O.P.Code:23HS0840a	R23	H.T.No.									

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. I Year II Semester Regular & Supplementary Examinations June-2025

ENGINEERING PHYSICS

(Common to CE, ME, CAD, CCC, CIC, CAI & CIA)

Time: 3 Hours **Max. Marks: 70**

PART-A

(Answer all the Questions **10 x 2 = 20** Marks)

1	a	Define Interference.	CO1	L1	2M
	b	Define Diffraction Grating.	CO1	L1	2M
	c	Define lattice parameters.	CO2	L1	2M
	d	Define Bragg's condition for X-Ray diffraction.	CO2	L1	2M
	e	Define dielectric polarisability.	CO3	L1	2M
	f	What is hysteresis?	CO4	L1	2M
	g	Mention any two properties of matter waves.	CO5	L1	2M
	h	What is Fermi energy level?	CO5	L1	2M
	i	Write any two differences between Intrinsic & Extrinsic semiconductors.	CO6	L2	2M
	j	What is Drift and Diffusion in semiconductors.	CO6	L1	2M

PART-B

(Answer all Five Units **5 x 10 = 50** Marks)

UNIT-I

2	a	Describe the formation of Newton's ring with necessary theory with relevant diagrams.	CO1	L3	6M
	b	Explain how the wavelength of light sources is determined using Newton's rings.	CO1	L2	4M

OR

3		In the study of Fraunhofer diffraction due to single slit how the diffraction fringes formed. Derive the conditions for bright and dark fringes.	CO1	L4	10M

UNIT-II

4		Show that Face centered cubic crystal structure has more closely packed structure than SC and BCC.	CO2	L3	10M

OR

5	a	Explain how crystal structure determined by Laue X-Ray diffraction method.	CO2	L2	7M
	b	What are the advantages of Laue X-Ray diffraction method?	CO2	L1	3M

UNIT-III

6	a	Obtain Clausius-Mosotti equation and explain how it can be used to determine the dipole moment of a polar molecule.	CO3	L4	7M
	b	Write the causes for Dielectric loss.	CO3	L4	3M

OR

7	a	Describe the classification of magnetic materials based magnetic moments.	CO4	L1	8M
	b	A magnetic material has magnetization 3300A/m and flux density of 0.0044 Wb/m2. Calculate the magnetizing force and relative permeability of the material.	CO4	L3	2M

UNIT-IV

8	a	Derive Schrödinger's time independent wave equation.	CO5	L3	7M
	b	Explain the physical significance of wave function.	CO5	L2	3M

OR

9	a	Derive an expression for electrical conductivity in a metal by using classical free electron theory.	CO5	L1	5M
	b	What are the postulates of classical free electron theory?	CO5	L3	5M

UNIT-V

10		Explain the formation of N-type & P-type semiconductors with band diagrams.	CO6	L2	10M

OR

11	a	Describe the Hall Effect in semiconductors.	CO6	L1	8M
	b	What are the applications of Hall Effect?	CO6	L1	2M

*** END ***