Q.P. Code: 20HS0848 **R20**

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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech I Year II Semester Supplementary Examinations May-2022

ENGINEERING PHYSICS

(Mechanical Engineering)

Time: 3 hours Max. Marks: 60

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

UNIT-I

1	a	Explain how the wavelength of light source is determined by forming Newton's rings.	L2	8M
	b	In a Newton's ring experiment, the diameter of the 8^{th} dark ring was 0.375cm and the diameter of the 18^{th} dark ring was 0.675cm. If the wavelength of the light used is 6200 x 10^{-8}cm then, find the radius of curvature of the plano-convex lens.	L1	4M
		OR		
2		Summarize the Fraunhoffer diffraction due to double slit and derive the condition for principal maxima, secondary maxima and minima.	L3	12M

UNIT-II

3	a	Define the following: (i) unit cell (ii)coordination number (iii) packing factor	L1	5M
	b	Explain the various types of crystal systems with neat diagrams	L2	7M
		OR		
4	a	Sketch the crystal planes for the following Miller indices (i) 101 (ii) 010 (iii) 100	L3	6M
	b	State and explain Bragg's law of X-ray diffraction.	L2	6M

UNIT-III

5	a	Describe the basic requirements of acoustically good hall give their remedies.	L2	6M
	b	Define the absorption coefficient of sound and derive the expression for it.	L3	6M
		OR		
6	a	Explain the piezoelectric method to produce ultrasonic waves.	L2	6M
	b	Summarize the detection methods of ultrasonic waves.	L2	6M

UNIT-IV

7	a	Elaborate the behavior of a wire under an increasing load.	L6	6M
	b	Classify different types of beams.	L2	6M
		OR		
8	a	Develop the relation between the Young's modulus and bulk modulus.	L6	6M
	b	Derive an expression for energy stored per unit volume in stretched string.	L3	6M

UNIT-V

9	a	What is Meissner effect? Explain.	L2	6M
	b	Explain the Josephson effect in superconducting materials.	L2	6M
		OR		
10	a	Summarize the ball milling technique to prepare nanomaterials.	L2	6M
	b	List the applications of nanomaterials in various fields.	L1	6M

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