

ANNA UNIVERSITY OF TECHNOLOGY, COIMBATORE
B.E. / B.TECH. DEGREE EXAMINATIONS : NOV / DEC 2011

REGULATIONS : 2008

FIRST SEMESTER

080040001- ENGINEERING PHYSICS I

(COMMON TO ALL BRANCHES)

Time : 3 Hours

Max. Marks :100

PART - A

(10 x 2 = 20 Marks)

ANSWER ALL QUESTIONS

1. Name the methods to detect Ultrasonic waves.
2. What is Non-destructive testing (NDT)?
3. Distinguish between spontaneous emission and stimulated emission.
4. Write any four advantages of laser surgery.
5. State the principle of an optical fibre.
6. What is an endoscope?
7. State the physical significance of the wave function.
8. Write any two limitations of TEM.
9. Define "Unit Cell".
10. Draw the crystal planes (101) and (111) in a cubic unit cell.

PART - B

(5 x 16 = 80 Marks)

ANSWER ALL QUESTIONS

11. a) (i) Describe the principle, construction and working of Piezo electric oscillator. (12)
(ii) Write the properties of Ultrasonic waves. (4)

(OR)

11. b) (i) Discuss the applications of ultrasonic in industries for drilling, welding, soldering, and cleaning. (12)
(ii) Explain the basic concept of SONAR. (4)

12. a) (i) Describe the principle, construction and working of He - Ne laser. (12)
(ii) State the applications of laser. (4)

(OR)

- b) (i) Describe the construction and reconstruction of Holographic image with neat diagram. (6+6)
(ii) Distinguish between photography and holography. (4)

13. a) (i) Obtain an expression for Acceptance angle of a step index fibre. (8)
(ii) Describe the crucible-crucible technique for the preparation of optical fibre. (8)

(OR)

- b) (i) Explain the components of general fibre optic communication system with a neat block diagram. (8)
(ii) Give the construction and working of LED as a light source for an optical fibre. (8)

14. a) (i) Give the theory of Compton effect and derive an expression for the change of wave length of scattered photons. (12)
(ii) Give the Planck's quantum hypothesis. (4)

(OR)

- b) (i) Derive the Time independent Schrodinger wave equation. (8)
(ii) Apply Schrodinger wave equation to a particle in one dimensional box and show the particle has quantised energy values. (8)

15.a) (i) Draw the HCP structure and get the value of c/a and hence calculate the packing fraction of HCP structure. (12)

(ii) What are the seven types of crystal systems? (4)

(OR)

b) (i) Explain in detail the different types of crystal defects. (12)

(ii) Give the procedure for finding Miller indices of crystal planes. (4)

*****THE END*****