SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year II Semester Regular & Supplementary Examinations August-2023
APPLIED PHYSICS
(Common to ECE & EEE)

Time: 3 Hours **Max. Marks: 60**

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

UNIT-I

1	a	Discuss the theory of interference of light due to thin films by reflection with suitable ray diagram.	CO1	L1	4M
	b	Derive the condition for constructive and destructive interference in the case of reflected system.	CO1	L4	8M

OR

2	a	Distinguish between Fraunhofer and Fresnel's diffraction.	CO1	L4	6M
	b	What is Diffraction grating and explain.	CO1	L4	6M

UNIT-II

3	a	What are the salient features of classical free electron theory? Derive an expression for electrical conductivity in a metal.	CO2	L4	8M
	b	Write advantages quantum free electron theory over classical free electron theory.	CO2	L1	4M

OR

4	a	Explain the Faraday's law and Ampere's law through the Maxwell equations.	CO2	L4	8M
	b	Write the applications of Faraday's law.	CO2	L1	4M

UNIT-III

5	a	Write the important characteristic of laser beam.	CO3	L3	4M
	b	Describe the construction and working principle of He-Ne Laser with the help of a neat diagram.	CO3	L3	8M

OR

6	a	What is the numerical aperture of an optical fibre and derive an expression for it.	CO3	L1	8M
	b	An optical fibre has a numerical aperture of 0.20 and cladding refractive index of 1.59. Determine the refractive index of core and the acceptance angle for the fibre in water has a refractive index of 1.33.	CO3	L3	4M

UNIT-IV

7	a	What is intrinsic semiconductor and explain the formation of extrinsic semiconductors through doping.	CO4	L1	6M
	b	Derive the expression for intrinsic carrier concentration.	CO4	L4	6M

OR

8	a	Describe the Hall Effect in semiconductors.	CO4	L3	8M
	b	Write the applications of Hall Effect.	CO4	L1	4M

UNIT-V

9	a	Prove that super conductor is a very good diamagnetic material.	CO5	L4	8M
	b	Write the applications of superconductors.	CO5	L1	4M

OR

10	a	What is nanomaterial? Write the classification of nanomaterials.	CO5	L1	4M
	b	Explain ball milling technique for synthesis of nanomaterial.	CO5	L4	8M

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