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



UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2025.

(For those admitted in June 2021 and later)

PROGRAMME AND BRANCH: B.Sc., CHEMISTRY

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
II	PART-III	CORE	U21CH203	INORGANIC CHEMISTRY-II

Date & Session: 04.11.2025/AN

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.	General electronic configuration of noble gases _____. a) ns^2np^6 b) ns^2n-1p^6 c) ns^1np^6 d) ns^2np^3
CO1	K2	2.	Structure of XeF_6 _____. a) pentagonal planar b) octahedral c) tetrahedral d) trigonal planar
CO2	K1	3.	Ilmenite a) Sc b) V c) Zn d) Ti
CO2	K2	4.	Potassium ferro ferricyanide is known as _____. a) Prussian blue b) Turnbull's blue c) Oxidising agent d) Reducing agent
CO3	K1	5.	Lanthanides and Actinides are known as _____. a) alkali metals b) transition elements c) f-block elements d) alkaline earth metals
CO3	K2	6.	Common oxidation state of lanthanides _____. a) +1 b) +2 c) +3 d) +4
CO4	K1	7.	Sulphide ores are concentrated by _____. a) magnetic separation b) froth flotation c) oxidation d) reduction
CO4	K2	8.	Semiconductors are purified by _____. a) zone refining b) electrorefining c) oxidation d) reduction
CO5	K1	9.	Interfering acid radical is _____. a) sulphate b) fluoride c) nitrate d) chloride
CO5	K2	10.	Primary standard is _____. a) $KMnO_4$ b) oxalic acid c) HCl d) NaOH
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.	Predict the molecular geometry of xenon hexafluoride using VSEPR theory (OR)
CO1	K3	11b.	Describe the preparation of krypton fluoride and discuss its stability compared to xenon fluorides.

CO2	K3	12a.	Describe the distinctive properties of the Zinc group metals and explain why they differ from typical transition metals. (OR)
CO2	K3	12b.	Explain the role of the Ziegler–Natta catalyst in polymerization reactions and describe how it works.
CO3	K4	13a.	Compare and analyze the common oxidation states exhibited by lanthanides and actinides. (OR)
CO3	K4	13b.	Compare the properties and applications of thorium dioxide and thorium nitrate in nuclear technology and industry.
CO4	K4	14a.	Analyze the difference between ores and minerals with examples. (OR)
CO4	K4	14b.	Compare and analyze the effectiveness of different ore concentration methods.
CO5	K5	15a.	Evaluate how would errors in the primary standard affect the final results? (OR)
CO5	K5	15b.	Evaluate common sources of systematic and random errors in titrimetric and gravimetric analyses.

Course Outcome	Bloom's K-level	Q. No.	SECTION – C (5 X 8 = 40 Marks) Answer <u>ALL</u> Questions choosing either (a) or (b)
CO1	K3	16a.	Explain how noble gases are separated from the atmosphere by fractional distillation and describe how one can isolate helium from natural gas. (OR)
CO1	K3	16b.	Given the properties of noble gases, suggest suitable applications for each in lighting, welding, or medical fields.
CO2	K4	17a.	Compare the catalytic activities of Wilkinson's catalyst and Ziegler–Natta catalyst and analyze the factors responsible for their effectiveness. (OR)
CO2	K4	17b.	Compare Prussian blue and Turnbull's blue in terms of their composition, structure, and applications.
CO3	K4	18a.	Analyze the principle behind ion exchange and solvent extraction methods for separating lanthanides, and explain the factors that influence the efficiency of each method. (OR)
CO3	K4	18b.	Analyze the relationship between electronic configuration and magnetic properties of lanthanides and actinides.
CO4	K5	19a.	Critically evaluate the advantages and limitations of zone refining compared to electrolytic refining. (OR)
CO4	K5	19b.	Assess the challenges in extracting uranium and thorium.
CO5	K5	20a.	Critically evaluate the selection criteria for indicators in acid-base and redox titrations. (OR)
CO5	K5	20b.	Evaluate the factors influencing precipitation from homogeneous solutions.