B.Sc. Biotechnology: Semester-I BST-103 :Chemistry I	
Teaching Scheme Lectures: 3 hrs/Week Tutorials: 1 hr/Week Credits: 4	**Examination Scheme** Class Test -12Marks Teachers Assessment - 6 Marks Attendance – 12 Marks End Semester Exam – 70 marks

Prerequisite: - General knowledge of Chemistry of intermediate standard

Course Objectives:

1. To give an overview of Chemical reactions
2. To give basic knowledge of chemicals and their reactions
3. To have an overview of bond formation and its types.
4. To explain the various types of isomerism.
5. To explain the molecular orbital theory.
6. To explain the kinetic theory of gases.
7.

Course Outcomes:

After completing the course, students will be able to:

1. Understand various types of chemical reactions
2. Analyze different chemicals and their usage in day to day life and in industries and other sectors
3Identify various bonds that exist in a molecule or a compound
4. Understand the concept of orbitals and sharing of electrons
5. Evaluate the role of kinetic theory of gases
6. Understand the concept of vander walls forces and weak bonds

Detail syllabus

Unit-1 Idea of de Broglie matter waves, Heisenberg uncertainty principle, atomic orbitals, Schrodinger wave equation, shapes of s. p, d orbital's. Aufbau and Pauli exclusion principles, Hund's multiplicity rule.
Unit-2 Bonding concept: Hybridization, bond lengths and bond angles, bond energy, localized and delocalized chemical bond, Vander Waals interactions, Hydrogen bonding and its applications.Molecular orbital theory: and its applications for homo and hetro nuclear diatomic molecules. Concept of isomerism:Types of isomerism. molecular chirality, enantiomers, optical activity, properties of enantiomers, mesa compounds.
Unit -3 Postulates of kinetic theory of gases, deviation from ideal behavior, van der Waals equation of state. Critical Phenomena:PV isotherms of real gases, continuity of states, Vander Waals equation, relationship between critical constant and Vander Waals constants, the law of corresponding states, reduced equation of state.

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Text and Reference Books

1. A Textbook of Physical Chemistry, A. S. Negi, S. C. Anand
2. Physical Chemistry, Gilbert William Castellan
3. Physical chemistry, Walter John Moore
4. Organic Chemistry, Benjamin List, KeijiMaruoka
5. Advanced Organic Chemistry, 4th ed. Part A: Structure and Mechanisms F. Carey and R. Sundberg, Kluwer Academic