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

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations October-2020

ENGINEERING PHYSICS

(Common to ECE, CSE & CSIT)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	**a**	What is interference? Describe the formation of Newton's ring with necessary theory.	**8 M**
	b	Explain population inversion.	**4 M**
		OR	
2	**a**	Define numerical aperture. Derive an expression for numerical aperture of an optical fiber.	**6 M**
	b	Differentiate step index and graded index optical fibers.	**6 M**
		UNIT-II	
3	**a**	Show that FCC has mostly closed packed structure than BCC and SC.	**8 M**
	b	Sketch the crystal planes for the following miller indices (i) (100) (ii) (101) (iii) (011) (iv) (111)	**4 M**
		OR	
4	**a**	What are the basic requirements for an acoustically good hall?	**7 M**
	b	Summarize the production of ultrasonic by using piezoelectric method.	**5 M**
		UNIT-III	
5	**a**	Derive the Schrödinger's time independent wave equation for a particle.	**8 M**
	b	State the Physical significances of wave function.	**4 M**
		OR	
6	**a**	What are the salient features of classical free electron theory? Derive the expression for electrical conductivity in metals.	**8 M**
	b	List the drawbacks of classical free electron theory.	**4 M**
		UNIT-IV	
7	**a**	State and explain Hall effect in semiconductors.	**6 M**
	b	Distinguish between direct and indirect band gap of semiconductors.	**6 M**
		OR	
8	**a**	Summarize the origin of magnetic moment.	**6 M**
	b	Explain the B=H curve in ferromagnetic materials.	**6 M**
		UNIT-V	
9	**a**	What is superconductivity? Show that superconductors are diamagnetic in nature.	**8 M**
	b	Discuss the flux quantization in superconductors.	**4 M**
		OR	
10	**a**	Describe the basic principles of nanomaterials.	**6 M**
	b	Explain the ball milling technique of synthesis of nanomaterial.	**6 M**

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