P C Rakshit Physical Chemistry Book

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The subject matter of this book is not entirely new in that much has been written about the state of the interfacial chemistry in other textbooks. However, the authors have found that there is really a need for a book which can lead an investigator, a student, or a beginn er through the in-depth understanding and descriptions involved in the derivations and usage of the adsorption equations based on the unified concept of the Gibbs surface excess. The derivation of the original Gibbs equation for the liquid interface has been amplified with reformulations and criticisms. Attempts have been frequently made to relate the surface excess quantities with the thermodynamic properties of the physically defined interfacial phase. In the last two decades, useful applications of the Gibbs equations have been made for the study of adsorption at solid-liquid as well as liquid-gas interfaces formed in the presence of the multicomponent solutions in the bulk. These recent treatments become useful for the experimental studies of the adsorption of electrolytes and interfacial properties related to neutral and charged monolayers. The consistency of the experimental results with those to be expected from the theories of the electrical double layer needs careful examination. An attempt has been made to present in a single volume all these developments based on the unified concept of the Gibbs surface excess. The study of the adsorption from solution is of considerable importance in the field of biology and in many other branches of applied science.

This comprehensive and thoroughly revised text, now in its third edition, continues to present the fundamental concepts of how mathematical models of chemical processes are constructed and demonstrate their applications to the simulation of three of the very important chemical engineering systems: the chemical reactors, distillation systems and vaporizing processes. The book provides an integrated treatment of process description, mathematical modelling and dynamic simulation of realistic problems, using the robust process model approach and its simulation with efficient numerical techniques. Theoretical background materials on activity coefficient models, equation of state models, reaction kinetics, and numerical solution techniques—needed for the development and simulation of mathematical models—are also addressed in the book. The topics of discussion related to tanks, heat exchangers, chemical reactors (both continuous and batch), biochemical reactors (continuous and fed-batch), distillation columns (continuous and batch), equilibrium flash vaporizer, refinery debutanizer column, evaporator, and steam generator contain several worked-out examples and case studies to teach students how chemical processes are operated, characterized and monitored using computer programming. NEW TO THIS EDITION The inclusion of following three new chapters on: • Gas Absorption •

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Liquid—Liquid Extraction Column • Once-Through Steam Generator will further strengthen the text. This book is designed for senior level undergraduate and first-year postgraduate level courses in 'Chemical Process Modelling and Simulation'. The book will also be useful for students of petrochemical engineering, biotechnology, and biochemical engineering. It can serve as a guide for research scientists and practising engineers as well.

Biophysics is an intradisciplinary as well as an emerging subject in the field of Biological Science in the recent years. It is a hybrid science which deals with Physics, Chemistry and Biology.

As the world's population continues to grow and economic conditions continue to improve, more solid and liquid waste is being generated by society. Improper disposal methods can not only lead to harmful environmental impacts but can also negatively affect human health. To prevent further harm to the world's ecosystems, there is a dire need for sustainable waste management practices that will safeguard the environment for future generations. Waste Management: Concepts, Methodologies, Tools, and Applications is a vital reference source that examines the management of different types of wastes and provides relevant theoretical frameworks about new waste management technologies for the control of air, water, and soil pollution. Highlighting a range of topics such as contaminant removal, landfill treatment, and recycling, this multi-volume book is ideally designed for environmental engineers, waste authorities, solid waste management companies, landfill operators, legislators, environmentalists, policymakers, government officials, academicians, researchers, and students.

A Textbook for B.Sc. (Part III and Hons.) and Postgraduate Courses of Indian Universities. In this edition, I have made major changes in the light of modern concepts introduced in syllabi at the under-graduate and postgraduate level as well. With matter has also been updated. The subject matter has been arranged systematically, in a lucid style and simple language. New Problems and exercises have also been introduced to acquaint the students with trend of questions they except in the examinations. Chemical Kinetics and Reaction Dynamics brings together the major facts and theories relating to the rates with which chemical reactions occur from both the macroscopic and microscopic point of view. This book helps the reader achieve a thorough understanding of the principles of chemical kinetics and includes: Detailed stereochemical discussions of reaction steps Classical theory based calculations of state-to-state rate constants A collection of matters on kinetics of various special reactions such as micellar catalysis, phase transfer catalysis, inhibition processes, oscillatory reactions, solid-state reactions, and polymerization reactions at a single source. The growth of the chemical industry greatly depends on the application of chemical kinetics, catalysts and catalytic processes. This volume is therefore an invaluable resource for all academics, industrial researchers and students interested in kinetics, molecular reaction dynamics, and the mechanisms of chemical reactions.

Engineering Chemestry I has been primarily written for first year B.Tech students but can also be used by BSc and MSc students to clarify their fundamental knowledge. The book begins with the basic theories of chemistry in various disciplines in order to provide a necessary background for dealing with a number of different physiochemical phenomena. Key Features 1. Brief

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discussion of the concepts 2. Coverage of syllabus in totality 3. Examination-oriented approach 4. Large number of solved problems 5. Solution to previous year's question papers 6. Exercises at the end of each chapter Physical ChemistrySarat Book DistributorsElementary Physical ChemistryA Textbook of Physical Chemistry for JEE Main & AdvancedAdvanced Physical ChemistryS. Chand Publishing Includes book reviews.

Photosynthesis is one of the most important reactions on Earth, and it is a scientific field that is intrinsically interdisciplinary, with many research groups examining it. We could learn many strategies from photosynthesis and can apply these strategies in artificial photosynthesis. Artificial photosynthesis is a research field that attempts to replicate the natural process of photosynthesis. The goal of artificial photosynthesis is to use the energy of the sun to make different useful material or high-energy chemicals for energy production. This book is aimed at providing fundamental and applied aspects of artificial photosynthesis. In each section, important topics in the subject are discussed and reviewed by experts.

With special reference to the study of chemistry; covers the period, 1765-1947.

The book has been designed according to the new AICTE syllabus and will cater to the needs of engineering students across all branches. The book provides the basis which is necessary for dealing with different types of physicochemical phenomena. Great care has been taken to explain the physical meaning of mathematical formulae, when and where they are required, followed by lucid development and discussion of experimental behaviour of systems. Every chapter has a set of solved problems and exercises. The idea is to instil sound understanding of the fundamental principles and applications of the subject. The author is known for explaining the concepts of Engineering Chemistry with full clarity, leaving no ambiguity in the minds of the readers. Although this book is primarily intended for BTech/BE students, it will also cater to the requirements of those pursuing BSc and MSc, including those of other disciplines like materials science and environmental science.

This book, now in its second edition, continues to provide a comprehensive introduction to the principles of chemical engineering thermodynamics and also introduces the student to the application of principles to various practical areas. The book emphasizes the role of the fundamental principles of thermodynamics in the derivation of significant relationships between the various thermodynamic properties. The initial chapter provides an overview of the basic concepts and processes, and discusses the important units and dimensions involved. The ensuing chapters, in a logical presentation, thoroughly cover the first and second laws of thermodynamics, the heat effects, the thermodynamic properties and their relations, refrigeration and liquefaction processes, and the equilibria between phases and in chemical reactions. The book is suitably illustrated with a large number of visuals. In the second edition, new sections on Quasi-Static Process and Entropy Change in Reversible and Irreversible Processes are included. Besides, new Solved Model Question Paper and several new Multiple Choice Questions are also added that help develop the students' ability and confidence in the application of the underlying concepts. Primarily intended for the undergraduate students of chemical engineering and other related engineering disciplines such as polymer,

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petroleum and pharmaceutical engineering, the book will also be useful for the postgraduate students of the subject as well as professionals in the relevant fields.

??University Science Books????

First published in 2000. Routledge is an imprint of Taylor & Francis, an informa company.

This comprehensive and thoroughly revised text, now in its second edition, continues to present the fundamental concepts of how mathematical models of chemical processes are constructed and demonstrate their applications to the simulation of two of the very important chemical engineering systems: the chemical reactors and distillation systems. The book provides an integrated treatment of process description, mathematical modelling and dynamic simulation of realistic problems, using the robust process model approach and its simulation with efficient numerical techniques. Theoretical background materials on activity coefficient models, equation of state models, reaction kinetics, and numerical solution techniques—needed for the development of mathematical models—are also addressed in the book. The topics of discussion related to tanks, heat exchangers, chemical reactors (both continuous and batch), biochemical reactors (continuous and fed-batch), distillation columns (continuous and batch), equilibrium flash vaporizer, and refinery debutanizer column contain several worked-out examples and case studies to teach students how chemical processes can be measured and monitored using computer programming. The new edition includes two more chapters—Reactive Distillation Column and Vaporizing Exchangers—which will further strengthen the text. This book is designed for senior level undergraduate and first-year postgraduate level courses in "Chemical Process Modelling and Simulation". The book will also be useful for students of petrochemical engineering, biotechnology, and biochemical engineering. It can serve as a guide for research scientists and practising engineers as well.

The rapid progression of technology has significantly impacted population growth, urbanization, and industrialization in modern society. These developments, while positive on the surface, have created critical environmental problems in recent years. The Handbook of Research on Inventive Bioremediation Techniques is a comprehensive reference source for the latest scholarly information on optimizing bioremediation technologies and methods to control pollution and enhance sustainability and conservation initiatives for the environment. Highlighting pivotal research perspectives on topics such as biodegradation, microbial tools, and green technology, this publication is ideally designed for academics, professionals, graduate students, and practitioners interested in emerging techniques for environmental decontamination.

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