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-2024/2025

ENGINEERING PHYSICS
(Common to ECE, CSE, EEE & CSIT)

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

PART-A
(Answer all the Questions **10 x 2 = 200** Marks)

1	a	Define Polarisation.	CO1	L1	2M
	b	Define Resolving Power of Grating.	CO1	L1	2M
	c	Draw the planes for given Miller indices i). (111) ii). (202) in cubic system.	CO2	L3	2M
	d	Define Bragg's condition for X-Ray diffraction.	CO2	L1	2M
	e	Write the causes for dielectric loss.	CO3	L4	2M
	f	What is Bohr magnetron?	CO4	L1	2M
	g	Mention any two properties of matter waves.	CO5	L1	2M
	h	What is Fermi energy level?	CO5	L1	2M
	i	What is Drift and Diffusion in semiconductors.	CO6	L1	2M
	j	What is extrinsic semiconductor?	CO6	L1	2M

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

UNIT-I

2	a	Distinguish between Fraunhofer and Fresnel's diffraction.	CO1	L3	5M
	b	Compare Interference and Diffraction.	CO1	L2	5M
		OR			
3	a	Describe the propagation of polarized light in Half –Wave plate.	CO1	L3	5M
	b	Calculate the thickness of Half-Wave plate, given that $\mu_e = 1.533$, $\mu_o = 1.544$ and $\lambda = 5000\ A^0$.	CO1	L4	5M

UNIT-II

4	a	What is (i) Unit cell (ii) Basis (iii) Bravais Lattice.	CO2	L1	3M
	b	Explain the various types of crystal systems with a neat sketch.	CO2	L2	7M
		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	4M
	b	Derive the expression for electronic polarizabilty α_e in dielectrics.	CO3	L3	6M
		OR			
7		Describe the classification of magnetic materials based on 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	Write brief note on Fermi Dirac distribution.	CO5	L1	4M
	b	What is the effect of temperature on Fermi Dirac distribution function?	CO5	L1	6M

UNIT-V

10	a	What is Fermi level?	CO6	L1	2M
	b	Prove that the Fermi level is lies exactly in between conduction band and valance band of intrinsic semiconductor.	CO6	L4	8M
		OR			
11	a	Describe the Hall Effect in semiconductors.	CO6	L1	8M
	b	What are the applications of Hall Effect?	CO6	L1	2M

*** END ***