

Reg. No.:



Name:

University of Kerala

W7793

First Semester FYUGP Degree Examination, December 2025

Discipline Specific Core Course

CHEMISTRY

UK1DSCCHE104 - GENERAL INORGANIC CHEMISTRY

Academic Level: 100-199

2025-Admission

Time: 1 Hour 30 Minutes(90 Mins.)

Max. Marks: 42

**Part A. 6 Marks.Time:6 Minutes.(Cognitive Level:Remember(RE)/Understand(UN)) Objective Type. 1 Mark
Each.Answer all questions**

Qn No.	Question	CL	CO
1	Define a polar covalent bond with an example.	RE	1
2	Name the units of radioactivity.	RE	4
3	Why does H ₂ O exhibit a higher boiling point than H ₂ S?	UN	1
4	Explain why the d-orbitals split into t _{2g} and e _g sets in an octahedral complex?	UN	2
5	Give an example of artificial radioactive decay series.	UN	4
6	Predict a suitable indicator used for titration between NH ₄ OH and HCl.	UN	3

Part B.8 Marks.Time:24 Minutes.(Cognitive Level:Understand(UN)/Apply(AP))Short Answer. 2 marks each.Answer all questions

Qn No.	Question	CL	CO
7	Hf and Zr behave almost identically in chemical reactions. Apply the concept of lanthanide contraction to explain this.	UN	1
8	Explain the terms: Molarity and Normality.	UN	3
9	[Co(NH ₃) ₆] ³⁺ forms an inner orbital complex whereas [CoF ₆] ³⁻ forms outer orbital complex. Apply the concept of valence bond theory to illustrate this observation.	AP	2
10	Define mass defect and binding energy.	AP	4

Part C. 28 Marks.Time:60 Minutes (Cognitive Level:Apply(AP)/Analyse(AN)/Evaluate(EV)/Create(CR)) Long Answer:7 marks each.Answer all 4 Questions choosing among options * within each question

Qn No.	Question	CL	CO
11	A) Apply a flow chart showing the logical steps and energy terms used in the derivation of the final lattice energy value using the Born-Haber cycle for the formation of NaCl. OR B) Illustrate the shape of CH₄ and BF₃ using hybridization concept	AP	1, 1
12	A) Analyse the use of coordination complexes in qualitative and quantitative analysis. OR B) Two octahedral complexes, [Fe(H₂O)₆]²⁺ and [Fe(CN)₆]⁴⁻, show very different magnetic behaviours. Analyse how ligand field strength leads to these differences.	AN	2, 2
13	A) Evaluate the role of radioactivity in medicine and agriculture. OR B) Evaluate the concept of n/p ratio to explain the nuclear stability	EV	4, 4
14	A) Explain the theory of acid base titration and acid base indicator. OR B) Evaluate the role and essential properties of metal ion indicators in complexometric titrations.	CR	3, 3