

MCT
MANJARA CHARITABLE TRUST
RAJIV GANDHI INSTITUTE OF TECHNOLOGY

DATE: - 19 / 04 / 2015

TERM TEST NO.2

Marks: 15

Sub: Applied physics – II

Time: 45 min.

Q.1. Solve any 5 questions from the following. (2 marks each)

- a) Draw the ray diagram of interference of light with in a thin film of wedge shape? Write the conditions of dark and bright band in reflected light?
- b) What is antireflection film? Write its required thickness & any two applications?
- c) Explain why the fringes are parallel in wedge shaped film while circular in Newtons rings experiment?
- d) Distinguish between Fresnel & Fraunhofer diffraction of light?
- e) Define resolving power & dispersive power of grating? Write its formulae?
- f) If the proton of mass 1.67×10^{-27} kg moving with velocity $1/20^{\text{th}}$ times velocity of light, calculate the wavelength of matter wave associated with it?

Q.2. Attempt the following (05 marks)

- a) Show that radius of Newton's rings is directly proportional to square root of natural number for dark rings & square root of odd the natural number for bright rings?

OR

- a) State & explain Heisenberg's uncertainty principle? An electron has a speed of 400 m/sec with uncertainty of 0.01%. Find the accuracy in its position?

$\lambda = \frac{h}{mv}$