COURSE CODE: 17B11PH111/ 16B11PH112   MAX. MARKS: 50

COURSE NAME: BASIC ENGINEERING PHYSICS/ BASIC ENGINEERING AND APPLIED PHYSICS

COURSE CREDITS: 04

MAX. TIME: 2 Hrs

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. What is interference and explain sustained and un-sustained interference

    (5)

2. Calculate the fringe with of a interference pattern by using Young's double slit experiment

    (8)

3. Two slits in Young's experiment have widths in the ratio 1:36. Deduce the ratio of intensities at the maxima and minima in the pattern.

    (5)

4. A biprism forms interference fringes with monochromatic light of wavelength 5450 Å. On introducing a thin glass plate ($\mu = 1.5$) in the path of one of the interfering beams, the central fringe shifts to the position previously occupied by the third bright fringe. Does the fringe width change? Find the thickness of the plate.

    (7)

5. Explain with neat diagram the working of Newtons Rings experiment and derive the relation for calculating the radius of nth Bright ring.

    (10)

6. Interference fringes were produced by Young's double slit method using light of wavelength 6×10^{-7} m. When a film of material 3.6×10^{-3} cm thick was placed over one of the slits the fringe pattern was displaced by a distance equal to thirty times that between two adjacent fringes. Calculate the refractive index of the material.

    (5)

7. Write short note on the following (Any Two)
    a. Interference by thin films
    b. Working of Biprism for interference
    c. Single slit Diffraction

    (5+5)