Semester III
Organic and Inorganic Chemistry

Objectives

1. To understand the basis and significance of atomic models and the different types of bonds
2. To understand the fundamental principles of titration
3. To acquaint the students to the principles of organic chemistry
4. To gain the knowledge about the different functional groups in detail

Subject	TC	Th C	Pr C	Int M	Ext M	Total
Organic and Inorganic Chemistry	**4**	**4**	**-**	**25**	**75**	**100**

Module no	Objective	Content	Evaluation
1	This module will enable students to: - Understand the basis and significance of atomic models - Acquire knowledge about different types of bonds	Atomic structure, Electronic configuration and Bonding: 1. Different models of atomic structure 2. Electronic configuration 3. S,p,d orbitals 4. Quantum numbers 5. Wave nature of electron 6. Valency 7. Stable configuration attainment 8. Types of bonds 9. Valence bond theory 10. Bonding of molecules using pure s and p orbitals 11. Hybridization	25 marks Presentation-Quiz
2	This module will enable students to: - Understand the basics of titration - Know all the aspects of acid-base titrations	**Theory of titrimetric analysis and Acid-Base titrations** 1. Classification of reactions 2. Equivalent weight of different substances 3. Expressing the concentration of solutions 4. Standard solutions 5. Definition of acids and bases 6. Different acid-base indicators 7. Titration curves for different strengths of acids and bases 8. Displacement titrations	25 marks Presentation-Quiz

3	This module will enable students to: - Know the basic terms used in redox reactions, iodometry, iodimetry and argentiometry - Understand the principles of titrations involving redox reactions, Iodine solution and silver nitrate solution	**Principles of Oxidation-Reduction, Iodometry and Argentiometry:** **A) Redox Reactions** 1. Definition of terms a) Oxidation b) Reduction c) Oxidising agent d) Reducing agent 2. Principle of redox reaction 3. Redox indicators and detection of end point 4. Titration curve with reference to ferrous and ferric **B) Iodometry and Iodimetry** 1. Preparation and standardization of $Na_2S_2O_3$ solution and Iodine solution 2. Detection of end point **C) Argentiometry** 1. Preparation of standard $AgNO_3$ solution 2. Srtandardization of $AgNO_3$ solution using Mohr's and Fajan's method 3. Determination of chloride, bromide and iodide individually and in the mixture	25 marks Presentation Quiz
4	This module will enable students to: - Understand the basics of organic chemistry - Learn different functional groups in detail	**Chemistry of functional groups** Introduction, structure, classification, properties, preparation and reactions of: 1. Alkanes 2. Alkenes 3. Alkynes 4. Benzene 5. Alkyl Halides 6. Alcohols 7. Aldehydes and ketones 8. Acids and their functional derivatives 9. Amines 10. Phenols	25 marks Presentation-Quiz Assignment

References:

1. Cotton and Wilkinson, Basic Inorganic Chemistry, Page 209 -216
2. Satya Prakash, Advanced Inorganic Chemistry Page 301-305, 319-324
3. Cristain G.D., John Wiley and Sons, Analytical Chemistry, 4th Ed. Pauling Linus, College Chemistry, Page 338 -349.
4. Sarine and Sarine,Numerical Problems in Chemistry, Page 331-349.
5. Morrison.R.T. and Boyd R.N., Organic Chemistry, 5th Ed, Prentice Hall of India Pvt. Ltd, New Delhi, 1989.
6. Peter Sykes, Guide Book to Mechanism in Organic Chemistry, (1981) 4th Ed, Orient – Longman.
7. Jean Louis Burgoit (2005), Ionic equilibria in Analytical Chemistry, Springer Science Ltd., 603-609.
8. Amit Arora (2006), Hydrocarbons- Alkanes, Alkenes, Alkynes, Discovery Publishing House.
9. David Cooper (2002), Valence Bond Theory, Library of Congress.