

Quadrant IV– Assessment

Programme : Bachelor of Science (Third/ Second year)
Subject : Electronics/Physics
Semester : V / IV
Paper Code : ELD105/ PYC104
Paper Title : Photonics / Optics
Name of the Unit : 2 / 1- Interference
Module Name : Wedge shaped film and Newton's rings
Module Number : 11/04
Name of the presenter: Dr. Girish Kundaikar, Associate Professor
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Short answer (20 to 50 words):

- 1) What is a wedge shaped film? How one can form this film?
- 2) Draw the experimental set up to produce the fringes by wedge shaped thin film.

Short Answer – II (extended – say 50 to 100 words)

- 1) Draw the necessary ray diagram and derive the expression for the fringe width of the fringes produced by wedge shaped film.
- 2) Draw the diagram of experimental set up to produce the Newton's rings . Also draw the nature of the rings

Numerical problems:

- 1) When a narrow air wedge is illuminated with monochromatic light and viewed normally interference bands are 0.3cm apart. If the angle of wedge is 10^{-5} radian, calculate the wavelength of light.
- 2) Monochromatic light of wavelength 5000 \AA is incident normally on an air wedge of angle 0.5 radians. Find the Bandwidth of interference fringes.
- 3) A glass wedge of angle 0.01 radian **wedge is illuminated by monochromatic light** of wavelength 6000 \AA falling normally on it. At what distance from the edge of the wedge will the 10th fringe be observed by reflected light.