O.P.Code:23HS0840 | R23 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech. I Year I Semester Regular & Supplementary Examinations December/January-2025/2026
ENGINEERING PHYSICS
(Common to CSE, CSIT, ECE, EEE)

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 polarization.	CO3	L1	2M
	f	What is Hysteresis.	CO3	L1	2M
	g	What are matter waves.	CO4	L1	2M
	h	What is fermi energy level.	CO4	L1	2M
	i	Write any two differences between Intrinsic and Extrinsic semiconductors.	CO5	L2	2M
	j	What is Drift and Diffusion in semiconductors.	CO5	L1	2M

PART-B

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

UNIT-I

2	a	State and explain principle of superposition.	CO1	L1	4M
	b	Discuss the theory of interference of light due to thin films by reflection with suitable ray diagram.	CO1	L2	6M

OR

3	a	Explain the various types of polarizations.	CO1	L2	5M
	b	Explain the production of plane polarized light using Nicol Prism.	CO1	L2	5M

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	Explain the different types of polarizations.	CO3	L2	5M
	b	Derive the expression for electronic polarizabilty, α_e in dielectrics.	CO3	L3	5M

OR

7		Describe the classification of magnetic materials based magnetic moments.	CO4	L1	10M

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	L3	6M
	b	What are the postulates of classical free electron theory?	CO5	L1	4M

UNIT-V

10	a	Classify the solids into conductor, semiconductor & insulators based on band theory of solids.	CO6	L2	5M
	b	Explain P-type and N-type semiconductors.	CO6	L2	5M

OR

11	a	Describe the Hall Effect in semiconductors.	CO6	L1	8M
	b	What are the applications of Hall Effect?	CO6	L3	2M

*** END ***