

SUB: APP. PHYSICS II  
SEM-II

DIV: E, H

DATE: 16/02/15  
PM

TIME: 12.00 to 1.00 PM

MARKS- 15

Q.1. Solve any Five from the following :-

- (10)
- Derive the conditions for a constant thickness film to appear bright & dark in reflected light
  - White light is incident at an angle of  $45^\circ$  on a soap film  $4 \times 10^{-5}$  cm thick. find the wavelength of light in the visible spectrum which will be absent in the reflected light ( $\mu = 1.2$ ).
  - What is Fringe width? Explain with example- How fringe width of Newtons rings goes on decreasing as the order of ring increases
  - Newton's rings are observed in reflected light of wavelength  $6000 \text{ \AA}$ . The diameter of the  $10^{\text{th}}$  dark ring is  $0.5 \text{ cm}$ . Find the radius of curvature of the lens and the thickness of the corresponding air film.
  - What is Rayleigh's criterion of resolution? Obtain an expression for the resolving power of a grating.
  - Discuss double slit diffraction?. draw diffraction pattern.

Q.2. a) Give the theory of plane diffraction Grating? show that intensity of max. increase with number of lines on grating.

OR

- (5)
- Light is incident on a grating  $0.5 \text{ cm}$  wide with 3000 lines. find angular separation in  $2^{\text{nd}}$  order of sodium lines  $5893 \text{ \AA}$  and  $5896 \text{ \AA}$ . check whether these two lines are resolved in  $2^{\text{nd}}$  order or not.

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