Birla Institute of Technology & Science, Pilani
Hyderabad Campus

SECOND SEMESTER 2020-2021

Course Handout (Part - II)

Date: 16.01.2021

In addition to part-I (General Handout for all courses appended to the time table) this portion gives further specific details regarding the course.

Course No. : CHEM F241
Course Title : Inorganic Chemistry-II
Instructor-in-charge : Dr. Sounak Roy

1. **Scope and Objective of the Course:** Theories of coordination chemistry, electronic spectroscopy and magnetism of complexes, organometallic chemistry and chemistry of lanthanides and actinides.

2. **Text Book:** T1. "Inorganic Chemistry" Huheey J. E., Keiter, Ellen A., Keiter, Richard L., Medhi, O.K.; 4th ed., Pearson.
   Reference Books: R1. "Concise Inorganic Chemistry", Lee, J.D. 5th Edition,Wiley, India Edition.
   R2 "Inorganic Chemistry", Shriver, D.F.; Atkins, P.W.; Overton T. L., Rourke, J. P., Weller, M. T., Armstrong, F. A. 4th edition, Oxford.
   R3 "Concepts & Models of Inorganic Chemistry" B. Douglas, D. McDaniel and J. Alexander 3rd Edn , wiley India.

3. **Course Plan:**

Lecture No	Learning Objectives	Topics to be covered	Chapter in the Text Book
1	Coordination chemistry	Bonding VB theory applied to coordination compounds	**T1**: 12.1-12.7
2-4	Crystal Field Theory (CFT)	Crystal field splitting; d orbitals in different crystal fields; applications of CFT	T1:Chapter 14: 428-444
5-7	Molecular orbital theory	Molecular orbital theory	T1:Chapter 14: 444-459
8-12	Electronic spectra of complexes, Magnetic	Electronic spectra of complexes, Magnetic properties of complexes	T1:Chapter 15: 461-492

	properties of complexes		
13-15	Structure Nomenclature	Structure – Nomenclature, Coordination numbers 1, 2, 3, 4, 5, 6, 7. Generalization about coordination numbers Isomerism: Linkage and other types of isomerism Chelate effect	T1:Chapter 15: 461-492
16-20	Reactions of coordinated complexes	Reactions – Nucleophilic substitution reactions, Kinetics, Mechanisms	T1:Chapter 17 (542-569) and Lecture notes
21-32	Organometallic chemistry	The 18-electron rule Metal-carbonyl complexes Nitrosyl complexes Dinitrogens Alkyls Carbenes, Carbynes, Carbides Alkenes Alkynes Metallocenes	T1:Chapter 18 and Lecture notes
33-37	Reactions of organometallic complexes	Catalysis by organometallic compounds Stereo chemically non-rigid molecules	T1:Chapter 18 and Lecture notes
38	Descriptive chemistry of metals - The Lanthanides and Actinides	Descriptive chemistry of metals - The Lanthanides and Actinides.	T1:Chapter 13 (407- 419) Lecture notes

4. **Evaluation Scheme:**

Component	Duration	Weighting (%)	Date and Time	Nature of Component
Assignment	-	30	Continuous	Open Book
Mid Semester Test	90 min	30	05/03 3.30 - 5.00PM	Open Book
Comprehensive Examination	120 min	40	15/05 AN	Open Book

5. **Chamber Consultation Hours**: To be announced in the class.

6. **Notices**: Notices, if any, concerning the course will be displayed in CMS.

7. **Academic Honesty and Integrity Policy:** Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

8. **Make-up-policy:** May be granted only for genuine cases.

Instructor-in-charge