

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- Oct 2017

B.Tech I Semester (CSE, CE, ECE, IT)

COURSE CODE: 10B11PH111

MAX. MARKS: 25

COURSE NAME: PHYSICS-I

COURSE CREDITS: 04

MAX. TIME: One Hour Thirty Minutes

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Section A

1. Describe Fresnel biprism. Describe in detail how the wavelength of monochromatic source of light can be calculated using Fresnel Biprism. [3.5 Marks]

Section B

2. Differentiate between single slit and double slit Fraunhofer diffraction pattern. [1.5 Marks]
3. Find the maximum number of orders available with a grating. Show that a grating with 5000 lines per cm cannot give a spectrum in 4th or higher order for light of wavelength 5890 Å. [2 Marks]

Section C

4. What do you understand by double refraction? What are ordinary and extra-ordinary rays? Describe construction and working of Nicol prism. [3 Marks]
5. Two Nicol prisms are so arranged that the amount of light transmitted through them is maximum. What will be the percentage reduction in the intensity of the incident light when the analyser is rotated through (i) 30°, (ii) 45° and (iii) 60° [3 Marks]
6. Describe the construction and working of a half shade polarimeter. Calculate the specific rotation if the plane of polarization is turned through 26.4° on traversing 0.2m length of 20% sugar solution. [3 Marks]

Section D

7. What do you conclude from Michelson-Morley experiment? Give explanation of null results of Michelson-Morley experiment. State and explain the fundamental postulates of special theory of relativity. [4 Marks]
8. Calculate the percentage contraction in length of a rod moving with a velocity 0.8 times the velocity of light in a direction inclined at 45° to its own length. [3 Marks]
9. With what velocity should a rocket move so that every year spent on it corresponds to 4 years on earth? [2 Marks]