Reg. No:

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year II Semester Regular Examinations November-2021
ENGINEERING PHYSICS
(Mechanical Engineering)

Time: 3 hours
Max. Marks: 60

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

UNIT-I

1	a	Outline the important conditions to get interference of light.	L2	4M
	b	Explain the formation of Newton's rings with necessary theory and derive the expression for dark and bright fringes.	L2	8M

OR

2	a	What is diffraction grating? Derive the expression for wavelength of light by using diffraction grating.	L3	6M
	b	A plane transmission grating having 4000 lines per cm is illuminated with sodium light normally. In the second order diffraction spectrum, the spectral lines are deviated by 30^0. Determine the wavelength of the spectral line.	L3	6M

UNIT-II

3	a	Estimate the packing factor of BCC.	L5	6M
	b	Develop an expression for the inter-planar spacing in terms of Miller indices for a cubic crystal system.	L3	6M

OR

4	a	Describe the principle and procedure of Debye-Scherrer method of X-ray diffraction.	L2	8M
	b	List the advantage of Debye-Scherrer method.	L1	4M

UNIT-III

5	a	Define reverberation time. Derive the Sabine's formula for reverberation time. List the factors controlling the reverberation time.	L3	8M
	b	A hall consists of volume 360 m^3 has a reverberation time 0.8 seconds. Calculate the total sound absorption coefficient of the hall.	L3	4M

OR

6	a	List the properties of ultrasonic waves.	L1	6M
	b	Discuss the applications of ultrasonic waves.	L2	6M

UNIT-IV

7	a	What is Hooke's law? Explain.	L2	6M
	b	Define stress and strain. Classify different types of strains.	L2	6M

OR

8	a	Extend the discussion on different types of supports.	L2	6M
	b	The Young's modulus for steel wire is 2.2 x 10^{11}N/m^2 and its rigidity modulus is 8.1 x 10^{10}N/m^2. Predicts the Poisson's ratio and its bulk modulus.	L6	6M

UNIT-V

9	a	Prove that superconductor is a very good diamagnetic material.	L5	6M
	b	Distinguish between type-I and type-II superconductors.	L4	6M

OR

10	a	Explain the basic principles of nanomaterials.	L2	5M
	b	Summarize the sol-gel technique for synthesis of nanomaterials.	L2	7M

*** END ***