SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.TechI Year I Semester Regular Examinations February-2024
ENGINEERING PHYSICS
(Computer Science & Engineering)

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

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

1	a	What is Interference and write their conditions.	CO1	L1	2M
	b	Define Polarisation.	CO1	L1	2M
	c	Define (i)Space lattice and (ii) Basis.	CO2	L1	2M
	d	Define Bragg's condition for X-Ray diffraction.	CO2	L1	2M
	e	Define dielectric constant.	CO3	L1	2M
	f	What is hysteresis?	CO4	L1	2M
	g	What are matter waves.	CO5	L1	2M
	h	Write any two merits of quantum free electron theory.	CO5	L2	2M
	i	Write any two differences between Intrinsic and 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	Discuss the theory of interference of light due to thin films by reflection with suitable ray diagram.	CO1	L2	7M
	b	A plane transmission grating having 4250 lines per cm is illuminated with sodium light normally. In the second order spectrum, the spectral lines are deviated by 300. What is the wavelength of the spectral line?	CO1	L3	3M

OR

3	Explain about Fraunhofer diffraction due to a single slit, Derive the conditions for bright and dark fringes.	CO2	L3	10M

UNIT-II

4	Show that Face centered cubic crystal structure has more closely packed structure than SC and BCC.	CO2	L2	10M

OR

5	a	Explain how crystal structure determined by Powder X-Ray diffraction method.	CO2	L2	7M
	b	Draw miller indices of planes (1 0 0), (1 0 1) and (010) in a cubic system.	CO2	L2	3M

UNIT-III

6	Explain Electronic, Ionic and Orientation polarisations.	CO3	L2	10M

OR

7	Explain about Dia, Para, Ferro, Anti ferro and Ferri magnetic materials.	CO4	L2	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	7M
	b	Write the merits and demerits of classical free electron theory.	CO5	L2	3M

UNIT-V

10	**a**	Expain about intrinsic semiconductors.	CO6	L2	5M
	b	Explain about extrinsic semiconductors.	CO6	L2	5M

OR

11	**a**	Describe the Hall Effect in semiconductors.	CO6	L1	8M
	b	Write any two applications Hall effect.	CO6	L2	2M

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