

B. Sc. Biotechnology: Semester-III	
BST303: Chemistry III	
Teaching Scheme Lectures: 3 hrs/Week Tutorials: 1hrs/Week Credits: 4	Examination Scheme Class Test -12Marks Teachers Assessment - 6Marks Attendance – 12 Marks End Semester Exam – 70 marks

Prerequisite: - Basic knowledge of chemistry

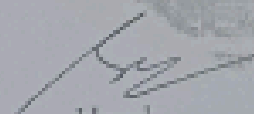
Course Objectives:

1. To give overview of concept of thermodynamics and energy
2. To give complete knowledge of Joule's law-joule-Thomson coefficient and inversion temperature
3. Calculation of w , q , dU , & dH for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process
4. To describe Classification and nomenclature
5. To explain the different methods of formation by reduction of aldehydes, ketones, carboxylic acids and esters
6. To explain the methods of formation, chemical reactions of vicinal glycols, and pinacol-pinacolone rearrangement


Course Outcomes:

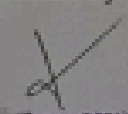
After completing the course, students will be able to:

- CO1: Students will have a firm foundation in the fundamentals and application of current chemical and scientific theories including those in Analytical, Inorganic, Organic and Physical Chemistries
- CO2: Students will be able to design and carry out scientific experiments as well as accurately record and analyze the results of such experiments
- CO3: Students will be skilled in problem solving, critical thinking and analytical reasoning as applied to scientific problems
- CO4: Students will be able to clearly communicate the results of scientific work in oral, written and electronic formats to both scientists and the public at large
- CO5: Students will be able to explore new areas of research in both chemistry and allied fields of science and technology


Head

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CO6: Students will appreciate the central role of chemistry in our society and use this as a basis for ethical behavior in issues facing chemists including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine

CO7: Students will be able to explain why chemistry is an integral activity for addressing social, economic, and environmental problems

Detailed Syllabus:

<p>UNIT-1 Definition of thermodynamic terms</p> <p>Definition of thermodynamic terms: system, surroundings etc. Types of systems; intensive and extensive properties. Thermodynamic process. Concept of heat and work. First Law of Thermodynamics: Statement, definition of internal energy and enthalpy. Heat capacity, heat capacities at constant volume and pressure and their relationship. Joule's law-Joule-Thomson coefficient and inversion temperature. Calculation of w, q, dU, & dH for the expansion of ideal gases under isothermal and adiabatic conditions for reversible process</p>
<p>UNIT-2 Classification and nomenclature</p> <p>Classification and nomenclature, Monohydric alcohols-nomenclature, methods of formation by reduction of aldehydes, ketones, carboxylic acids and esters, Hydrogen bonding, Acidic nature, Reactions of alcohols, Dihydric alcohols-nomenclature, methods of formation, chemical reactions of vicinal glycols, and pinacol-pinacolone rearrangement</p>
<p>UNIT-3 Characteristic properties of d-block elements</p> <p>Overview and characteristic properties of s, p, d-block elements. Properties of the elements of the first transition series, their binary compounds and complexes illustrating relative stability of their oxidation states, coordination number and Effective atomic number</p>

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, Peter Atkin
4. Physical chemistry, Walter John Moore
5. Organic Chemistry, Benjamin List, Keiji Maruoka Advanced Organic Chemistry, 4th ed. Part A: Structure and Mechanisms F. Carey and R. Sundberg, Kluwer Academic


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