

Odd Semester Lecture Plan

Name of the college: Government College of Arts, Science and Commerce, Sanquelim – Goa.

Name of Faculty: Ms. Rosalina Desilva

Subject: Chemistry

Paper code: CHC- 301 Inorganic Chemistry

Program/Course: T.Y. B.Sc.

Division: A

Academic year: 2025 - 2026

Semester: V

Total Lectures: 15

Course Objectives:

Theory - To understand fundamentals of the metal ligand bond in accordance with VBT and CFT.

Practical-

1. To use various titrimetric techniques to estimate the analytes,
2. To perform gravimetric methods to estimate metal ions.
3. To prepare coordination compounds.

Course Learning Outcome:

Theory - At the end of the course, students will be able to: Differentiate VBT and CFT approaches for Metal-ligand bonding.

Practical -

1. perform the redox and complexometric titrations.
2. explain the chemistry behind the strategies used for the removal of interfering ions in gravimetric estimations.
3. develop experimental skills in inorganic preparations

Month	Lectures From: To:	No. of lectures allotted	Topic, Subtopic to be covered	Learning outcome	ICT Tools	Reference books
June 2025	23/6/25 - 28/6/25	01 02	Introduction to Valence bond theory B- I & B-II General Instructions and safety measures	Students will be able to: Apply VBT to coordination compound	Smart board	1. P.L. Soni and Mohan Katyal, Textbook of Inorganic Chemistry by Sultan Chand and Sons, 20 th Edn (1997) 2. Puri, Sharma and Kalia, Principles of Inorganic Chemistry, 33rd Edition, Vishal Publishing Co. (2018).

June- July	30/6/25 - 05/7/25	01 02	Hybridisation of the central metal orbitals sp^3 , dsp^2 , sp^3d Gravimetry-Ni as Nidmg	Apply VBT to coordination compounds explain strategies in gravimetry	Smart board	3. J.D. Lee, Concise Inorganic Chemistry by Chaman and Hall, 5th ed. (1996) .4. F. A. Cotton and G. Wilkinson, Advanced Inorganic Chemistry, 3rd Edn.
July	07/7/25 - 12/7/25	01 02	Hybridisation- dsp^3 , sp^3d^2 / d^2sp^3 Inner and Outer orbital complexes Gravimetry-Ni as Nidmg	Apply VBT to coordination compounds Continuation	Smart board	5. P. W. Atkins, T. Overton, J. Rourke, M. Weller, F. Armstrong, Shriver & Atkins, Inorganic Chemistry, 5th Ed.; Oxford Publications, (2009).
July	14/7/25 - 19/7/25	01 02	Electroneutrality principle, limitations of VBT Gravimetry-Zn and $Zn_2P_2O_7$	Apply VBT to coordination compounds explain strategies used in gravimetry	Smart board	6. K. V. S. Laxmi Devi, N. C. Patel, S.S. Dhume, A. Venkatachalam, S. P. Turakhia, Chhaya Dixit and R. A. Mirji, College Inorganic Chemistry for T.Y. B. Sc. 21st Edn, Himalaya Publishing House
July	21/7/25 - 26/7/25	01 02	Crystal field theory: Postulates Gravimetry-Zn and $Zn_2P_2O_7$	Apply VBT to coordination compounds Continuation	Smart board	
July-August	28/7/25 - 02/8/25	01 02	Effect of CFS of d orbitals in octahedral and tetrahedral geometry Inorganic preparations	Apply VBT to coordination compounds develop experimental skills	Smart board	
August	04/8/25 - 09/8/25	01 02	Effect of CFS of d orbitals in octahedral and tetrahedral geometry Inorganic preparations	Apply CFT to coordination compounds Develop experimental skills	Smart board	
August	11/8/25 - 16/8/25	01 02	Factors affecting Δ , Spectrochemical series. Inorganic preparations	Apply CFT to coordination compounds develop experimental skills	Smart board	

August	18/8/25 - 23/8/25	01 02	Crystal Field Stabilization Energy (CFSE)-calculation Gravimetry-Fe -Fe ₂ O ₃ and Ba- BaSO ₄	Apply CFT to coordination compounds strategies for removal of interfering ions in gravimetry	Smart board	
August	25/8/25		-----			
September	02/09/25- 06/09/25	01 02	Consequences of crystal field splitting Gravimetry-Fe -Fe ₂ O ₃ and Ba- BaSO ₄	Apply CFT to coordination compounds Continuation	Smart board	
September	08/09/25- 13/09/25	01 02	Consequences of crystal field splitting Gravimetry-Fe -Fe ₂ O ₃ and Ba- BaCrO ₄	Apply CFT to coordination compounds strategies for removal of interfering ions in gravimetry	Smart board	
September	15/09/25- 20/09/25	01 02	Limitations of CFT Gravimetry-Fe -Fe ₂ O ₃ and Ba- BaCrO ₄	Compare CFT and VBT Continuation	Smart board	
September	22/09/25- 27/09/25	01 02	Evidences for covalency: i) intensities of d-d transitions, ii) ESR spectrum of [IrCl ₆] Volumetry- H ₂ O ₂ - KMnO ₄	Compare CFT and VBT perform the redox and complexometric titrations.	Smart board	
September- October	29/09/25- 04/10/25	Nil	-----			

October	06/10/25- 11/10/25	01 02	Evidences for covalency: iii) Nephe- lauxetic effect iv) NMR spectra. Repetition	Compare CFT and VBT	Smart board	
October	13/10/25- 18/10/25	01 02	Revision Repetition	Questions Journal Certification		
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