

Engineering Chemistry Ravikrishnan

Engineering Chemistry-II serves as a textbook for the second semester course for I year BE/B. Tech students of Anna University, Chennai. The book is informative and exhaustive to meet the requirements of students who aim to assimilate authentic knowledge for use during engineering course as well as in their careers. The theoretical portions have been explained in simple language, clear style with lot of solved problems and illustrated diagrams. Academic and industrial communities will find this book a valuable resource. Key Features

- Specifically designed for I year B.E. students of colleges affiliated to Anna University, Chennai.
- The chapters are presented in simple language.
- Suitable diagrams for clear understanding of the concepts.
- The recent developments in the respective fields are included in all the chapters.
- Comparative tables are presented where ever two similar concepts arise.
- Many solved problems.
- Review questions from previous Anna University examinations at the end of each chapter.

This book on Engineering Chemistry has been entirely rewritten in order to make it up-to-date and modern, both in approach and content. All diagrams have been redrawn or replaced by new ones. To meet the requirements of the latest syllabi of the various universities of India, topics like transition metals, coordination compounds, crystal field theory, gaseous and liquid states, adsorption, flame photometry, fullerenes, composites, mechanism of some typical reactions, oils and fats, soaps and detergents, have been included or expanded upon. A large number of solved numerical examples drawn from various university examinations have been given at the end of theoretical part of each chapter. Questions have been drawn from latest examinations of various universities.

Any good text book, particularly that in the fast changing fields such as engineering & technology, is not only expected to cater to the current curricular requirements of various institutions but also should provide a glimpse towards the latest developments in the concerned subject and the relevant disciplines. It should guide the periodic review and updating of the curriculum.

Written in lucid language, the book offers a detailed treatment of fundamental concepts of chemistry and its engineering applications.

Completely revised and updated, Elements of Environmental Engineering: Thermodynamics and Kinetics, Second Edition covers the applications of chemical thermodynamics and kinetics in environmental processes. Each chapter has been rewritten and includes new examples that better illuminate the theories discussed. An excellent introduction to environmental engineering, this reference stands alone in its multimedia approach to fate and transport modeling and in pollution control design options. Clearly and lucidly written, it provides extensive tables, figures, and data that make it the reference to have on this subject.

Now in its seventh edition, Basic Engineering Mathematics is an established textbook that has helped thousands of students to succeed in their exams. Mathematical theories are explained in a straightforward manner, being supported by practical engineering examples and applications in order to ensure that readers can relate theory to practice. The extensive and thorough topic coverage makes this an ideal text for introductory level engineering courses. This title is supported by a companion website with resources for both students and lecturers, including lists of essential formulae, multiple choice tests, and full solutions for all 1,600 further questions.

Compatibilization of Polymer Blends: Micro and Nano Scale Phase Morphologies, Interphase Characterization and Properties offers a comprehensive approach to the use of compatibilizers in polymer blends, examining both fundamental and advanced knowledge in the field. The book begins by introducing polymer blends, describing thermodynamics, miscibility, and phase separation, and explaining the main concepts of compatibilization. Other sections cover theoretical approaches for nearly compatible blends, incompatible blends, nanofillers, physical compatibilization, reactive compatibilization, morphological and structural characterization, and physico-mechanical characterization. Finally, key application areas are covered, including biomedical applications, packaging and automobile engineering. While this book will be a highly valuable reference source for academics, researchers and postgraduate students interested in polymer blends, it will also be ideal for anyone involved in the fields of polymer science, polymer chemistry, polymer physics, materials science, scientists, R&D professionals, and engineers involved in the development or engineering of polymer products. Offers detailed and systematic coverage of essential and advanced topics relating to the compatibilization of polymer blends. Presents a critical analysis of the effect of compatibilization on morphology and thermal, mechanical, electrical and viscoelastic properties of polymer blends. Draws on novel studies and state-of-the-art research, discussing the latest issues and developments.

As the series title implies each Clinician's Desk Reference is a practical resource and a daily aid for physicians in the hospital setting and in primary care. Asthma is one of the most important chronic disorders in the developed world. Evidence from around the world shows the prevalence of asthma has increased considerably since 1975, and now affects around 7.2% of the world population (about 100 million individuals). In the UK asthma is now the most common chronic disease affecting all age groups with approximately 11% of the population being diagnosed as having asthma at some time in their lives. Understanding of the basic mechanisms involved in the pathogenesis of asthma has improved dramatically over the past 20 years. Along with this increase in basic scientific knowledge, randomized clinical trials have produced evidence to guide clinicians in how to manage patients with asthma. The book covers epidemiology, diagnosis and management, and takes a look at future developments. The authors highlight the under diagnosis of occupational asthma and emphasize the importance of effective patient education, particularly asthma action plans. There are ten clinical cases dealing with common diagnostic and management problems, frequently asked questions and appendices containing resources for patients and clinicians including useful websites, information leaflets and major references.

This book provides the students with a solid foundation in the technology of microprocessors and microcontrollers, their principles and applications. It comprehensively presents the material necessary for understanding the internal architecture as well as system

design aspects of Intel's legendary 8085 and 8086 microprocessors and Intel's 8051 and 8096 microcontrollers. The book throughout maintains an appropriate balance between the basic concepts and the skill sets needed for system design. Besides, the book lucidly explains the hardware architecture, the instruction set and programming, support chips, peripheral interfacing, and cites several relevant examples to help the readers develop a complete understanding of industrial application projects. Several system design case studies are included to reinforce the concepts discussed. With exhaustive coverage provided and practical approach emphasized, the book would be indispensable to undergraduate students of Electrical and Electronics, Electronics and Communication, and Electronics and Instrumentation Engineering. It can be used for a variety of courses in Microprocessors, Microcontrollers, and Embedded System Design.

Chromatin immunoprecipitation sequencing (ChIP-seq), which maps the genome-wide localization patterns of transcription factors and epigenetic marks, is among the most widely used methods in molecular biology. Practical Guide to ChIP-seq Data Analysis will guide readers through the steps of ChIP-seq analysis: from quality control, through peak calling, to downstream analyses. It will help experimental biologists to design their ChIP-seq experiments with the analysis in mind, and to perform the basic analysis steps themselves. It also aims to support bioinformaticians to understand how the data is generated, what the sources of biases are, and which methods are appropriate for different analyses.

Designed Primarily For Courses In Operational Amplifier And Linear Integrated Circuits For Electrical, Electronic, Instrumentation And Computer Engineering And Applied Science Students. Includes Detailed Coverage Of Fabrication Technology Of Integrated Circuits. Basic Principles Of Operational Amplifier, Internal Construction And Applications Have Been Discussed. Important Linear Ics Such As 555 Timer, 565 Phase-Locked Loop, Linear Voltage Regulator Ics 78/79 Xx And 723 Series D-A And A-D Converters Have Been Discussed In Individual Chapters. Each Topic Is Covered In Depth. Large Number Of Solved Problems, Review Questions And Experiments Are Given With Each Chapter For Better Understanding Of Text. Salient Features Of Second Edition * Additional Information Provided Wherever Necessary To Improve The Understanding Of Linear Ics. * Chapter 2 Has Been Thoroughly Revised. * Dc & Ac Analysis Of Differential Amplifier Has Been Discussed In Detail. * The Section On Current Mirrors Has Been Thoroughly Updated. * More Solved Examples, Pspice Programs And Answers To Selected Problems Have Been Added.

Sarah's dream was to live in a beautiful valley with a slow moving river running through it. This was a big dream for a young girl who, along with her brother Frank, were orphaned early in life. Their parents died with the wagon train on the way to California in the early 1800's. Sarah and Frank were the only survivors. How would two children survive the highway men, the raging grassfires, the cold winters and the heartache? This is their life story as told through the eyes of an old Indian man named Winnepesaukee. Engineering Mechanics is a textbook specifically designed for a one-semester interdisciplinary course offered at the university level for undergraduate engineering programmes in India.

Coulson and Richardson's Chemical Engineering: Volume 3A: Chemical and Biochemical Reactors and Reaction Engineering, Fourth Edition, covers reactor design, flow modelling, gas-liquid and gas-solid reactions and reactors. Captures content converted from textbooks into fully revised reference material Includes content ranging from foundational through technical Features emerging applications, numerical methods and computational tools

With links to a large volume of ultrasound images and video clips, this book provides a practical guide for all physicians undertaking pleural ultrasound investigations and procedures and helps clinicians choose the correct ultrasound equipment for their department. With instructions for clinical practice, the book helps readers recognize normal anatomy and common pleural pathologies. Links to additional instructional videos assist in perfecting techniques for ultrasound guided pleural procedures through clear explanations. Self-assessment and revision sections help readers test their knowledge. Book jacket.

Chemistry for TechnologistsThe Commonwealth and International Library: Electrical Engineering DivisionElsevier International interest in nanoscience research has flourished in recent years, as it becomes an integral part in the development of future technologies. The diverse, interdisciplinary nature of nanoscience means effective communication between disciplines is pivotal in the successful utilization of the science. Nanochemistry: A Chemical Approach to Nanomaterials is the first textbook for teaching nanochemistry and adopts an interdisciplinary and comprehensive approach to the subject. It presents a basic chemical strategy for making nanomaterials and describes some of the principles of materials self-assembly over 'all' scales. It demonstrates how nanometre and micrometre scale building blocks (with a wide range of shapes, compositions and surface functionalities) can be coerced through chemistry to organize spontaneously into unprecedented structures, which can serve as tailored functional materials. Suggestions of new ways to tackle research problems and speculations on how to think about assembling the future of nanotechnology are given. Primarily designed for teaching, this book will appeal to graduate and advanced undergraduate students. It is well illustrated with graphical representations of the structure and form of nanomaterials and contains problem sets as well as other pedagogical features such as further reading, case studies and a comprehensive bibliography.

Some chapters in the book deal with the basic principles of chemistry while others are focused on its applied aspects, providing the correct interphase between the principles of chemistry and engineering. KEY FEATURES * Chapters cover both basic principles of chemistry as also its applied aspects. * Written in easy self-explanatory language and in depth at the same time. * Review questions provided at the end of each chapter. * A separate section 'Laboratory Manual' in Engineering Chemistry comprising 12 experiments is appended at the end of the book.

In 2001 Wyn Roberts celebrated both his 70th birthday and 50 years of working in surface science, to use the term "surface science" in its broadest meaning. This book aims to mark the anniversary with a contribution of lasting value, something more than the usual festschrift issue of a relevant journal. The book is divided into three sections: Surface Science, Model Catalysts and Catalysis, topics in which Wyn has always had interests. The authors for each chapter were chosen from some of the many eminent scientists who have worked with Wyn in various ways and are all internationally acknowledged as leaders in their field. The authors have produced authoritative reviews of their own specialties which together result in a book with an unrivalled combination of breadth and depth exploring the most recent

developments in surface chemistry and catalysis.

Large scale cultivation of macrofungi is possible with fermentation, using easily accessible lignocellulosic agricultural residues applying economical methods to generate substantial biomass, food and biofuels. Bioconversion of lignocellulosic wastes by macrofungi generates value-added fungal nutritional biomass for humans and livestock. Besides commercial cultivation techniques, other topics covered in *Advances in Macrofungi: Industrial Avenues and Prospects* include: the healing potential of mushrooms, industrial opportunities, mycelium-based products, forest wild mushrooms and industrial applications of white rot fungi. This book reviews the industrial applications and uses of macrofungi. It encourages students and researchers to explore non-conventional sources of nutrition as well as bioactive metabolites to serve as nutraceuticals. It emphasizes the potential of macrofungi as a source of bioactive compounds to remedy human lifestyle diseases especially cancers and cardiovascular ailments along with immunostimulation potential by Cordyceps. This book emphasizes the role of mushrooms as a source of cosmeceuticals, flavors, essence, scents and perfumes.

Given the rapid advances in the field, this book offers an up-to-date introduction to nanomaterials and nanotechnology. Though condensed into a relatively small volume, it spans the whole range of multidisciplinary topics related to nanotechnology. Starting with the basic concepts of quantum mechanics and solid state physics, it presents both physical and chemical synthetic methods, as well as analytical techniques for studying nanostructures. The size-specific properties of nanomaterials, such as their thermal, mechanical, optical and magnetic characteristics, are discussed in detail. The book goes on to illustrate the various applications of nanomaterials in electronics, optoelectronics, cosmetics, energy, textiles and the medical field and discusses the environmental impact of these technologies. Many new areas, materials and effects are then introduced, including spintronics, soft lithography, metamaterials, the lotus effect, the Gecko effect and graphene. The book also explains the functional principles of essential techniques, such as scanning tunneling microscopy (STM), atomic force microscopy (AFM), scanning near field optical microscopy (SNOM), Raman spectroscopy and photoelectron microscopy. In closing, Chapter 14, 'Practicals', provides a helpful guide to setting up and conducting inexpensive nanotechnology experiments in teaching laboratories.

Environmental Science And Engineering Pertain To A Systematic Analysis Of The Natural And Man-Made World Encompassing Various Scientific, Economic, Social And Ethical Aspects. Human Impacts Leading To Large-Scale Degradation Of The Environment Have Aroused Global Concern On Environmental Issues In The Recent Years. The Apex Court Has Hence, Issued Directive To Impart Environmental Literacy To All. In This Book The Fundamental Concepts Of Environmental Science And Engineering Have Been Introduced And Analyzed In A Simple Manner Strictly As Per The Anna University Iind And Iiird Semester Syllabus. Besides The Undergraduate Students Of All Disciplines The Book Will Also Be Useful For Those Appearing In Various Competitive Exams Since Environmental Issues Now Find A Focus In Most Of Such Examinations. The Contents Of The Book Will Be Of Interest To All Educationists, Planners And Policy Makers. Key Features Of The Book Include A Simple And Holistic Approach With Illustrations, Tables And Specific Case Studies Mainly In The Indian Context. The Basic Terminologies Have Been Defined In The Text While Introducing The Topics And Some Useful Terms Mentioned In The Text Have Been Explained In The Glossary For An Easy Grasp By Students Of All Disciplines.

Written by the most well known face of India's IT literacy movement, this book is designed for the first course in C# taken by undergraduate students in Computers and Information Technology. The revised edition maintains the lucid flow and continuity which has been the strength of the book.

Designed as a text for all undergraduate students of engineering for their core course in Environmental Science and Engineering and for elective courses in environmental health engineering and pollution and control engineering for students of civil engineering, this comprehensive text, now in its Second Edition provides an in-depth analysis of the fundamental concepts. It also introduces the reader to different niche areas of environmental science and engineering. The book covers a wide array of topics, such as natural resources, disaster management, biodiversity, and various forms of pollution, viz. water pollution, air pollution, soil pollution, noise pollution, thermal pollution, and marine pollution, as well as environmental impact assessment and environmental protection. This edition introduces a new chapter on Environment and Human Health. **KEY FEATURES :** Gives in-depth yet lucid analysis of topics, making the book user-friendly. Covers important topics, which are adequately supported by illustrative diagrams. Provides case studies to explore real-life problems. Supplies review questions at the end of each chapter to drill the students in self-study.

Large scale cultivation of macrofungi is possible with fermentation, using easily accessible lignocellulosic agricultural residues utilising economical methods to generate substantial biomass, food and biofuels. Bioconversion of lignocellulosic wastes by macrofungi generates value-added fungal nutritional biomass for humans and livestock. Besides commercial cultivation techniques, other topics covered include healing potential of mushrooms, industrial opportunities, mycelium-based products, forest wild mushrooms and industrial applications of white rot fungi. This book addresses the various applications of macrofungi. It encourages readers to explore non-conventional sources of nutrition as well as bioactive metabolites to serve as nutraceuticals. The volume emphasizes the significance of macrofungi as source of bioactive compounds to remedy human lifestyle diseases especially cancers and cardiovascular ailments along with immunostimulation potential by Cordyceps. This book also emphasises on the role of mushrooms as a source of cosmeceuticals, source of flavors, essence, scents and perfumes.

Discussing the influence of environmental factors on both living and nonliving entities, this text places special emphasis on human health problems such as mutagenesis, teratogenesis and carcinogenesis, as well as looking at the major global issues of energy conservation, acid rain and greenhouse gases.

Hydrogels are very important for biomedical applications because they can be chemically manipulated to alter and control the hydrogel's interaction with cells and tissues. Their flexibility and high water content is similar to that of natural tissue, making them extremely suitable for biomaterials applications. *Biomedical hydrogels* explores the diverse range and use of hydrogels, focusing on processing methods and novel applications in the field of implants and prostheses. Part one of this book concentrates on the processing of hydrogels, covering hydrogel swelling behaviour, superabsorbent cellulose-based hydrogels and regulation of novel hydrogel products, as well as chapters focusing on the structure and properties of hydrogels and different fabrication technologies. Part two covers existing and novel applications of hydrogels, including chapters on spinal disc and cartilage replacement implants, hydrogels for ophthalmic prostheses and hydrogels for wound healing applications. The role of hydrogels in imaging implants in situ is also discussed. With its distinguished editor and international team of contributors, *Biomedical hydrogels* is an excellent reference for biomedical research scientists and engineers in industry and academia, as well as others involved in research in this area, such as research clinicians. Examines the diverse range and use of hydrogels, focusing on processing methods and novel applications Comprehensive book explores the structure and properties of hydrogels and different fabrication

technologies Covers important areas such as processing of hydrogels, covering hydrogel swelling behaviour, superabsorbent cellulose-based hydrogels and regulation of novel hydrogel products

Systems-Level Modelling of Microbial Communities: Theory and Practice introduces various aspects of modelling microbial communities and presents a detailed overview of the computational methods which have been developed in this area. This book is aimed at researchers in the field of computational/systems biology as well as biologists/experimentalists studying microbial communities, who are keen on embracing the concepts of computational modelling. The primary focus of this book is on methods for modelling interactions between micro-organisms in a community, with special emphasis on constraint-based and network-based modelling techniques. A brief overview of population- and agent-based modelling is also presented. Lastly, it covers the experimental methods to understand microbial communities, and provides an outlook on how the field may evolve in the coming years.

Elucidates various modern TV pick-up tubes, CCD imagers, and various kinds of VTRs, VCRs and video disk systems along with their design features. This book includes contemporary developments like cable and satellite television, MAC packets with HDTV and videotex information services as also their advances.

Now in its eighth edition, Higher Engineering Mathematics has helped thousands of students succeed in their exams. Theory is kept to a minimum, with the emphasis firmly placed on problem-solving skills, making this a thoroughly practical introduction to the advanced engineering mathematics that students need to master. The extensive and thorough topic coverage makes this an ideal text for upper-level vocational courses and for undergraduate degree courses. It is also supported by a fully updated companion website with resources for both students and lecturers. It has full solutions to all 2,000 further questions contained in the 277 practice exercises.

Gas-Solid Reactions describes gas-solid reaction systems, focusing on the four phenomena—external mass transfer, pore diffusion, adsorption/desorption, and chemical reaction. This book consists of eight chapters. After the introduction provided in Chapter 1, the basic components of gas-solid reactions are reviewed in Chapter 2. Chapter 3 describes the reactions of individual nonporous solid particles, while Chapter 4 elaborates the reaction of single porous particles. Solid-solid reactions proceeding through gaseous intermediates are considered in Chapter 5. Chapter 6 deals with the experimental approaches to the study of gas-solid reaction systems. How information on single-particle behavior may be used for the design of multiparticle, large-scale assemblies, and packed- and fluidized-bed reaction systems is deliberated in Chapter 7. The last chapter covers the specific gas-solid reaction systems, including some statistical indices indicating the economic importance of the systems and processes it's based on. This publication is recommended for practicing engineers engaged in process research, development, and design in the many fields where gas-solid reactions are important.

Chemistry for Technologists provides a basic text on chemical principles written specifically for the technologists. The topics covered are those of basic chemistry. Definitions of such terms as chemical reactions, stoichiometry, and atomic structures are made simple so as not to require prior technical background of the subject. The book introduces the student to topics such as structural chemistry, physical chemistry, organic chemistry, and inorganic chemistry. A chapter on analytical chemistry is also provided. The chapter focuses on method of analysis such as routine methods, electrometric methods, and chromatographic methods. Chromatography is a type of separation method, which is discussed in detail. Different types of chromatography are also enumerated. The waves mechanics and hydrogen atom are fully covered. The electronic nature of bonding and bonding between two hydrogen atoms are discussed in detail. The ionic crystals, molecular crystals, and covalent crystals are presented completely. The text will be a useful tool for technology students and practising technologists.

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