

Engineering Chemistry Og Palanna

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. Introduction to Computational Chemistry, Second Edition provides a comprehensive account of the fundamental principles underlying different methods, ranging from classical to the sophisticated. Although comprehensive in its coverage, this textbook focuses on calculating molecular structures and (relative) energies and less on molecular properties or dynamical aspects. No prior knowledge of concepts specific to computational chemistry are assumed, but the reader will need some understanding of introductory quantum mechanics, linear algebra, and vector, differential and integral calculus.

Statistical Physics (SP) has followed an unusual evolutionary path in science. Originally aiming to provide a fundamental basis for another important branch of Physics, namely Thermodynamics, SP gradually became an independent field of research in its own right. But despite more than a century of steady progress, there are still plenty of challenges and open questions in the SP realm. In fact, the area is still rapidly evolving, in contrast to other branches of science, which already have well defined scopes and borderlines of applicability. This difference is due to the steadily expanding number of applications, as well as ongoing improvements and revisions of concepts and methods in SP. Such particular aspects of SP lend further significance and timeliness to this book about perspectives and trends within the field. Here, the aim is to present the state-of-the-art vision of expert researchers who study SP and Complex Systems. Although a comprehensive treatment is well beyond what can be treated in a single volume, the book provides a snapshot of the field today, as well as a glimpse of where the field may be heading during the next decade. The book is aimed at graduate and advanced undergraduate physics students, as well as researchers who work with SP, Complex Systems, Computational Physics, Biological Physics and related topics. It addresses questions such as: What insights can be gained from recent advances in the study of traditional problems in SP? How can SP help us understand problems that arise in the biological sciences and in the study of complex systems? How can new problems be formulated using the 'language' of SP? In this way, it attempts to document partial progress in answering these and related questions. The book also commemorates the occasion of the 70th anniversary in 2011 of two important physicists and friends who dedicated their lives to the understanding of nature in general and to the development of Statistical Physics and the science of Complexity in particular: Liacir Lucena and H Eugene Stanley.

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.

The series Topics in Current Chemistry Collections presents critical reviews from the journal Topics in Current Chemistry organized in topical volumes. The scope of coverage is all areas of chemical science including the interfaces with related disciplines such as biology, medicine and materials science. The goal of each thematic volume is to give the non-specialist reader, whether in academia or industry, a comprehensive insight into an area where new research is emerging which is of interest to a larger scientific audience. Each review within the volume critically surveys one aspect of that topic and places it within the context of the volume as a whole. The most significant developments of the last 5 to 10 years are presented using selected examples to illustrate the principles discussed. The coverage is not intended to be an exhaustive summary of the field or include large quantities of data, but should rather be conceptual, concentrating on the methodological thinking that will allow the non-specialist reader to understand the information presented. Contributions also offer an outlook on potential future developments in the field.

Air pollution related to the release of industrial toxic gases, represents one of the main concerns of our modern world owing to its detrimental effect on the environment. To tackle this growing issue, efficient ways to reduce/control the release of pollutants are required. Adsorption of gases on porous materials appears as a potential solution. However, the physisorption of small molecules of gases such as ammonia is limited at ambient conditions. For their removal, adsorbents providing strong adsorption forces must be used/developed. In this study, new carbon-based materials are prepared and tested for ammonia adsorption at ambient conditions. Characterization of the adsorbents' texture and surface chemistry is performed before and after exposure to ammonia to identify the features responsible for high adsorption capacity and for controlling the mechanisms of retention. The characterization techniques include: nitrogen adsorption, thermal analysis, potentiometric titration, FT-IR spectroscopy, X-ray diffraction, Energy Dispersive X-ray spectroscopy, X-ray photoelectron spectroscopy and Electron Microscopy. The results obtained indicate that ammonia removal is governed by the adsorbent's surface chemistry. On the contrary, porosity (and thus physisorption) plays a secondary role in this process, unless strong dispersive forces are provided by the adsorbent. The surface chemistry features responsible for the enhanced ammonia adsorption include the presence of oxygen-(carboxyl, hydroxyl, epoxy) and sulfur- (sulfonic) containing groups. Metallic species improve the breakthrough capacity as well as they lead to the formation of Lewis acid-base interactions, hydrogen-bonding or complexation. In addition to the latter three mechanisms, ammonia is retained on the adsorbent surface via Brønsted acid-base interactions or via specific reactions with the adsorbent's functionalities leading to the incorporation of ammonia into the adsorbent's matrix. Another mechanism involves dissolution of ammonia in water when moisture is present in the system. Even though this process increases the breakthrough capacity of a material, it provides rather weak retention forces since ammonia dissolved in water is easily desorbed from the adsorbent's surface.

This comprehensive and well-organized text discusses the fundamentals of electronic communication, such as devices and analog and digital circuits, which are so essential for an understanding of digital electronics. Professor Santiram Kal, with his wealth of knowledge and his years of teaching experience, compresses, within the covers of a single

volume, all the aspects of electronics - both analog and digital - encompassing devices such as microprocessors, microcontrollers, fibre optics, and photonics. In so doing, he has struck a fine balance between analog and digital electronics. A distinguishing feature of the book is that it gives case studies in modern applications of electronics, including information technology, that is, DBMS, multimedia, computer networks, Internet, and optical communication. Worked-out examples, interspersed throughout the text, and the large number of diagrams should enable the student to have a better grasp of the subject. Besides, exercises, given at the end of each chapter, will sharpen the student's mind in self-study. These student-friendly features are intended to enhance the value of the text and make it both useful and interesting.

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.

Medicinal chemistry is the chemistry discipline concerned with the design, development and synthesis of pharmaceutical drugs. The discipline combines expertise from chemistry and pharmacology to identify, develop and synthesize chemical agents that have a therapeutic use and to evaluate the properties of existing drugs. Medicinal Chemistry is a comprehensive and well illustrated presentation of the major areas of pharmaceutical drug research. It will be extremely useful as a textbook for pharmacy students and as an overview for research scientists entering the pharmaceutical industry. The book integrates the chemical and pharmacological aspects of drugs, and links the sciences of organic chemistry, biochemistry, and biology with the clinical areas of required for a thorough understanding of modern medicinal drugs. The treatment of pain and disease is one of the most important goals of humankind. Since ancient times people have been using potions, natural products and even the dust of mummies for the treatment of health problems. The healing effects of remedies were often ascribed to spirits and mythical entities, but some of the herbal preparations did possess curative properties. In the 1800's scientists began to investigate potions to determine what chemicals were present that could cause the observed healing. Thus, the early days of medicinal chemistry began with the study of naturally occurring materials that were effective in treating human disorders. The studies were tedious and required much sample purification and structure determination at a time when instrumental methods of analysis were unavailable. Also, screening methods for chemical efficacy against disease had to be developed so that humans were not used as trials. The book builds on the history of drug development, but does not assume much background knowledge. The focus is on building upon the understandings of the molecular function of drugs, and from there, taking a broad overview of the topical issues and most frequently used techniques.

Green Chemistry concerned with chemical research and engineering that encourages the design of products and processes that minimize the use and generation of hazardous substances. It is effective in controlling the impact of chemicals on human health and the environment. Chemists and chemical engineers applying green chemistry look at the entire life cycle of a product or process, from the origins of the materials used for manufacturing to the ultimate fate of the materials after they have finished their useful life. This book is written especially for researchers at various levels e.g. in industry, R&D Laboratories, University and College laboratories etc. It describes a large number of organic reactions under green conditions. The conditions used are aqueous phase, using PTC catalyst, sonication and microwave technologies.

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

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.

This book presents a modern and balanced approach while discussing the conceptual and practical aspects of vacuum science and technology. The chapters in the book are planned in systematic fashion from basic concepts through vacuum production and measurement, vacuum components, trouble shooting and then providing applications. It would be useful to students, both at the under-graduate and graduate levels in physics and also in various branches of engineering. In addition, it would be of value to practicing scientists and engineers who have to deal with vacuum science and technology.

This book presents a large number of organic reactions performed under green conditions, which were earlier performed using anhydrous conditions and various volatile organic solvents. The conditions used involve green solvents like water, super critical carbon dioxide, ionic liquids, polymer-supported reagents, polyethylene glycol and perfluorous liquids. A number of reactions have been conducted in solid state without using any solvent. Most of the reactions have been conducted under microwave irradiations and sonication. In large number of reactions, catalysts like phase transfer catalysts, crown ethers and biocatalysts have been used. Providing the protocols that every laboratory should adopt, this book elaborates the principles of green chemistry and discusses the planning and preparations required to convert to green laboratory techniques. It includes applications relevant to practicing researchers, students and environmental chemists. This book is useful for students (graduate and postgraduate), researchers and industry professionals in the area of chemical engineering, chemistry and allied fields.

About the Book: This book Engineering Mathematics-II is designed as a self-contained, comprehensive classroom text for the second semester B.E. Classes of Visveswaraiah Technological University as per the Revised new Syllabus. The topics included are Differential Calculus, Integral Calculus and Vector Integration, Differential Equations and Laplace Transforms. The book is

written in a simple way and is accompanied with explanatory figures. All this make the students enjoy the subject while they learn. Inclusion of selected exercises and problems make the book educational in nature. It shou.

It is a heartwarming and humorous story of a lovable hedgehog who finds one fine morning that he has misplaced his precious spectacles, without which he feels himself lost. He must find them quickly, and so, he goes out on a search, committing one blunder after another because he cannot see things clearly without the aid of glasses. In the end, his close friend Graf, the giraffe, helps him find them. Just like the earlier popular children picture story books by the author, this latest book also has a highly enjoyable and humorous story that is bound to captivate the imagination of the little readers. With its simple and lucid narration style and finely colored and detailed illustrations by the author herself, it makes an excellent addition to your tiny tots' book collections. Though the book is meant for the age group of 2-8 years, it can be read and enjoyed even by older children and grown-ups too because of the humorous story and lovely illustrations. It makes for a perfect gift, a highly enjoyable read-aloud and also an ideal bedtime story for toddlers and preschoolers. The book teaches children about the value of friendship, kindness and the importance of helping others in need. While kindling their interests through humorous illustrations, it also introduces them to the wonderful world of nature, spring season and various animals. Perfect bedtime picture book for kids ages: 2, 3, 4, 5, 6, 7, 8

Organometallic Chemistry is the study of chemical compounds containing bonds between carbon and metal. The term "e;Metal"e; is defined deliberately broadly in this context and may include elements, such as silicon or boron, which are not metallic but are considered to be metalloids. Almost all branches of chemistry and material science now interface with organometallic chemistry. Organometallics find practical uses in stoichiometric and catalytic processes, especially processes involving carbon monoxide and alkene-derived polymers. Organometallic (OM) chemistry is the study of compounds containing, and reactions involving, metal-carbon bonds. The metal-carbon bond may be transient or temporary, but if one exists during a reaction or in a compound of interest, we're squarely in the domain of organometallic chemistry. Despite the denotational importance of the M-C bond, bonds between metals and the other common elements of organic chemistry also appear in OM chemistry: metal-nitrogen, metal-oxygen, metal-halogen, and even metal-hydrogen bonds all play a role. Metals cover a vast swath of the periodic table and include the alkali metals (group 1), alkali earth metals (group 2), transition metals (groups 3-12), the main group metals (groups 13-15, "e;under the stairs"e;), and the lanthanides and actinides. The principal idea of this book is to offer a comprehensive coverage of unconventional and thought-provoking topics in organometallic chemistry. It also supplies practical information about reaction mechanisms, along with the descriptions of contemporary applications to organic synthesis, organized by mechanism and kinetic. It will serve as a valuable reference tool for students and professional of organic and post organic chemistry, who need to become better acquainted with the subject.

A riveting and humorous story of a MOTHER HEN and her frantic search for her lost eggs. On a tip-off from a friendly BIRDIE, a MOTHER HEN races to retrieve her stolen eggs from the nest-robbers before it is too late. After a roller-coaster chase, a joyful surprise awaits her and the readers in the end. With a perfectly rhymed and beautifully illustrated story, the book offers an immersive reading experience and helps the young readers in developing their reading habits. And with innovative illustrations, it also assists them in improving their counting skill and their ability to identify different shapes and colors. As the children join the MOTHER HEN emotionally in her bold and racy adventure, they are sure to get an inspiration to be courageous and hopeful in adversity. A must-have for every child who loves to curl-up with a really-nice picture story book.

A heterocyclic compound or ring structure is a cyclic compound that has atoms of at least two different elements as members of its ring(s). Heterocyclic chemistry is the branch of organic chemistry dealing with the synthesis, properties, and applications of these heterocycles. This text is a concise book that gives details of heterocyclic compounds. This book will also be useful to the students preparing for various competitive examinations. Much emphasis has been placed on chemical reactions and mechanisms of heterocyclic compounds. Each compound had been described in a clear and systematic manner. The subject-matter presented in each book, though concise, has adequate coverage of this subject; the important points wherever necessary have been highlighted; complex portion of the content has been interpreted in an easy to grasp manner; and long sequences of references of reactions have been summarized in short run flowcharts.

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.

While encouraging the use of modeling techniques for sizing, cost and schedule estimation, reliability, risk assessment, and real-time design, the authors emphasize the need to calibrate models with actual data. Explicit guidance is provided for virtually every task that a software engineer may be assigned, and realistic case studies and examples are used extensively to reinforce the topics presented.

Organic chemistry is a discipline within chemistry that involves the scientific study of the structure, properties, composition, reactions, and preparation of carbon-based compounds, hydrocarbons, and their derivatives, these compounds may contain any number of other elements, including hydrogen, nitrogen, oxygen, the halogens as well as phosphorus, silicon and sulphur. Organic compounds are structurally diverse and the range of application of organic compounds is enormous. Organic Chemistry provides an easy access to the core information in the field and makes a comprehensive approach to disseminate information in a clear and systematic manner. The book is presented and organized in a way to discourage students from rote learning. It covers all the topics in Organic Chemistry which are normally included in the syllabi of Indian universities for undergraduate courses. Special emphasis has been given to the basic concepts viz. acids and bases, hybridization and resonance. Though, the study of Organic Chemistry may be complex, it is very important in everyday life. Although many books on the subject are available in the market, yet, there is a dearth. Hence this humble effort, will hopefully prove to be beneficial for all concerned readers.

Physical chemistry is the branch of chemistry that is concerned with the application of physics to chemical systems. This may involve the application of the principles of thermodynamics, quantum mechanics, quantum chemistry, statistical mechanics and kinetics to the study of chemistry. Physical chemistry, in contrast to chemical physics, is predominantly (but not always) a macroscopic or supra-molecular science, as the majority of the principles on which physical chemistry was founded, are concepts related to the bulk rather than on molecular/atomic structure alone. Physical chemistry is the study of how matter behaves on a molecular and atomic level and how chemical reactions occur. Based on their analyses, physical chemists may develop new theories, such as how complex structures are formed.

Physical chemists often work closely with materials scientists to research and develop potential uses for new materials. Nuclear chemistry is the subfield of general chemistry dealing with nuclear processes, radioactivity and nuclear properties of atoms. It deals with the composition of nuclear forces, nuclear reactions and radioactive materials. Nuclear chemistry bases the formation of artificial radioactivity. It is

the chemistry of radioactive elements such as the radium, actinides and radon together with the chemistry associated with equipments such as nuclear reactors which are specially designed to perform nuclear processes. This book offers arresting illustrations that set it apart from others of its kind. The author focuses on core topics of physical chemistry, presented within a modern framework of applications. Industrial applications of Metal complexes have gained significant importance especially in the area of Catalysis in the last three decades. Scope for further development of such applications is extensive as several biological processes in living cells involve metal complexes. Coordination Chemistry is a subject uniquely involving application of Quantum Mechanics, Spectroscopy, Kinetics, Catalysis, Biology and Industrial Chemistry. This book has been written keeping these important aspects of the subject in mind.

This book has been designed to provide a comprehensive exposure to the first course on Engineering Chemistry taken by the undergraduate students of engineering. Lucid presentation, simple language along with clear illustrations and applications makes this book an easy text to read and understand the concepts. Feature: • Provides a perfect link between the fundamental concepts and their relevant applications • Lab-manual with details of all the 12 lab experiments • 5 Solved previous years' question papers

Industrial Chemistry is a branch of chemistry in modern science. In industrial chemistry in modern science, we study about compounds or elements, their properties, and applications; which are used in industries. Since the time of Industrial Revolution, human intellect throughout the civilized world has been driving this Chemical Revolution. The book Industrial Chemistry is an excellent source of technological and economic information on the most important precursors and intermediates used in the chemical industry. It should be in the hand of every higher-graduate student, especially if chemical technology is not part of the study, like in many college universities. This book on industrial chemistry provides an overview of the new trends and hot topics by describing the challenge of designing industrial chemical processes that are up-to-date, sustainable, and economically feasible. The text in this book is throughout supplemented with diagrams and tables. The treatment of all topics is in a cogent, lucid style aimed at enabling the reader to grasp the information quickly and easily. This useful book is specifically intended for practicing chemical engineers, industrial chemists and research students.

Lignocellulosic Biomass Production and Industrial Applications describes the utilization of lignocellulosic biomass for various applications. Although there have been numerous reports on lignocellulosic biomass for biofuel application, there have been very few other applications reported for lignocellulosic biomass-based chemicals and polymers. Therefore, this book covers all of the possible lignocellulosic biomass applications. Besides describing the different types of biofuel production, such as bioethanol, biobutanol, biodiesel and biogas from lignocellulosic biomass, it also presents various other lignocellulosic biomass biorefinery applications for the production of chemicals, polymers, paper and bioplastics. In addition, there are chapters on valorization of lignocellulosic materials, alkali treatment to improve the physical, mechanical and chemical properties of lignocellulosic natural fibers, and a discussion of the major benefits, limitations and future prospects of the use of lignocellulosic biomass.

This book is a highly enjoyable collection of short and crisp read-aloud tales of mischievous spiders, and its simple, humorous and rhyming narration style makes it an ideal bed-time companion for tiny tots. It is also a fine beginner and early-learner book that introduces small kids to the world of colours, shapes, numbers, letters and words in unique way. The narration is easy to follow and grasp, and the beautiful illustrations coloured in pleasing shades with subtle humour ingrained in every small detail, make it a very cute and lovable book. The illustrations are so engrossing that a child can enjoy the book even without the aid of the text. This is the third picture story book by the author after her popular books, 'The Adventures of Mother Hen and Her Ten Eggs' and 'Bia the Bee learns to dance', written and illustrated in similar humorous vein.

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