

**BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(AUTONOMOUS)**

I-B. Tech I-Semester Supplementary Examinations (BR23), April - 2025

SUBJECT NAME: CHEMISTRY**BRANCH: CSE, AI&DS, AI&ML,INF**

Time: 3 hours

Max. Marks: 70

*Question Paper consists of Part-A and Part-B
Answer ALL the question in Part-A and Part-B*

PART-A (10X2 = 20M)

	Marks	CO	BL
1. a) How many Pi- molecular orbitals are there in benzene? What are they?	(2M)	CO1	L1
b) Interpret the electronic configuration of O ₂ molecule	(2M)	CO1	L2
c) Outline any two applications of super capacitors.	(2M)	CO2	L2
d) Define superconductors and give examples.	(2M)	CO2	L1
e) Name any two examples of potentiometric sensors and amperometric sensors.	(2M)	CO3	L1
f) Build the model graph of conductometric titration between strong acid and strong base	(2M)	CO3	L3
g) List any two bio-degradable polymers.	(2M)	CO4	L1
h) Name the steps involved in free radical polymerization.	(2M)	CO4	L1
i) Interpret the various regions of electromagnetic spectrum.	(2M)	CO5	L2
j) What is the basic principle behind chromatography?	(2M)	CO5	L1

PART-B (5X10 = 50M)

2a.	Derive Schrodinger wave equation.	(5M)	CO1	L3
b.	Determine the bond order of N ₂ and H ₂ ⁺	(5M)		L5
(OR)				
3a.	Construct the energy level diagram of CO and tell the stability and its magnetic nature.	(10M)	CO1	L3
(OR)				
4a.	Outline any five applications of carbon nanotubes.	(5M)	CO2	L2
b.	Distinguish between Type-I and Type-II superconductors.	(5M)		L4
(OR)				
5a.	Define super capacitors. Write an account on classification of super capacitors.	(10M)	CO2	L1
(OR)				
6a.	Derive Nernst equation.	(5M)	CO3	L3
b.	What are the major applications of Zinc-air battery and lithium cells.	(5M)		L1
(OR)				
7a.	Illustrate any two-acid base conductometric titrations.	(10M)	CO3	L2
(OR)				
8a.	Discuss the mechanism of free radical addition polymerization.	(10M)	CO4	L4
(OR)				
9a.	Determine the preparation, properties and applications of PVC.	(5M)	CO4	L5
b.	Explain the preparation of Bakelite with suitable reactions and applications.	(5M)		L2

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|------|---|-------|-----|----|
| 10a | Discuss the working of UV-Visible spectrophotometer. | (5M) | | L2 |
| b. | Explain Beer Lamberts Law. | (5M) | CO5 | L2 |
| (OR) | | | | |
| 11a | Discuss the Principle, Instrumentation and Application of HPLC? | (10M) | CO5 | L2 |
