



बिरसा मुंडा द्रायबल युनिवर्सिटी Birsā Mūṇḍā Drāyabala Yūnīvārsīṭī

राजपिपला, जि० नर्मदा Rajpipla, Dist. Narmda

Established by Tribal Development Department, Govt. of Gujarat

School of Science

M.Sc. (Chemistry) Programme

Subject Code & Name: - MS01CCHE04 & Inorganic Chemistry-I

Teaching and Evaluation Scheme:

Teaching Scheme				Examination Scheme			
Credits				Component Weightage			
				Internal		External	
L	T	P	Total	TH	PWE	TH	PWE
2	-	2	4	25	25	25	25

Programme Name	M.Sc. Chemistry
Semester	I
Course Code	MS01CCHE04
Course Title	Inorganic Chemistry-I
Course Content Type (Th./Pr.)	Theory
Course Credit	4
Sessions+ Lab. Per Week	4
Total Teaching/Lab. Hours	60 Hours
* 2 Laboratory = 1 Session	

Learning Objectives

1. The basic concepts and laws of chemistry are covered in this course. Coordination chemistry and quantum mechanics are among the subjects covered.
2. This course is aimed to provide the students with a solid understanding of all the fundamental concepts of co-ordination chemistry.

Prerequisites (if any)

Learning Outcomes

On the Completion of this course, students will able to:

1. Understand crystal field theory and which factors are responsible for the stability of the complex compounds
2. Understand magnetic properties of complex compounds.
3. Understand Orgel diagram, John-Teller Distortion, Term symbols and isomerism of complex compounds.



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Detailed Contents		
UNIT	TOPIC/SUB-TOPIC	TEACHING HOURS
I	Co-Ordination Chemistry-I: Crystal field theory(CFT) , Crystal field splitting in octahedral and tetrahedral complexes, Factors affecting crystal field splitting energy(CFSE), Applications of CFSE, Jahn-Teller Distortion(JTD), Splitting in square planar complexes, σ and π - bonding in Oh and Td complexes, color and electronic spectra, selection rules for deciding colour intensity, microstates, Term-symbol for transition metal, Term-symbol for diatomic molecules	15
II	Co-Ordination Chemistry-II: Orgel diagram, Nephelauxetic effect, Tanabe-Sugano(TS) diagram, Magnetism, Magnetic moment(Heavier and lighter elements), structural isomerism, stereo isomerism, Thermodynamic and kinetic stability of complex compounds, Factors affecting stability of complexes	15
Text Book(s)		
1. Advanced Inorganic Chemistry (Vol II), By: S. Prakash, G.D. Tuli, S.K. Basu and R.D. Madan: S Chand and Company Ltd.		
Reference Books		
1. Principles of Inorganic chemistry- B. R. Puri, L. R. Sharma and K. C. Kalia; Vallabh publications, Delhi. 2. Concise Inorganic Chemistry - J. D. Lee 3. Selected Topic in Inorganic Chemistry, 8th edition, by Wahid U. Malik, G.D. Tuli and R.D. Madan 4. Basic Inorganic Chemistry by Ajai Kumar, Aaryush Education 5. Advanced Inorganic Chemistry by F. Albert Cotton, Geoffrey Wilkinson, An Indian Adaptation Willey.		
Web Resources		
1. www.nptel.ac.in 2. www.swayam.gov.in 3. www.epgp.inflibnet.ac.in (e-PG pathshala) 4. www.ndl.iitkgp.ac.in (National Digital Library)		



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Required Software(s) (if any)

Practical(s) (if any)

INORGANIC CHEMISTRY

Sr. No. (Inorganic-I)-Quantitative Analysis:

1. Hexa ammine nickel(II) chloride.
2. Ferrous ammonium sulphate.
3. Mercury tetrathiocyanatocobaltate.
4. Tris-acetylacetonato Manganese(II) chloride.
5. Potassiumtrioxalato ferrate
6. Prussian blue
7. Hexaure chromic chloride.
8. Tetra ammine copper sulphate
9. Cis – trans- bis oxalate, diaquo chromate(III)

References Books:

1. Advanced Practical Inorganic Chemistry – Gurdeep Raj Goel Publishing House, Meerut.
2. Qualitative Inorganic Analysis. – A. I. Vogel, 6th Edition revised by G. Svehla ELBS – London
3. Textbook of Chemistry Analysis – A. I. Vogel
4. Qualitative Chemistry semi micro analysis – edited by P. K. Agasyan CBS Publisher Delhi.
5. Chemistry: Inorganic Qualitative Analysis in the Laboratory, Clyde Metz, Elsevier, 2012, ISBN: 978032316104

L:: Lecture, T:: Tutorial , P:: Practical

(PWE:: Practical Work Examination)

(PWE includes Laboratory practical work, project work, viva simulation exercise work etc.)

