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2.7 Chemical Equilibria2.8 Pressure and Temperature Dependence of the Gibbs Energy; 2.9 Phase Changes; 2.10 Additions to the Gibbs Energy; Problems; Chapter 3 Applications of Thermodynamics to Biological Systems; 3.1 Biochemical Reactions; 3.2 Metabolic Cycles; 3.3 Direct Synthesis of ATP; 3.4 Establishment of Membrane Ion Gradients by Chemical Reactions; 3.5 Protein Structure; 3.6 Protein Folding; 3.7 Nucleic Acid Structures; 3.8 DNA Melting; 3.9 RNA; References; Problems; Chapter 4 Thermodynamics Revisited; 4.1 Introduction; 4.2 Mathematical Tools; 4.3 Maxwell Relations
4.4 Chemical Potential4.5 Partial Molar Quantities; 4.6 Osmotic Pressure; 4.7 Chemical Equilibria; 4.8 Ionic Solutions; References; Problems; CHEMICAL KINETICS; Chapter 5 Principles of Chemical Kinetics; 5.1 Introduction; 5.2 Reaction Rates; 5.3 Determination of Rate Laws; 5.4 Radioactive Decay; 5.5 Reaction Mechanisms; 5.6 Temperature Dependence of Rate Constants; 5.7 Relationship Between Thermodynamics and Kinetics; 5.8 Reaction Rates Near Equilibrium; 5.9 Single Molecule Kinetics; References; Problems; Chapter 6 Applications of Kinetics to Biological Systems; 6.1 Introduction
6.2 Enzyme Catalysis: The Michaelis-Menten Mechanism6.3 - Chymotrypsin; 6.4 Protein Tyrosine Phosphatase; 6.5 Ribozymes; 6.6 DNA Melting and Renaturation; References; Problems; QUANTUM MECHANICS; Chapter 7 Fundamentals of Quantum Mechanics; 7.1 Introduction; 7.2 Schrödinger Equation; 7.3 Particle in a Box; 7.4 Vibrational Motions; 7.5 Tunneling; 7.6 Rotational Motions; 7.7 Basics of Spectroscopy; References; Problems; Chapter 8 Electronic Structure of Atoms and Molecules; 8.1 Introduction; 8.2 Hydrogenic Atoms; 8.3 Many-Electron Atoms; 8.4 Born-Oppenheimer Approximation
8.5 Molecular Orbital Theory8.6 Hartree-Fock Theory and Beyond; 8.7 Density Functional Theory; 8.8 Quantum Chemistry of Biological Systems; References; Problems; SPECTROSCOPY; Chapter 9 X-ray Crystallography; 9.1 Introduction; 9.2 Scattering of X-Rays by a Crystal; 9.3 Structure Determination; 9.4 Neutron Diffraction; 9.5 Nucleic Acid Structure; 9.6 Protein Structure; 9.7 Enzyme Catalysis; References; Problems; Chapter 10 Electronic Spectra; 10.1 Introduction; 10.2 Absorption Spectra; 10.3 Ultraviolet Spectra of Proteins; 10.4 Nucleic Acid Spectra; 10.5 Prosthetic Groups
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Sommario/riassunto

A new edition with complete, up-to-date and expanded material for a working knowledge of physical chemistry for the biological sciencesThe second edition of Physical Chemistry for the Biological Sciences builds on the success of the first edition with important updates and new material to provide a state-of-the-art introduction to physical chemistry for both professionals and students. The topics discussed include thermodynamics, kinetics, quantum mechanics, spectroscopy, statistical mechanics, and hydrodynamics. As in the first edition, most

of the subjects can be understood without advanced
