BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE
(AUTONOMOUS)

I - B. Tech II-Semester Regular Examinations (BR23), June - 2025
CHEMISTRY (ECE&EEE)

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)	What is Schrödinger wave equation? Explain the significance of Ψ?		(2M)	CO1	L1
b)	Calculate the bond orders of CO and O_2		(2M)	CO1	L1
c)	Mention any four applications of super capacitors?		(2M)	CO2	L3
d)	What are primary cells? Give any two examples		(2M)	CO2	L1
e)	What are carbon nanotubes?		(2M)	CO3	L1
f)	Give any two differences between primary and secondary cells?		(2M)	CO3	L3
g)	What is the Polymer Electrolyte Membrane Fuel Cell (PEMFC)?		(2M)	CO4	L1
h)	What are biodegradable polymers?		(2M)	CO4	L1
i)	What is the principle of High Performance Liquid Chromatography (HPLC)?		(2M)	CO5	L1
j)	Explain the different chromatographic methods?		(2M)	CO5	L2

PART–B (5X10 = 50M)

		Marks	CO	BL
2.a)	Discuss the formation of CO molecule on the basis of M.O theory?	5(M)	CO1	L3
b)	Mention any five important postulates of Molecular Orbital Theory	5(M)		

(OR)

		Marks	CO	BL
3.a)	Solve the Schrödinger wave equation for a particle in a one-dimensional box with significance of wave functions?	10(M)	CO1	L3

		Marks	CO	BL
4.a)	What are fullerenes? Give any three applications of fullerenes.	5(M)	CO2	L1
b)	Discuss the preparation of carbon nanotubes by Arc Discharge Method with a neat sketch	5(M)		

(OR)

		Marks	CO	BL
5.a)	What are super capacitors? Give the classification of Super Capacitors & Mention	6(M)	CO2	L3
b)	Write any three applications of Super capacitors.	4(M)		
	Briefly discuss about P-Type Semiconductors ?			

6.a)	What are primary cells? Give any two examples. Briefly discuss the working of Zinc-air battery with a neat Sketch and also give zinc-air battery reactions.	10 M)	CO3	L4

<div align="center">(OR)</div>

7.a)	What are Conductometric titrations? Give any two examples.	2(M)	CO3	L3
b)	Explain the construction and working of Hydrogen-oxygen fuel cell with a neat diagram. Also mention the chemical reactions.	8(M)		

8.a)	Write an account of the preparation, properties, and engineering applications of:	10(M)	CO4	L4
	i) Buna-S rubber			
	ii) Buna-N rubber			
	iii) PVC			

<div align="center">(OR)</div>

9.a)	What are conducting polymers?	2(M)	CO4	L1
b)	Briefly explain the Mechanism of conduction in Polyacetylene. Also give few applications of Conducting polymers	8(M)		

10.a)	What is electromagnetic spectrum?	2(M)	CO5	L2
b)	Draw a neat sketch and give the principle, instrumentation, and applications of IR spectroscopy	8(M)		

<div align="center">(OR)</div>

11.a)	Derive Beer–Lambert's Law.	5(M)	CO5	L2
b)	Briefly explain the theory of IR vibration spectroscopy.	5(M)		

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