Roll No.:

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -1 EXAMINATION- 2023
B.Tech-I Semester (BT/BI)

COURSE CODE(CREDITS):18B11PH112 (04)

COURSE NAME: Basic Engineering Physics-I

COURSE INSTRUCTORS: Dr. Ragini Raj Singh

MAX. MARKS: 15

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

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Q.1. Discuss the intensity distribution in interference with the help of the resultant intensity equation and interference term (Conditions for maximum and minimum intensities).

[CO:1 ; Marks:2]

Q.2. How to determine wavelength of the light source and refractive index of the liquid using Newtons's ring experimental setup.

[CO:1 ; Marks:3]

Q.3.How to find missing orders in double slit diffraction? Discuss the cases where a=b and a=2b.

[CO: 2 ; Marks:2]

Q.4. How to find out width of central maxima in plane transmission grating?

[CO:2 ; Marks:2]

Q.5. Two coherent sources of intensity ratio α interfere. Prove that in interference pattern

$$\frac{I_{max} - I_{min}}{I_{max} + I_{min}} = \frac{2\sqrt{\alpha}}{1+\alpha}$$

[CO:1 ; Marks:2]

Q.6. In Young's double slit experiment, the slits are 0.5 mm apart and the interference is observed on a screen placed at a distance of 100 cm from the slits. It is found that the 11th bright fringe is at a distance of 8.835 mm from the fourth dark ring from the centre of the interference pattern. Find the wavelength of the light.

[CO:2 ; Marks:2]

Q.7. In Newton's ring experiment, the diameter of 5th and 15th rings are 0.5 and 1 cm, respectively. Find the diameter of 30th dark ring.

[CO:3 ; Marks:2]