Q.P. Code: 16HS603 **R16**

Reg. No: | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year I Semester Supplementary Examinations August-2021

ENGINEERING PHYSICS

(Common to CE, ME, AGE & EEE)

Time: 3 hours Max. Marks: 60

(Answer all Five Units **5 x 12 = 60** Marks)

UNIT-I

1	a	Explain the Fraunhofer diffraction in single slit.	6M
	b	Write a short note on population inversion.	6M
		OR	
2	a	Define acceptance angle and numerical aperture. Derive the expressions for acceptance angle and numerical aperture of an optical fiber.	8M
	b	Discuss the attenuation losses in optical fiber.	4M
		UNIT-II	
3	a	Describe the various crystal systems with neat diagrams with examples.	7M
	b	What are Miller indices? Give the procedure to find the Miller indices.	5M
		OR	
4	a	Give the properties of ultrasonics.	6M
	b	List the basic requirements of acoustically good hall.	6M
		UNIT-III	
5	a	Describe the behavior of the particle in one dimensional potential well in terms of eigen function and eigen values.	8M
	b	An electron is bound in one dimensional infinite well of width 0.1 nm. Find the energy values in the ground state and first two excited states.	4M
		OR	
6	a	Derive an expression for electrical conductivity in metals by using Quantum free electron theory.	5M
	b	Classify the solids in to conductors, semiconductors and insulators based on band theory of solids.	7M
		UNIT-IV	
7	a	Distinguish between intrinsic and extrinsic semiconductors.	6M
	b	Describe the Hall effect in semiconductors.	6M
		OR	
8	a	What are soft and hard magnetic materials.	6M
	b	Define the following a) magnetization b) permeability c) magnetic flux density.	6M
		UNIT-V	
9	a	What is Meissner's effect? Explain.	6M
	b	Difference between type-I and type-II superconductors.	6M
		OR	
10	a	What is nanomaterial? Give the classification of nanomaterial.	6M
	b	List the applications of nanomaterials in various fields.	6M

*** END ***