O.P.Code:23HS0801 | R23 | H.T.No.

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

B.Tech. I Year II Semester Regular & Supplementary Examinations June-2025

CHEMISTRY

(Common to CSE, CSIT, EEE & ECE)

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

PART-A

(Answer all the Questions 10 x 2 = 20 Marks)

1	a	Define HOMO and LUMO.	CO1	L1	2M
	b	Give the Significance of Ψ and Ψ2.	CO1	L1	2M
	c	Mention the Properties of Nano materials.	CO2	L1	2M
	d	What are Intrinsic and Extrinsic Semiconductors?	CO2	L1	2M
	e	Give any two applications of Hydrogen Oxygen fuel cells.	CO3	L1	2M
	f	Give examples for amperometric sensors.	CO4	L1	2M
	g	What is monomer?	CO5	L1	2M
	h	Give examples of Biodegradable polymers used in real life.	CO5	L1	2M
	i	What is a stationary phase?	CO6	L1	2M
	j	Define Beer- Lambert's law with equation.	CO6	L1	2M

PART-B

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

UNIT-I

2		Derive equation for a particle in one dimensional box in detail and explain their significance.	CO1	L2	10M

OR

3	a	Explain Planck's Quantum Theory.	CO2	L2	5M
	b	Explain the significance of the Ψ and Ψ2 .	CO2	L2	5M

UNIT-II

4	a	Compare the band diagrams of Insulators, Semi-conductors and Conductors.	CO2	L3	5M
	b	Explain the basic principle and Classifications of Super Capacitors.	CO2	L3	5M

OR

5	a	Draw the band diagrams for conductors, semi-conductors and Insulators.	CO2	L2	6M
	b	Discuss the properties of Carbon nanotubes.	CO2	L2	4M

UNIT-III

6		Derive the Nernst equation for a single electrode potential and explain the terms in equation and write its applications.	CO3	L3	10M

OR

7		Explain the construction, cell reactions and applications of Lithium-Ion rechargeable cell?	CO4	L3	10M

UNIT-IV

8	a	Discuss the preparation, properties and application of Buna-S rubber and Buna-N rubber.	CO5	L2	6M
	b	Explain about synthesis, properties and applications of Poly Lactic Acid.	CO5	L2	4M

OR

9	a	Explain the preparation, properties and uses of Bakelite.	CO5	L2	5M
	b	Explain Co-ordination or Ziegler-Natta polymerization.	CO5	L2	5M

UNIT-V

10	a	What is meant by Chromatography? Write about principle and instrumentation of HPLC chromatography with neat diagram.	CO6	L1	7M
	b	What is the use of detector in chromatographic technique and what are the different types of detectors used in HPLC technique.	CO6	L2	3M

OR

11		Explain the various possible electronic transitions occurs in a molecule by absorbing the UV-Visible radiation.	CO6	L2	10M

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