SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
B.Tech I Year II Semester Supplementary Examinations December-2025
CHEMISTRY
(Common to CSE, CSIT, EEE, ECE)

Time: 3 Hours   Max. Marks: 70

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

1	a	Write short notes on Wave-Particle duality of matter	CO1	L2	2M
	b	Give the Significance of Ψ and $\Psi2$	CO1	L1	2M
	c	Write the importance on band gap in semiconductors?	CO2	L1	2M
	d	Define Nanomaterial?	CO2	L1	2M
	e	Define Single electrode potential?	CO3	L1	2M
	f	Write the applications of Hydrogen Oxygen fuel cells	CO4	L1	2M
	g	Give examples of Biodegradable polymers?	CO5	L1	2M
	h	Define Polymerization?	CO5	L1	2M
	i	Give any 4 examples of mobile phase	CO6	L1	2M
	j	Write the working principle of Liquid chromatography?	CO6	L1	2M

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

UNIT-I

2	Illustrate the molecular orbital diagram of O_2^+ and O_2^{2-}. Explain its bond order and magnetic property based on MOT theory.	CO1	L3	10M

OR

3	Calculate the bond order of F_2 & NO molecule and explain the magnetic properties based on MOT theory.	CO1	L3	10M

UNIT-II

4	a	Explain in detail about principle and classification of semiconducting materials.	CO2	L2	7M
	b	Discuss about Type-I and Type-II Superconductors with examples.	CO2	L2	3M

OR

5	a	Explain the basic principle and Classifications of Super Capacitors.	CO2	L2	6M
	b	Outline the important applications of Graphine nanoparticles.	CO2	L2	4M

UNIT-III

6	Explain construction and working of Daniel cell? Calculate the single electrode potential of zinc in 0.01M $ZnSO_4$ solution at 298.15 K. {E0 Zn/Zn 2+ = -0.756V}	CO3	L3	10M

OR

7	a	Define Fuel cell? Describe the Construction and Working principle and uses of Polymer electrolyte membrane fuel cell.	CO4	L2	6M
	b	Discuss about potentiometric sensors with examples.	CO4	L2	4M

UNIT-IV

8	a	Explain different types of polymerizations with examples in detail.	CO5	L2	5M
	b	Explain about synthesis, properties and applications of Poly Lactic Acid.	CO5	L2	5M

OR

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

UNIT-V

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

OR

11	a	Explain the various possible electronic transitions occurs in a molecule by absorbing the UV-Visible radiation.	CO6	L2	
	b	Explain in detail about Stretching and bending vibrations.	CO6	L2	

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