

B. Tech. DEGREE EXAMINATION, MAY - 2015

(Examination at the end of First Year)

Paper - III : Physics

Time : 3 Hours

Maximum Marks : 75

Answer question No. 1 Compulsory

(15 × 1 = 15)

Answer ONE question from each unit

(4 × 15 = 60)

All questions carry equal marks

- 1) a) Explain Magnetoslriction.
b) Explain Dispersive of grating.
c) Explain Biot-savart's law.
d) Define Fermi level.
e) Write down applications of lasers.
f) Explain spontaneous emission.

Unit - I

- 2) a) What is piezo electric effect? Explain the production of ultrasonics using piezo – electric Gystal Give applications of ultrasonics in medicine and industry.

OR

- b) What is meant by diffraction of light? Give the theory of fraunhoffer diffraction due to a single slit and hence obtain the condition for primary and secondary maxima. Using this obtain intensity distribution curve.

Unit – II

- 3) a) Explain Hall effect and mention its uses. Derive expression for Hall coefficient.

OR

- b) Explain faraday's laws of electromagnetic induction. Obtain expression for growth of electric current in a circuit containing inductance, Resistance and a constant E.M.F.

Unit – III

4) a) What is Compton effect? Derive an expression for the Compton shift.

OR

b) What do you understand intrinsic and extrinsic semiconductors? Explain p-type and n-type semiconductors with energy band diagrams.

Unit – IV

5) a) Explain characteristics of a laser. Describe the construction and working of Ruby laser.

OR

b) What is meissner effect? Explain type – I, type – II superconductors and high temperature superconductors.

