2008 ACHARYA NAGARJUNA UNIVERSITY

I/IV B.TECH DEGREE EXAMINATION
(EXAMINATION AT THE END OF FIRST YEAR OF 4 YEAR COURSE)
PHYSICS

NOV EMBER2008

Time : 3 hour
Mark : 70

Answer ALL questions

1. (a) What is Piezo-electric effect?

(b) State Superposition Principle.

(c) What is a diffraction grating?

(d) What is meant by plane polarised light?

(e) State Lenz's law.

(f) What is induced electric field?

(g) What is self inductance?

(h) What is electric resonance?

(i) What is block body?

(j) State Heisenberg Uncertainty principle.

(k) What is population inversion?

(l) What is principle of propagation of light in an optical fibre?

(m) What is Meissner effect?

(n)What is the principle of Holography?

2.(a) What is Magnetostriction? How ultrasonic waves produced using this method?

(b) Write different applications of ultrasonics.

(c) How is diffraction isdifferent from Intereference?

(d) Describe the construction and working of Michelson's interferometer. Give some applications of Michelson's Interferometer.

(e) What is quarter wave plate and what is its use.

3.(a) State and explain Biot-Savart's law and Faraday's law.

(b) Derive an expression for the magnetic induction at a point due to an infinite straight conductor carrying current.

(c) Deduce an expression for the energy stored in a magentic field.

(d) Write Maxwell equations(4)

(e) Derive the equation for resonance frequency ofseries LCR circuit.

4.(a) Write the de Broglie concept of matter waves.

(b) What is Comptn effect? Explain in detail the theory and experimental verification of Compton effect

(c) Give the physical significance of wave function

(d) Derive Schrodinger time independent wave equation.

(e) Give applications of radio Isotopes in Industry.

5.(a)Explain spontaneous and stimulation emission.

(b) Describe the construction and working of He-Ne laser and Give applications of Lasers

(c) Explain Superconductivity.

(d) Explain the construction and working of LED and LCD in detail.

(e) Write the applications of Nanotechnology.