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

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)

B.Tech. I Year I Semester Regular & Supplementary Examinations December/January-2024/2025

CHEMISTRY

(Common to CSM, CIC, CAD, CCC, CAI & CIA)

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

PART-A

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

1	a	Define Bond Order.	CO1	L1	2M
	b	Give Heisenberg Uncertainty principle.	CO1	L1	2M
	c	Define Semiconductor.	CO2	L1	2M
	d	Define Nanomaterial.	CO2	L1	2M
	e	Write Single electrode potential.	CO3	L1	2M
	f	What is Primary Battery.	CO3	L1	2M
	g	What is Monomer?	CO5	L1	2M
	h	What is Polymerization?	CO5	L1	2M
	i	Write Beer- Lambert's law.	CO6	L1	2M
	j	Define Mobile phase.	CO6	L1	2M

PART-B

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

UNIT-I

2	a	Explain Planck's Quantum Theory.	CO1	L2	5M
	b	Write short notes on Wave-Particle duality of matter.	CO1	L2	5M
		OR			
3		Illustrate the molecular orbital diagram of O_2^{+} and O_2^{2-}. Explain its bond order and magnetic property based on MOT theory.	CO1	L2	10M

UNIT-II

4	a	Explain about p-type and n-type semiconductor.	CO2	L2	5M
	b	Discuss about Type-I and Type-II Superconductors with examples.	CO2	L2	5M
		OR			
5	a	Discuss the classification and properties Graphine nanoparticles.	CO2	L2	5M
	b	Outline the important applications of Graphine nanoparticles.	CO2	L2	5M

UNIT-III

6	a	What is single electrode potential? Calculate the single electrode potential of zinc in 0.05M $ZnSO_4$ solution at 298.15 K. $\{E^0_{Zn/Zn^{2+}} = -0.763V\}$	CO3	L3	5M
	b	Explain construction and working of Daniel cell.	CO3	L2	5M
		OR			
7		Write a note on construction, cell reactions and applications of Lithium-Ion rechargeable cell.	CO4	L2	10M

UNIT-IV

8		Explain different types of polymerizations with examples in detail.	CO5	L2	10M
		OR			
9	a	Write the preparation, properties and application of Buna-S rubber and Buna-N rubber.	CO5	L2	6M
	b	Write the applications of conducting polymers.	CO5	L2	4M

UNIT-V

10		Explain the various possible electronic transitions occurs in a molecule by absorbing the UV-Visible radiation.	CO6	L2	10M
		OR			
11	a	What is the use of detector in chromatographic technique and what are the different types of detectors used in HPLC technique.	CO6	L2	5M
	b	Discuss the principle and applications of IR Spectroscopy.	CO6	L2	5M

***** END *****