



VIT

Vellore Institute of Technology

SLOT: F2+TF2

REG.NO.: 21BEC0336

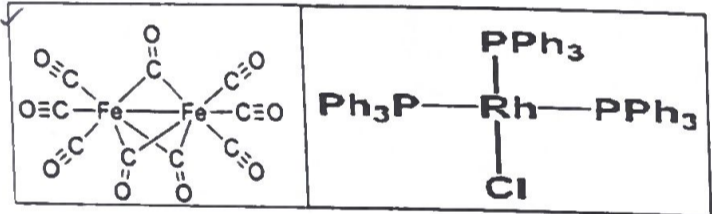
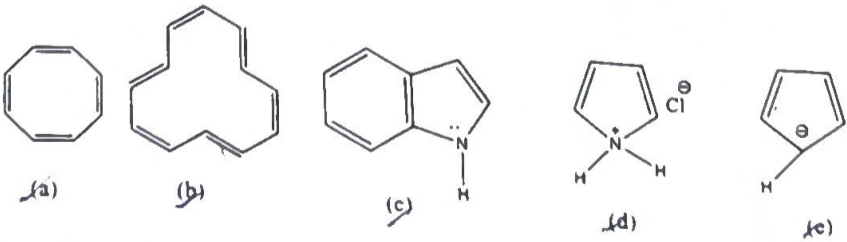
SCHOOL OF ADVANCED SCIENCES CONTINUOUS ASSESSMENT TEST (CAT) -I WINTER SEMESTER 2024-2025

Programme Name & Branch : B.Tech
 Course Code : BCHY101L
 Course Name : Engineering Chemistry
 Faculty Name(s) : Dr. Sathishkumar P
 Class Number(s) : VL2024250505999
 Date of Examination : 01.02.2025
 Exam Duration : 90 minutes

Maximum Marks: 50

General Instruction(s):

- Answer **all** the Questions.
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes Statement:
CO. 1: Apply the fundamental concepts in organic, inorganic and physical chemistry.

Q. No	Question	M	CO	BL
1.	Discuss the significance of crystal field theory (CFT) in understanding the (i) bonding nature, (ii) crystal field splitting energy (Δ_0) and (iii) spectrochemical series of coordination compounds along with its limitations	10	1	BL3
2.	a) Validate the EAN ($18 e^-$) rule for the following compounds with appropriate explanation, (Fe = 26 and Rh = 45)  b) Discuss in detail about the hybridization and magnetic moment of the following coordination complex, $[Cu(Cl)_4]^{2-}$ and $[Ni(CN)_4]^{2-}$	5 + 5	1	BL3
3.	a) Discuss the applications of ferrocene. b) Explicate the structure of hemoglobin and discuss the role of Fe in respiration process.	5 + 5	1	BL3
4.	a) Give an account on stabilizing/destabilizing effects of t-butyl group on (i) Carbocation and (ii) Free radical. Draw required structures. b) How do the 's' character and resonance influence the stability of carbanions? Explain with suitable example.	5 + 5	1	BL3
5.	Identify the aromatic, anti-aromatic and non-aromatic nature of the following compounds, 	10	1	BL3
