

Subject Code PHYS132

ENROLLMENT NO....2009

MID TERM EXAMINATION-November 2022

Engineering Physics

Time: 01Hr

Maximum marks: 20

Note: Attempt the questions as mentioned in different sections.

**SECTION-A (Attempt any two questions, Each of 04 Marks)**

Q.1. A wedge shaped air-film having an angle of 40 seconds is illuminated by monochromatic light and fringes are observed vertically through a microscope. The distance between two consecutive bright fringes is 0.12 cm. Calculate the wavelength of light used.

Q.2. When white light falls normally upon a film of soapy water whose thickness is  $5 \times 10^{-5}$  cm and refractive index is 1.33. Which wavelength in the visible region will be reflected more strongly?

Q.3. In a Newton's ring experiment, the diameter of the 5<sup>th</sup> ring was 0.3 cm and the diameter of 25<sup>th</sup> ring was 0.8 cm. If the radius of curvature of the planoconvex lens is 1 m, calculate the wavelength of light used.

**SECTION-B (Attempt any One question, 8 Marks)**

Q.1. (a) Write down the conditions for sustained interference of light. (2)

(b) Explain the phenomenon of interference due to a thin film and derive the conditions of maxima and minima in reflected system in thin film. (6)

Q.2. Discuss the formation of Newton's ring in reflected system. Explain why the centre of Newton's ring appear dark in reflected system. Also, derive an expression for the diameter of bright ring in Newton's ring formed by monochromatic light.

**SECTION-C (Compulsory, 4 Marks)**

Q.1. In Newton's ring experiment, the diameters of 4<sup>th</sup> and 12<sup>th</sup> dark rings are 0.4 and 0.7 cm respectively. Calculate the diameter of 20<sup>th</sup> dark ring.