

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)
