5]