G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI – 628 502.

UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2024.
(For those admitted in June 2021 and later)

PROGRAMME AND BRANCH: B.Sc., CHEMISTRY

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
IV	PART – III	CORE – 6	U21CH406	INORGANIC CHEMISTRY - III

Date & Session: 09.11.2024 / FN **Time : 3 hours** **Maximum: 75 Marks**

Course Outcome	Bloom's K-level	Q. No.	SECTION – A (10 X 1 = 10 Marks) Answer ALL Questions.
CO1	K1	1.	Choose a monodendate ligand from the following: a) Chloro b) dien c) Ox d) en
CO1	K2	2.	What is the coordination number of the complex $K_4[Fe(CN)_6]$. a) 4 b) 6 c) 1 d) 2
CO2	K1	3.	The arrangement of common ligands in the increasing order of their crystal-field splitting energy (CFSE) values is known as _____. a) Electrochemical series b) Coordination series c) Spectrochemical series d) EAN
CO2	K2	4.	For a high spin d^4 octahedral complex the crystal field splitting energy will be------ Δ_0. a) -1.6 b) -0.6 c) -1.2 d)-0.8
CO3	K1	5.	The complexes which allow very quick exchange of ligands from their coordination sphere by other ligands are called _____ complexes. a) Mobile b) trans c) Labile d) inert
CO3	K2	6.	Trans effect is related to _____ reactions taking place in square planar complexes. a) Substitution b) isomerism c) Elimination d) Addition
CO4	K1	7.	According to Sidgwick's effective atomic number rule the central metal acquires------------ configuration. a) inert gas b) Quartet c) Duplet d) Octect
CO4	K2	8.	In Wilkinson's Catalyst, the coordination centre is _____. a) Ph b) Rh c) PPh d) Rb
CO5	K1	9.	Photovoltaic cells consist of two or more layers of. a) Conductor b) semiconductors c) Batteries d) Insulators
CO5	K2	10.	The products of photolysis of water are _____. a) H_2 and O_2 b) OH^- and O_2^- c) H^+ and OH^- d) O_2 and H^+
Course Outcome	Bloom's K-level	Q. No.	SECTION – B (5 X 5 = 25 Marks) Answer ALL Questions choosing either (a) or (b)
CO1	K3	11a.	Identify various types of ligands. **(OR)**
CO1	K3	11b.	Apply VB theory to octahedral complexes.

CO2	K3	12a.	Model the splitting of d-orbitals in octahedral complexes.
			(OR)
CO2	K3	12b.	Compute the factors affecting the magnitude of crystal field splitting.
CO3	K4	13a.	Define trans effect and propose any one theory to explain trans effect.
			(OR)
CO3	K4	13b.	Illustrate anation reactions with an example.
CO4	K4	14a.	Analyze on the structure and nature of M-L bond in any one metal carbonyls.
			(OR)
CO4	K4	14b.	Examine the applications of Wilkinson's catalyst in the hydrogenation of alkenes.
CO5	K5	15a.	Review on the application of Adamson's rules with one example.
			(OR)
CO5	K5	15b.	Evaluate on the properties of excited states.

Course Outcome	Bloom's K-level	Q. No.	**SECTION – C (5 X 8 = 40 Marks)** **Answer ALL Questions choosing either (a) or (b)**
CO1	K3	16a.	Apply the basics of structural isomerism to square planar complexes.
			(OR)
CO1	K3	16b.	Find the merits and limitations of VB theory.
CO2	K4	17a.	State effective atomic number rule. Correlate this to stability of complexes.
			(OR)
CO2	K4	17b.	Analyze on magnetic properties of transition metal complexes.
CO3	K4	18a.	Deduce the inner-sphere electron transfer reaction mechanisms.
			(OR)
CO3	K4	18b.	Enumerate the mechanism of aquation/acid hydrolysis reactions.
CO4	K5	19a.	Appraise the preparation of organo metallic compounds of Mg, Cu, Fe and Co.
			(OR)
CO4	K5	19b.	Justify the Role of Ziegler – Natta catalyst in the polymerization of olefins with suitable example.
CO5	K5	20a.	Summarize on semiconductor based photo voltaic cells.
			(OR)
CO5	K5	20b.	Write a report on photolytic cleavage of water into H_2 and O_2