BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, Pilani
Pilani Campus

INSTRUCTION DIVISION
First SEMESTER 2015-2016
Course Handout (Part II)

Date : 03/08/2015

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 F214
Course title : Inorganic Chemistry I
Instructor-in-charge : INAMUR RAHAMAN LASKAR

Scope and Objective of the Course: The course provides a comprehensive survey of the concepts involved in the study of the VSEPR Model, VB Theory, Ionic Crystal Structure, Structure of Complex Solids, Electronegativity, Acid-Base Chemistry, Chemistry in Aqueous and Non-Aqueous Solvents, Periodicity, Chemistry of transition metals, Halogens and Noble Gases, Inorganic Chains, Rings, Cages and Clusters

Text Book: Huheey J. E., Keiter, E. A. Keiter, R. L. Keiter, O. K. Medhi, Inorganic Chemistry, 4th ed., Pearson Education,

Reference Books: I. Inorganic Chemistry by Shriver & Atkins, (4th edition)

II. Cotton F.A., Wilkinson G., Murillo, C.A., Bochmann, M. Advanced Inorganic Chemistry, 6th ed., John Wiley and Sons, New York (2003).

1. Course Plan:

Lec. No:	Topics to be covered	Learning objects	Reference: (Chapter and page No: of T1)
1-2	Concepts of inorganic chemistry	Electronegativity Acid-base chemistry	Chapter 5: p 155-169 Chapter 8: p 220-227
3-4		A generalized acid-base concept	Self-study (p 228-236)
5-7		Measures of acid-base strength Hard and soft acids and bases, Symbiosis	p 237-243
8-9		Chemistry of aqueous and nonaqueous solvents	Chapter 9: p 246-257
10		Summary of protonic and aprotic solvents	Self-study (p257-260)
11		Molten salts Electrode potentials and electromotive forces	p 260-265
12-13	The chemistry of halogens and the noble gases	Noble gas chemistry: Fluorides, bonding	Chapter12: p343-367
14		Other compounds of xenon Bond strengths in noble gas compounds	
15-16		Halogens in positive oxidation states Polyhalide ions, Fluorine-oxygen chemistry, Oxyacids of heavier halogens, Halogen oxides and oxyfluorides Halogen cations, Halides, Pseudohalogens	
17-18		Electrochemistry of the halogens and pseudohalogens	

19-21	Structure of molecules	The Covalent Bond: VSEPR Model and VB Theory	Chapter 6: p171-182
22-26	Ionic bonding and the solid state	The ionic bond, Lattice energy, Size effects, Covalent character in predominantly ionic bonds, Imperfections in crystals, Conductivity in ionic Solids, Solid held together by covalent boding	Chapter 4: p72-114
27-29	The Chemistry of the Main Group Elements: Periodicity	Periodicity: First and second row anomalies The use of *p* orbitals in pi-bonding The use of *d* orbitals by nonmetals Periodic anomalies of the nonmetals and post-transition metal	Chapter10: p268-290
30-38	Inorganic chains, rings, cages	Catenation, Heterocatenation, Silicate minerals, Intercalation chemistry, One dimensional conductors, Isopoly anions, Heteropoly anions; Borazines, Phosphazenes, Phosphazene polymers, Other heterocyclic inorganic systems, Homocyclic inorganic systems; Boron cage compounds-Boranes, Carboranes, Metallacarboranes, Structure prediction for heteroboranes and organometallic clusters	Chapter11: p292-338
39-40	Inorganic clusters	Metal clusters, Dinuclear compounds, Trinuclear clusters, Tetranuclear clusters, Hexanuclear clusters, Polyatomic Zintl anions and cations, Chevrel phases, Infinite metal chains	Chapter13: p395-406

Evaluation Scheme:

Components	Duration	Weightage%	Date and Time	Remarks
Mid Term Test	90 min	30%	6/10 8:00 - 9:30 AM	Closed Book
Tutorials	15 min	25%	Continuous	Closed book
Comprehensive Exam.	3 hrs.	45%	3/12 FN	$

$ The Comprehensive Examination will have a closed book quiz portion with 16% weightage, and an open book section with 29% weightage.

Notices: Notices, if any, concerning the course will be displayed on the **Notice Board of Chemistry Group** only.

Make up policy: Make up would be considered only for **genuine cases**

Instructor-in-charge

CHEM F214