

BTS(C) - I & II - 08 - 030 (B)

B.Tech. Degree I & II Semester (Combined) Examination, June 2008

IT/CS/EC/CE/ME/SE/EB/EI/EE/FT 102 ENGINEERING PHYSICS
(2006 Scheme)

Time: 3 Hours

Maximum Marks: 100

PART A (Answer all questions)

(8 x 5 = 40)

- I
- a) ✓ How will you test the optical planeness of a glass plate?
 - b) ✓ Calculate the thickness of a retardation plate, that can convert a PPL into CPL.
Given $\lambda = 589\text{nm}$ $\mu_e = 1.55, \mu_o = 1.54$
 - c) Briefly explain the principle of holography.
 - d) ✓ List any five applications of ultrasonic waves.
 - e) ✓ Using Heisenberg's uncertainty principle, prove that no electron is residing inside the nucleus.
 - f) ✓ What are thermonuclear reactions?
 - g) ✓ Explain the terms : Lattice Planes and Miller Indices.
 - h) ✓ What is meant by double refraction?

PART B

(15 x 4 = 60)

- II ✓ a) Discuss the theory of interference in thin films. (10)
- b) Give differences between Interference and Diffraction. (5)
- OR**
- III a) Explain the construction and working of a Nicol Prism. (10)
- b) What are half shades? Briefly explain the working of Lorantz half shade. (5)
- IV ✓ a) Explain the terms : i) Optical Pumping ii) Stimulated emission. (5)
- b) Outline the principle and working of the He-Ne Laser. (10)
- OR**
- V a) Derive the expression for Numerical Aperture of an optical fibre. (7)
- b) Explain the working of an optical fibre communication system. (8)
- VI ✓ a) What is a wave function? Give its physical significance. (5)
- b) Derive time independent Schrodinger equation. (10)
- OR**
- VII a) Explain the working of a Nuclear reactor. (10)
- b) State Pauli's exclusion principle. (5)
- VIII a) State and explain Bragg's law. (5)
- b) Give the classification of semiconductors with their applications. (10)
- OR**
- IX a) What is Meissner effect? (5)
- b) Distinguish between type I and type II superconductors with examples. (10)
