Course Code: 23BS2T03

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE

(AUTONOMOUS)

I - B. Tech II-Semester Supplementary Examinations (BR23), Sep/Oct - 2024

SUBJECT NAME: CHEMISTRY **BRANCH: 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)	Write the bond order of O_2 and N_2	(2M)	CO-1	L1
b)	Calculate the ground state energy of a particle in a box of length 1m	(2M)	CO-1	L2
c)	What are extrinsic semiconductors? Give two examples	(2M)	CO-2	L1
d)	Super capacitors are also called as Ultra capacitors? Justify	(2M)	CO-2	L2
e)	How a galvanic cell can be represented	(2M)	CO-3	L1
f)	What are anodic and cathodic materials in Zn-air battery	(2M)	CO-3	L1
g)	Define functionality of a monomer?	(2M)	CO-4	L1
h)	What are bio degradable polymers? Mention their advantages	(2M)	CO-4	L2
i)	Calculate molar absorption coefficient of a solution having concentration of 0.01 M passed through a path length of 1 M having an absorption of 0.280	(2M)	CO-5	L2
j)	List out detector materials for HPLC	(2M)	CO-5	L1

PART–B (5X10 = 50M)

2a.	What is LCAO approximation. How it can be helpful in identifying magnetic character of a molecule? Explain with suitable example	10(M)	CO-1	L2
	(OR)			
3a.	Derive Schrodinger time independent wave equation. Explain the significance of Ψ^2	10(M)	CO-1	L3
4a.	What is Super conductivity? Explain its types, properties and applications	10(M)	CO-2	L1
	(OR)			
5a.	Write a note on conduction mechanism in n-type semiconductors	5 (M)	CO-2	L2
b.	What are Fullerenes? Write a note on its structure and applications	5 (M)		
6a.	Derive Nernst equation for calculation of cell potential?	6 (M)	CO-3	L2
b.	Write a note on biomedical applications of electrochemical sensors.	4 (M)		
	(OR)			
7a.	What are secondary batteries? Explain the construction of Li-Ion battery with charging and discharging equations	10(M)	CO-3	L2
8a.	What is polymerization? Explain the mechanism of step growth polymerization with a suitable example	10(M)	CO-3	L1
	(OR)			

9a.	What are conducting polymers? Explain the mechanism of conduction in extrinsic conducting polymers	10(M)	CO-4	L1
10a	What are absorption laws? Derive an expression for absorption of radiation by Lamberts Beers Law	8 (M)	CO-5	L2
b.	Define the terms Auxochrome and Chromophores	2 (M)		
	(OR)			
11a	What is Principle involved in Chromatography? Give examples	2 (M)	CO-5	L2
b.	Explain the Principle, Instrumentation and Application of HPLC?	8 (M)		

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