MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT
(AN AUTONOMOUS INSTITUTION)
(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)
Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section2(f) & 12(B)of the UGC act,1956

I B.Tech I Sem Supplementary Examination, October 2022
Applied Physics
(ECE)

Time: 3 Hours.   Max. Marks: 70

Note: 1. Question paper consists: Part-A and Part-B.
2. In Part – A, answer all questions which carries 20 marks.
3. In Part – B, answer any one question from each unit.
   Each question carries 10 marks and may have a, b as sub questions.

PART- A
                                             (10*2 Marks = 20 Marks)

1.	a)	What is Compton effect	2M	CO1	BL1
	b)	Explain Heisenberg uncertainty principle	2M	CO1	BL2
	c)	Distinguish p-type and n-type semiconductors	2M	CO2	BL2
	d)	Define the Fermi energy level	2M	CO2	BL1
	e)	Write the principle involved in LED	2M	CO3	BL2
	f)	Mention the examples for photodetectors	2M	CO3	BL1
	g)	Mention the applications of LASER	2M	CO4	BL1
	h)	Brief the losses associated with optical fibers	2M	CO4	BL2
	i)	What are piezoelectric materials	2M	CO5	BL1
	j)	Plot hysteresis curve	2M	CO5	BL2

PART- B
                                             (10*5 Marks = 50 Marks)

2	a)	Outline the laws of Black body radiation	7M	CO1	BL3
	b)	Interpret the wave function	3M	CO1	BL3

OR

3	a)	Apply Schrodinger wave equation to solve particle in a box problem	10M	CO1	BL3

4	a)	Compare the radiative and non-radiative recombination mechanisms in semiconductors	5M	CO2	BL4
	b)	Discuss the dependence of Fermi level on carrier concentration and temperature	5M	CO2	BL3

OR

5	a)	Explain the construction and principle of operation of BJT	5M	CO2	BL2
	b)	Illustrate the I-V characteristics of Zener diode in reverse bias	5M	CO2	BL2

6		Describe the structure, materials used, working principle and characteristics of PIN	10M	CO3	BL2
		OR			
7		Explain the structure, materials used and characteristics of LED	10M	CO3	BL2
8		Explain the construction and working of He-Ne laser	10M	CO4	BL3
		OR			
9	a)	Distinguish step index and graded index optical fibers	5M	CO4	BL3
	b)	List the applications of optical fibers	5M	CO4	BL1
10	a)	Derive Clausius-Mossotti equation	10M	CO5	BL3
		OR			
11	a)	Classify magnetic materials	5M	CO5	BL3
	b)	Mention the applications of magnetics materials	5M	CO5	BL2

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CO: Course Outcome   **BL - Blooms Taxonomy Levels**