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)

Max. Marks :100

v

Time : 3 Hours

PART - A

 $(10 \times 2 = 20 \text{ Marks})$

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

 $(5 \times 16 = 80 \text{ Marks})$

(4)

ANSWER ALL QUESTIONS

11.a) (i) Describe the principle, construction and working of Piezo electric oscillator. (12)

(ii) Write the properties of Ultrasonic waves.

(OR)

11.b) (i) Discuss the applications of ultrasonic in industries for drilling, welding, solder	ing,
and cleaning.	<mark>(12</mark>)
(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)
(ii) state the applications of theory (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	nea
block diagram.	(8)
(ii) Give the construction and working of LED as a light source for an optical	
fibre.	(8)
(1, 1, 2) (i) City the theory of Corrector offect and derive an every proving for the change	
14.a) (i) Give the theory of Compton effect and derive an expression for the change	(10)
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	

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(8)

and show the particle has quantised energy values.

15.a) (i) Draw the HCP structure and get the value of c/a and hence calculate the	
the packing fraction of HCP structure.	(12)
(ii) What are the seven types of crystal systems?	(4)

(OR)

(12)

(4)

b) (i) Explain in detail the different types of crystal defects.(ii) Give the procedure for finding Miller indices of crystal planes.

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