VIT

Vellore Institute of Technology

(Deemed to be University under section 3 of UGC Act, 1956)

SCHOOL OF ADVANCED SCIENCES

Department of Chemistry

Winter Semester 2022-23

Continuous Assessment Test – I

Course Code: BCHY101L **Duration :** 90 Minutes **Slot : E1+TE1**

Course Name: Engineering Chemistry **Max. Marks : 50**

Class Numbers: VL2022230504477; VL2022230504612; VL2022230504614; VL2022230504546; VL2022230504548; VL2022230504544;VL2022230504616

Faculty Names: Dr.Nawaz Khan F, Dr.Manju,S.L, Dr. Sarveswari S, Dr. Mohana Roopan. S, Dr. Vijayaraghavan R, Dr. Sriraghavan K, Dr. Loganathan Rangasamy

Q. No.	Answer ALL the questions (5 x 10 = 50 Marks)	Marks	CO	BL
1	Metal complexes acquire tetrahedral, square planar and octahedral geometries based on electronic configuration. Justify the statement with suitable example for each.	10	CO2	1
2	(a) Differentiate sigma bonded, π-bonded, sigma & π-bonded organometallic compounds with suitable examples. (b) Delineate the structure and the applications of an organometallic compound having diamagnetic iron sandwiched between two cyclopentadienyl anions.	(5 + 5)	CO2	2
3	(a) Illustrate with an example the significance of the metal complexes in living beings (humans or plants). (b)The cyclopentadienyl anion is aromatic, while cyclopentadienyl cation and cyclopentadiene are antiaromatic and non-aromatic, respectively. Justify.	(5 + 5)	CO2	3
4	(a) Illustrate with an example the role of hyperconjugation and resonance in the stability of free radicals. (b) Identify an analgesic and antipyretic drug molecule. Enumerate its synthetic route with a mechanism.	(5 + 5)	CO2	1
5	Illustrate the neighboring carbon-carbon multiple bonds' effect on the stability of the carbocations, carbanions and free radicals with suitable examples	10	CO2	2