

**VIT**Vellore Institute of Technology
(Deemed to be University under section 3 of UOI Act, 1956)**SCHOOL OF ADVANCED SCIENCES**
Department of Chemistry
Fall Semester 2024-25
Continuous Assessment Test -I

Course Code: BCHY101L

Duration : 90 Minutes

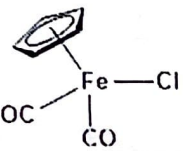
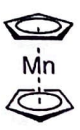
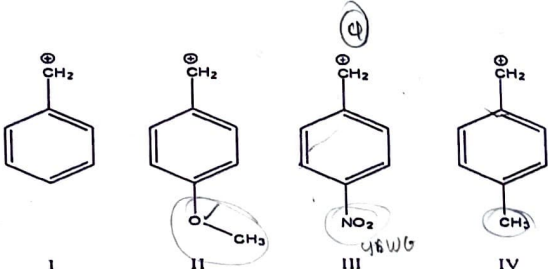
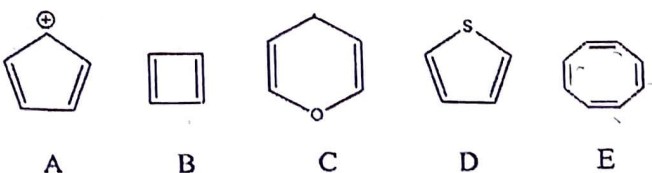
Slot : G2+TG2

Course Name: Engineering Chemistry

Max. Marks: 50

Class Numbers: 6757, 6764, 6768, 6777, 6782, 6791, 6793, 7042, 7043, 7093, 7094, 7096, 7196, 7237, 8578

Faculty Names: Dr. NAWAZ KHAN F, Dr. PRABHAKARAN D, Dr. RAJASEKHARA REDDY SABBASANI, Dr. SUSANTA KUMAR BHUNIA, Dr. MADHVESH PATHAK, Dr. SRIRAGHAVAN K, Dr. MANJU S L, Dr. VEERA VENKATA RAMESH E, Dr. SANGEETHA D, Dr. ARUNPRASAD M, Dr. SOVAN ROY, Dr. RAJAGOPAL D, Dr. THENMOZHI K, Dr. LOGANATHAN RANGASAMY, Dr. MAUSUMI GOSWAMI

Q N	Answer <u>ALL</u> the questions (5 x 10 = 50 Marks)	Marks	CO	BL
1	Explain in detail the structure and function of hemoglobin as well as the role of distal histidine in proper functioning of hemoglobin. <i>(structure also)</i>	10	CO1	BL1
2	(a) Calculate Δ_0 value and magnetic moment of the below mentioned complexes with the help of CFT:- (i) $[\text{CoCl}_6]^{3-}$ (ii) $[\text{Cr}(\text{CN})_6]^{3-}$ b) Predict the stability of the following organometallic compounds using 18 electron rule:- (i)  (ii) 	(5 + 5)	CO1	BL3
3	a) Coordination complexes are important in estimation of metal ions-justify the statement with any two examples. b) Clarify the reason of the following observations: - (i) CFSE of $[\text{Ir}(\text{NH}_3)_6]^{3+}$ is greater than $[\text{Co}(\text{NH}_3)_6]^{3+}$. (ii) Shape of $\text{Ni}(\text{CO})_4$ is tetrahedral.	(5 + 5)	CO1	BL3
4	a) Arrange the following carbocations in the decreasing order of stability and explain the reasons:  b) What are the factors those stabilize tertiary and benzyl free radical?	(5 + 5)	CO1	BL3
5	Label the following compounds appropriately as aromatic, non-aromatic or anti-aromatic with suitable justification:- 	10	CO1	BL2