Course Code: 23BS1T03

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE

(AUTONOMOUS)

I - B. Tech I-Semester Regular/Supplementary Examinations (BR23), Jan - 2026

CHEMISTRY (CSE, AI&ML, CSE-AI&DS, INF)

Time: 3 hours Max. Marks: 70

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

PART–A (10X2 = 20M)

		Marks	CO	BL
1. a)	What is the significance of Ψ and Ψ^2?	(2M)	CO1	2
b)	What are the bond orders of H_2 and O_2	(2M)	CO1	2
c)	Give an account of two applications of Super Capacitors	(2M)	CO2	1
d)	Write an account of any two applications of Nanomaterials	(2M)	CO2	2
e)	What is an Electrochemical Cell?	(2M)	CO3	2
f)	What is a Battery?	(2M)	CO3	2
g)	What is meant by functionality of a monomer?	(2M)	CO4	2
h)	Write any two applications of PVC	(2M)	CO4	2
i)	What is an Electromagnetic Spectrum?	(2M)	CO5	2
j)	Explain the basic principle of HPLC	(2M)	CO5	2

PART–B (5X10 = 50M)

2.a	Explain Molecular Orbital theory	5(M)	CO1	2
b	Discuss on the energy diagram of CO molecule	5 (M)	CO1	2
	(OR)			
3.	Derive Schrodinger wave equation for a particle in a one-dimension box	10(M)	CO1	2
4.a	Write an account on N-type and P-type of semiconductors	6(M)	CO2	2
b	What are graphene nanoparticles and write their applications	4(M)	CO2	2
	(OR)			
5	What are Fullerenes? How Fullerenes are prepared? Write their applications	10(M)	CO2	2
6.a	Derive Nernst equation	6(M)	CO3	1
b	Find the electrode potential of a half cell for Zn electrode dipped in a 0.01M zinc solution	4(M)	CO3	1
	(OR)			
7.a	What are fuel cells?	2(M)	CO3	2
b	Explain about Hydrogen-Oxygen fuel cell and write its applications and limitations	8(M)	CO3	2

8.a	What is Polymerization	2(M)	CO4	2
b	Explain Chain growth polymerization with example and mechanism	8(M)	CO4	2
	(OR)			
9.a	Distinguish between Thermoplastics and Thermosetting plastics	6(M)	CO4	2
b	Explain how Nylon-6,6 is prepared and write its applications	4(M)	CO4	2
10a	What is Beer-Lambert's law?	3(M)	CO5	2
b	Explain the principle of UV-visible spectroscopy and its applications	7(M)	CO5	2
	(OR)			
11a	What is absorption of radiation?	2(M)	CO5	2
b	Write an account of the principle, working and application of HPLC	8(M)	CO5	2

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