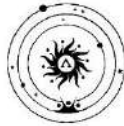


H.T.No:

--	--	--	--	--	--	--	--	--	--

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]
