Q.P.Code: 23HS0801	R23	H.T.No.									

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

B.Tech I Year II Semester Regular & Supplementary Examinations May/June-2026
CHEMISTRY
(Common to EEE, ECE, CSE & CSIT)

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

PART-A

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

1	a	State the significance of ψ and ψ^2 in quantum mechanics.	CO1	L1	2M
	b	Define bond order. Calculate bond order of O_2 molecule.	CO1	L2	2M
	c	Define semiconductors and give one example.	CO2	L1	2M
	d	List two properties of carbon nanotubes.	CO2	L2	2M
	e	State Nernst equation for a cell reaction.	CO3	L1	2M
	f	Mention two advantages of hydrogen-oxygen fuel cells.	CO3	L2	2M
	g	Define functionality of a monomer with an example.	CO4	L1	2M
	h	What are Biodegradable polymers?	CO4	L2	2M
	i	State Beer-Lambert's law.	CO5	L1	2M
	j	What is the principle of HPLC?	CO5	L2	2M

PART-B

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

UNIT-I

2		Illustrate the molecular orbital diagram of O2 + and O22-. Explain its bond order and magnetic property based on MOT theory.	CO1	L2	10M

OR

3	a	Explain Planck's Quantum Theory.	CO1	L2	5M
	b	Write short notes on Wave-Particle duality of matter	CO1	L2	5M

UNIT-II

4	a	Explain the basic principle and Classifications of Super Capacitors.	CO2	L2	5M
	b	Discuss applications of Super Capacitors.	CO2	L2	5M

OR

5	a	What is meant by Nano materials? How the Nano materials Classified.	CO2	L1	5M
	b	Write a note on applications of fullerenes.	CO2	L1	5M

UNIT-III

6	a	Define Electrochemical cell? Explain the construction, working Principle and mechanism of an Electrochemical cell.	CO3	L1	5M
	b	Calculate the emf of iron-copper voltaic cell [Fe/Fe+2//Cu+2/Cu] with standard potential of copper and iron as + 0.34 V and – 0.44 V respectively.	CO3	L3	5

OR

7	a	What is primary Battery? Write about construction, cell reactions and applications of Zinc-Air battery.	CO3	L1	6
	b	Differentiate Primary and Secondary Batteries with examples.	CO3	L2	4

UNIT-IV

8	a	Write the preparation, properties and application of Buna-S rubber and Buna-N rubber.	CO5	L2	6
	b	Write the applications of conducting polymers.	CO5	L3	4

OR

9	a	Discuss the synthesis, properties and applications of Polyvinylchloride (PVC) polymer.	CO5	L2	5
	b	Distinguish between Thermoplastics and Thermosetting plastics.	CO5	L2	5

UNIT-V

10	a	Explain the different regions of electromagnetic spectrum.	CO6	L2	5
	b	Discuss the basic components of UV-Visible spectroscopy.	CO6	L1	5

OR

11	a	Explain various classifications of Chromatographic technique.	CO6	L2	5
	b	Explain in detail about Stretching and bending vibrations.	CO6	L2	5

*** END ***