H.T.No: | | | | | | | | | | | Course Code: **241PH001**

ADITYA UNIVERSITY

B.Tech – I Semester End Examinations Regular (B.Tech2024)

SOLID STATE PHYSICS

(Common to CE, ME, Min.E & PT)

Time: 3 hours **Max. Marks: 50**

Answer ONE question from each unit
All Questions Carry Equal Marks
All parts of the questions must be answered at one place only

UNIT-I					
1	a	State and explain Hooke's law with stress-strain curve.	L2	CO1	[5M]
	b	Derive Relation between Bulk modulus and Young's modulus	L3	CO1	[5M]
		(OR)			
2	a	Derive an expression for bending moment for a beam.	L3	CO1	[5M]
	b	Describe depression of cantilever	L2	CO1	[5M]
UNIT-II					
3	a	Describe the seven crystal systems with neat diagrams.	L2	CO2	[5M]
	b	Define Atomic Packing Fraction. Calculate the Atomic Packing Fraction for BCC and FCC.	L2	CO2	[5M]
		(OR)			
4	a	State and explain Bragg's law of X-ray diffraction.	L2	CO2	[5M]
	b	Describe Powder method to analyze the crystal structure	L2	CO2	[5M]
UNIT-III					
5	a	Show that Fermi energy lies in the middle of valence band and conduction band in intrinsic semiconductors	L1	CO3	[6M]
	b	Distinguish between intrinsic and extrinsic semiconductors.	L2	CO3	[4M]
		(OR)			
6	a	What are drift and diffusion currents? Explain	L2	CO3	[5M]
	b	Derive Einstein's relations in semiconductors.	L3	CO3	[5M]
UNIT-IV					
7	a	Explain the origin of magnetic moment in atom.	L2	CO4	[6M]
	b	Explain various types of magnetic materials with example.	L2	CO4	[4M]
		(OR)			
8	a	Explain Ferromagnetic hysteresis curve with neat diagram	L2	CO4	[5M]
	b	Find the relative permeability of a ferromagnetic material if a field of strength 220 amp/meter produces a magnetization 3300 amp/meter in it	L3	CO4	[5M]
UNIT-V					
9	a	Show that electronic polarizability is proportional to cube of the atomic radius	L2	CO5	[6M]
	b	Write the applications of dielectric materials	L1	CO5	[4M]
		(OR)			
10	a	Derive Clausius –Mosotti equation.	L3	CO5	[6M]
	b	Write a short note on Ferro electric materials.	L2	CO5	[4M]

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