JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST-2 (OCT-2019)
B.Tech I Semester (BI/BT)

COURSE CODE: 18B11PH112   MAXIMUM MARKS: 25

COURSE NAME: Basic Engineering Physics-1

COURSE CREDITS: 4   TIME ALLOWED: 1HR 30 MIN

Note: *All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Attempt all the questions in sequence.*

1. Draw the ray diagram of interference phenomenon by reflection in thin films and derive the relation for measurement of path difference. **CO-1**

   [4]

2. Prove that $\lambda = \frac{D_n^2 - D_p^2}{4(n-p)R}$ using Newtons Rings Method for interference. If the diameter of two consecutive Newtons rings in reflected light of wavelength 589 nm are 2.0 and 2.02 cm, respectively, what is the radius of curvature of the lens surface in contact with the plane glass surface? **CO-1, 2**

   [3+2]

3. What is missing orders of transmission grating derive relation for the same. In a double slit Fraunhofer diffraction pattern, the screen is placed 170 cm away from the slits. The width of the slits is 0.08 mm and they are 0.4 mm apart. Calculate the wavelength of light if the fringe width is 0.25 cm. also find the missing orders. **CO-3, 4**

   [3+3]

4. How is Nicol Prism used for creation and analysis of Polarisation of light? Calculate the angle of polarization from a beam from (i) air to water (ii) water to glass and (iii) glass to water if the refractive indices of water and glass are 1.33 and 1.54 respectively . **CO-5,6**

   [2+3]

5. (a) A diffraction grating used at normal incidence gives a line λ_1=600 nm in a certain order superimposed on other line λ_2=450 nm of the next higher order. If the angle of diffraction is 30 degrees, calculate the number of lines in 1 cm of the grating. **CO-4**

   (b) Explain the working of half wave and quarter wave plates. What types of out puts will both these plates have? **CO-5**

   [2.5+2.5]