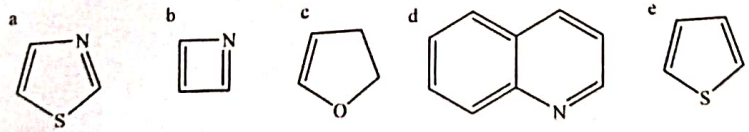
VIT
Vellore Institute of Technology

SCHOOL OF ADVANCED SCIENCES
Department of Chemistry
Fall Semester 2023-24
Continuous Assessment Test – 2

Course Code: BCHY101L **Duration** : 90 Minutes **Slot: C2 +TC2**
Course Name: Engineering Chemistry **Max. Marks :** 50
Class Numbers: VL2023240106245, 6249, 6253, 6259, 6273, 6277, 6281, 6285,6289, 6293, 6535
Faculty Names: Dr. Mohana Roopan S, Dr. Nawaz Khan F, Dr. Manju S L, Dr. Anand Prabu A, Dr. Sumathi S, Dr. Priyankar Paira, Dr. Rajasekhara Reddy, Dr. Vijayaraghavan R, Dr. Santhakumar K, Dr. Asharani I.V, Dr. Amit Kumar Tiwari

QN	Answer ALL the questions (5 X 10 = 50 Marks)	Marks	CO	BL
1	**(a)** What happens when a thermos flask containing liquid is vigorously shaken? Identify and describe the law of thermodynamics used to explain the above phenomenon. **(b)** 1 mole of an ideal gas, maintained at 4.9 atm and at a certain temperature, absorbs heat 2504 J and expands to 2 litres. Calculate the entropy change in expansion process.	5+5	CO2	BL4
2	**(a)** For the reaction $Ag_2O(s) \rightarrow 2Ag(s) + ½\ O_2(g)$: ΔH = 30.1 kJ mol^{-1} and ΔS=6.06 JK^{-1} mol^{-1} (at 1 atm). Calculate the temperature at which ΔG is equal to zero. Also predict the direction of the reaction at this temperature. **(b)** A reaction has its rate constant value as 3×10^{-7} L mol^{-1} s^{-1} at T=450 K and 4.2×10^{-6} L $mol^{-1}s^{-1}$ at T=550 K. Determine the activation energy of the reaction.	5+5	CO2	BL3
3	Identify the biocatalyst used in the food industry, to preserve foodstuffs and in the manufacture of beverages. Explain the chemical process and the mechanism.	10	CO2	BL4
4	Segregate the following compounds into aromatic, non-aromatic and anti-aromatic and give justification.  	10	CO1	BL3
5	**(a)** Identify the indicator used in strong acid and weak base titration, elaborate the synthesis. **(b)** A patient had consulted a doctor with the following symptoms. He had body pain, elevated body temperature and symptoms of rheumatism. Which drug the doctor would have prescribed? Explain with mechanism the synthesis of the drug.	5+5	CO1	BL3