

[MOBI] Yvc Rao Chemical Engineering Thermodynamics Ebook

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Chemical Engineering Thermodynamics-RAO 1997

Solutions Manual For Chemical Engineering Thermodynamics-Y. V. C. Rao 1998

This book is a very useful reference that contains worked-out solutions for all the exercise problems in the book *Chemical Engineering Thermodynamics* by the same author. Step-by-step solutions to all exercise problems are provided and solutions are explained with detailed and extensive illustrations. It will come in handy for all teachers and users of *Chemical Engineering Thermodynamics*.

Engineering Thermodynamics Through Examples-Y.V.C. Rao 2003

An introduction to thermodynamics-Y. V. C. Rao 2004

The laws of thermodynamics the science that deals with energy and its transformation have wide applicability in several branches of engineering and science. The revised edition of this introductory text for undergraduate engineering courses covers the physical concepts of thermodynamics and demonstrates the underlying principles through practical situations. The traditional classical (macroscopic) approach is used in this text. Numerous solved examples and more than 550 unsolved problems (included as chapter-end exercises) will help the reader gain confidence for applying the principles of thermodynamics in real-life problems. Sufficient data needed for solving problems have been included in the appendices.

Introduction to Thermodynamics-Y. V. C. Rao 1993-01-01

Solutions Manual for an Introduction to Thermodynamics-Y.V.C. Rao 2005-02

This manual contains the complete solution for all the 505 chapter-end problems in the textbook *An Introduction to Thermodynamics*, and will serve as a handy reference to teachers as well as students. The data presented in the form of tables and charts in the main textbook are made use of in this manual for solving the problems.

A TEXTBOOK OF CHEMICAL ENGINEERING THERMODYNAMICS-K. V. NARAYANAN 2013-01-11

Designed as an undergraduate-level textbook in Chemical Engineering, this student-friendly, thoroughly class-room tested book, now in its second edition, continues to provide an in-depth analysis of chemical engineering thermodynamics. The book has been so organized that it gives comprehensive coverage of basic concepts and applications of the laws of thermodynamics in the initial chapters, while the later chapters focus at length on important areas of study falling under the realm of chemical thermodynamics. The reader is thus introduced to a thorough analysis of the fundamental laws of thermodynamics as well as their applications to practical situations. This is followed by a detailed discussion on relationships among thermodynamic properties and an exhaustive treatment on the thermodynamic properties of solutions. The role of phase equilibrium thermodynamics in design, analysis, and operation of chemical separation methods is also deftly dealt with. Finally, the chemical reaction equilibria are skillfully explained. Besides numerous illustrations, the book contains over 200 worked examples, over 400 exercise problems (all with answers) and several objective-type questions, which enable students to gain an in-depth

understanding of the concepts and theory discussed. The book will also be a useful text for students pursuing courses in chemical engineering-related branches such as polymer engineering, petroleum engineering, and safety and environmental engineering. New to This Edition • More Example Problems and Exercise Questions in each chapter • Updated section on Vapour-Liquid Equilibrium in Chapter 8 to highlight the significance of equations of state approach • GATE Questions up to 2012 with answers

Introduction to CHEMICAL ENGINEERING THERMODYNAMICS-GOPINATH HALDER 2014-09-02

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, 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.

Chemical Engineering Thermodynamics-Y. V. C. Rao 1997

Heat Transfer-Y.V. Rao 2001-09

Heat Transfer is a compulsory core course in the curriculum of almost all branches of engineering in several engineering and technical institutions and universities. An outcome of the lecture notes prepared by the author, this book has been prepared primarily for an introductory course in Heat and Mass Transfer.

Engineering Thermodynamics-R. K. Rajput 2010

Intended as a textbook for "applied" or engineering thermodynamics, or as a reference for practicing engineers, the book uses extensive in-text, solved examples and computer simulations to cover the basic properties of thermodynamics. Pure substances, the first and second laws, gases, psychrometrics, the vapor, gas and refrigeration cycles, heat transfer, compressible flow, chemical reactions, fuels, and more are presented in detail and enhanced with practical applications. This version presents the material using SI Units and has ample material on SI conversion, steam tables, and a Mollier diagram. A CD-ROM, included with the print version of the text, includes a fully functional version of QuickField (widely used in industry), as well as numerous demonstrations and simulations with MATLAB, and other third party software.

Chemical Process Principles Charts-Olaf Andreas Hougen 1964

Elements of Chemical Reaction Engineering-H. Scott Fogler 1999

"The fourth edition of Elements of Chemical Reaction Engineering is a completely revised version of the book. It combines authoritative coverage of the principles of chemical reaction engineering with an unsurpassed focus on critical thinking and creative problem solving, employing open-ended questions and stressing the Socratic method. Clear and organized, it integrates text, visuals, and computer simulations to help readers solve even the most challenging problems through reasoning, rather than by memorizing equations."--BOOK JACKET.

A HEAT TRANSFER TEXTBOOK-John H. Lienhard 2004

PRINCIPLES OF MASS TRANSFER AND SEPERATION PROCESSES-BINAY K. DUTTA 2007-01-21

This textbook is targetted to undergraduate students in chemical engineering, chemical technology, and biochemical engineering for courses in mass transfer, separation processes, transport processes, and unit operations. The principles of mass transfer, both diffusional and convective have been comprehensively discussed. The application of these principles to separation processes is explained. The more common separation processes used in the chemical industries are individually described in separate chapters. The book also provides a good understanding of the construction, the operating principles, and the selection criteria of separation equipment. Recent developments in equipment have been included as far as possible. The procedure of equipment design and sizing has been illustrated by simple examples. An overview of different applications and aspects of membrane separation has also been provided. 'Humidification and water cooling', necessary in every process indus-try, is also described. Finally, elementary principles of 'unsteady state diffusion' and mass transfer accompanied by a chemical reaction are covered. SALIENT FEATURES : • A balanced coverage of theoretical principles and applications. • Important recent developments in mass transfer equipment and practice are included. • A large number of solved problems of varying levels of complexities showing the applications of the theory are included. • Many end-chapter exercises. • Chapter-wise multiple choice questions. • An Instructors manual for the teachers.

Modern Engineering Thermodynamics-Robert T. Balmer 2010-12-20

Designed for use in a standard two-semester engineering thermodynamics course sequence. The first half of the text contains material suitable for a basic Thermodynamics course taken by engineers from all majors. The second half of the text is suitable for an Applied Thermodynamics course in mechanical engineering programs. The text has numerous features that are unique among engineering textbooks, including historical vignettes, critical thinking boxes, and case studies. All are designed to bring real engineering applications into a subject that can be somewhat abstract and mathematical. Over 200 worked examples and more than 1,300 end of chapter problems provide the use opportunities to practice solving problems related to concepts in the text. Provides the reader with clear presentations of the fundamental principles of basic and applied engineering thermodynamics. Helps students develop engineering problem solving skills through the use of structured problem-solving techniques. Introduces the Second Law of Thermodynamics through a basic entropy concept, providing students a more intuitive understanding of this key course topic. Covers Property Values before the First Law of Thermodynamics to ensure students have a firm understanding of property data before using them. Over 200 worked examples and more than 1,300 end of chapter problems offer students extensive opportunity to practice solving problems. Historical Vignettes, Critical Thinking boxes and Case Studies throughout the book help relate abstract concepts to actual engineering applications. For greater instructor flexibility at exam time, thermodynamic tables are provided in a separate accompanying booklet. Available online testing and assessment component helps students assess their knowledge of the topics. Email textbooks@elsevier.com for details.

Essentials of Thermodynamics-N.D. Hari Dass 2021-02-21

Essentials of Thermodynamics offers a fresh perspective on classical thermodynamics and its explanation of natural phenomena. It combines fundamental principles with applications to offer an integrated resource for students, teachers and experts alike. The essence of classic texts has been distilled to give a balanced and in-depth treatment, including a detailed history of ideas which explains how thermodynamics evolved without knowledge of the underlying atomic structure of matter. The principles are illustrated by a vast range of applications, such as osmotic pressure, how solids melt and liquids boil, the incredible race to reach absolute zero, and the modern theme of the renormalization group. Topics are handled using a variety of techniques, which helps readers see how concepts such as entropy and free energy can be applied to many situations, and in diverse ways. The book has a large number of solved examples and problems in each chapter, as well as a carefully selected guide to further reading. The treatment of traditional topics like the three laws of thermodynamics, Carnot cycles, Clapeyron equation, phase equilibria, and dilute solutions is considerably more detailed than usual. For example, the chapter on Carnot cycles discusses exotic cases like the photon cycle along with more practical ones like the Otto, Diesel and Rankine cycles. There is a chapter on critical phenomena that is modern and yet highly pedagogical and contains a first principles calculation of the critical exponents of Van der Waals systems. Topics like entropy constants, surface thermodynamics, and superconducting phase transitions are explained in depth while maintaining accessibility for different readers.

HEAT TRANSFER-DUTTA, BINAY K. 2000-01-01

This textbook is intended for courses in heat transfer for undergraduates, not only in chemical engineering and related disciplines of biochemical engineering and chemical technology, but also in mechanical engineering and production engineering. The author provides the reader with a very thorough account of the fundamental principles and their applications to engineering practice, including a survey of the recent developments in heat transfer equipment. The three basic modes of heat transfer - conduction, convection and radiation - have been comprehensively analyzed and elucidated by solving a wide range of practical and design-oriented problems. A whole chapter has been devoted to explain the concept of the heat transfer coefficient to give a feel of its importance in tackling problems of convective heat transfer. The use of the important heat transfer correlations has been illustrated with carefully selected examples.

Applied Thermodynamics-R. K. Rajput 2009-12

Schaum's Outline of Thermodynamics for Engineers, 2ed-Merle Potter 2010-05-23

Tough Test Questions? Missed Lectures? Not Enough Time? Fortunately for you, there's Schaum's Outlines. More than 40 million students have trusted Schaum's to help them succeed in the classroom and on exams. Schaum's is the key to faster learning and higher grades in every subject. Each Outline presents all the essential course information in an easy-to-follow, topic-by-topic format. You also get hundreds of examples, solved problems, and practice exercises to test your skills. This Schaum's Outline gives you Practice problems with full explanations that reinforce knowledge Coverage of the most up-to-date developments in your course field In-depth review of practices and applications Fully compatible with your classroom text, Schaum's highlights all the important facts you need to know. Use Schaum's to shorten your study time-and get your best test scores! Schaum's Outlines-Problem Solved.

Chemical Process Control-George Stephanopoulos 1984

Covers all aspects of chemical process control and provides a clear and complete overview of the design and hardware elements needed for practical implementation.

Introduction to Material and Energy Balances-Gintaras V. Reklaitis 1983

A thorough introduction to balance equation concepts. Geared for the course offered to chemical engineering majors in their

sophomore year. Develops a framework for the analysis of flowsheet problem information with extensive use of degree-of-freedom analysis. Presents systematic approaches for manual and computer-aided solution of full scale balance problems. Provides a detailed development of the structure, properties, and interrelationships of species and element balances based on the algebraic view of reaction-stoichiometry and the rate of reaction concept.

Chemical Engineering Kinetics-Joe Mauk Smith 1981

Unit Operations-II-Ka Gavhane 2014-11

Introduction - Conduction - Convection - Radiation - Heat Exchange Equipments - Evaporation - Diffusion - Distillation - Gas Absorption - Liquid Liquid Extraction - Crystallisation - Drying - Appendix I Try yourself - Appendix II Thermal conductivity data - Appendix III Steam tables

Mass-transfer Operations-Robert Ewald Treybal 1980

Basic Thermodynamics-B. K. VENKANNA, SWATI B. V. 2010-07-01

This book provides an in-depth discussion of the principles of thermodynamics. It focuses on engineering applications of theory and sound techniques for solving thermodynamic problems. The book presents the fundamental concepts of thermodynamics and describes the theory of work and heat. The text covers in detail the first law and the second law of thermodynamics with their applications. It also explains the concepts of entropy and availability and irreversibility. In addition, the book presents thermodynamic properties of pure substances, ideal gases and mixtures of ideal gases, as well as real gases. This book is designed for undergraduate students of mechanical engineering, industrial and production engineering, automobile engineering and aeronautical engineering for their courses in thermodynamics.

Applied Chemical Engineering Thermodynamics-Dimitrios P. Tassios 2013-12-19

Applied Chemical Engineering Thermodynamics provides the undergraduate and graduate student of chemical engineering with the basic knowledge, the methodology and the references he needs to apply it in industrial practice. Thus, in addition to the classical topics of the laws of thermodynamics, pure component and mixture thermodynamic properties as well as phase and chemical equilibria the reader will find: - history of thermodynamics - energy conservation - intermolecular forces and molecular thermodynamics - cubic equations of state - statistical mechanics. A great number of calculated problems with solutions and an appendix with numerous tables of numbers of practical importance are extremely helpful for applied calculations. The computer programs on the included disk help the student to become familiar with the typical methods used in industry for volumetric and vapor-liquid equilibria calculations.

Analysis, Synthesis and Design of Chemical Processes-Richard Turton 2008-12-24

The Leading Integrated Chemical Process Design Guide: Now with New Problems, New Projects, and More More than ever, effective design is the focal point of sound chemical engineering. Analysis, Synthesis, and Design of Chemical Processes, Third Edition, presents design as a creative process that integrates both the big picture and the small details—and knows which to stress when, and why. Realistic from start to finish, this book moves readers beyond classroom exercises into open-ended, real-world process problem solving. The authors introduce integrated techniques for every facet of the discipline, from finance to operations, new plant design to existing process optimization. This fully updated Third Edition presents entirely new problems at the end of every chapter. It also adds extensive coverage of batch process design, including realistic examples of equipment sizing for batch sequencing; batch scheduling for multi-product plants; improving production via intermediate storage and parallel equipment; and new optimization techniques specifically for batch processes. Coverage includes Conceptualizing and analyzing chemical processes: flow diagrams, tracing, process

conditions, and more Chemical process economics: analyzing capital and manufacturing costs, and predicting or assessing profitability Synthesizing and optimizing chemical processing: experience-based principles, BFD/PFD, simulations, and more Analyzing process performance via I/O models, performance curves, and other tools Process troubleshooting and “debottlenecking” Chemical engineering design and society: ethics, professionalism, health, safety, and new “green engineering” techniques Participating successfully in chemical engineering design teams Analysis, Synthesis, and Design of Chemical Processes, Third Edition, draws on nearly 35 years of innovative chemical engineering instruction at West Virginia University. It includes suggested curricula for both single-semester and year-long design courses; case studies and design projects with practical applications; and appendixes with current equipment cost data and preliminary design information for eleven chemical processes—including seven brand new to this edition.

Engineering Thermodynamics-R. K. Singal 2009-01-01

Engineering Thermodynamics has been designed for students of all branches of engineering specially undergraduate students of Mechanical Engineering. The book will also serve as reference manual for practising engineers. The book has been written in simple language and systematically develops the concepts and principles essential for understanding the subject. The text has been supplemented with solved numerical problems, illustrations and question banks. The present book has been divided in five parts: "Thermodynamic Laws and Relations" Properties of Gases and Vapours" Thermodynamics Cycles" Heat Transfer and Heat Exchangers" Annexures

Numerical Methods for Engineers-Santosh Gupta 2012-09-01

Numerical techniques required for all engineering disciplines explained. Necessary amount of elementary material included. Difficult concepts explained with solved examples. Some equations solved by different techniques for wider exposure. An extensive set of graded problems with hints included.

Process Systems Analysis and Control-Steven E. LeBlanc 2013

Chemical and Engineering Thermodynamics-Stanley I. Sandler 1989

A revised edition of the well-received thermodynamics text, this work retains the thorough coverage and excellent organization that made the first edition so popular. Now incorporates industrially relevant microcomputer programs, with which readers can perform sophisticated thermodynamic calculations, including calculations of the type they will encounter in the lab and in industry. Also provides a unified treatment of phase equilibria. Emphasis is on analysis and prediction of liquid-liquid and vapor-liquid equilibria, solubility of gases and solids in liquids, solubility of liquids and solids in gases and supercritical fluids, freezing point depressions and osmotic equilibria, as well as traditional vapor-liquid and chemical reaction equilibria. Contains many new illustrations and exercises.

Introduction to Process Calculations Stoichiometry-KA. Gavhane 2012

Engineering Thermodynamics-P. Chattopadhyay 2016-02-18

Starting with the basic concepts, the book gradually discusses important topics such as entropy, thermodynamic availability, properties of steam, real and ideal gas, power cycles and chemical equilibrium in increasing order of complexity. A lucid exposition of the fundamental concepts of thermodynamics in the book along with numerous worked-out examples and well-labelled detailed illustrations are sure to instil in the beginners a holistic understanding of the subject.

Unit Operations of Chemical Engineering-Warren Lee McCabe 1967

Mass Transfer-K. V. Narayanan 2017-03-30

Solutions Manual for Thermodynamics and an Introduction to

Thermostatistics, Second Edition-Herbert B. Callen 1986

Moran's Principles of Engineering Thermodynamics-Michael J. Moran
2020-01-08

Moran's Principles of Engineering Thermodynamics, SI Version, continues to offer a comprehensive and rigorous treatment of classical thermodynamics, while retaining an engineering perspective. With concise, applications-oriented discussion of topics and self-test problems, this book encourages students to monitor their own learning. This classic text provides a solid foundation for subsequent studies in fields such as fluid mechanics, heat transfer and statistical thermodynamics, and prepares students to effectively apply thermodynamics in the practice of engineering. This edition is revised with additional examples and end-of-chapter problems to increase student comprehension.

Chemical Engineering Thermodynamics II-T. K. Nguyen 2018-05-08

This course aims to connect the principles, concepts, and laws/postulates of classical and statistical thermodynamics to applications that require quantitative knowledge of thermodynamic properties from a macroscopic to a molecular level. It covers their basic postulates of classical thermodynamics and their application to transient open and closed systems, criteria of stability and equilibria, as well as constitutive property models of pure materials and mixtures emphasizing molecular-level effects using the formalism of statistical mechanics. Phase and chemical equilibria of multicomponent systems are covered. Applications are emphasized through extensive problem work relating to practical cases.

Thermodynamics and Its Applications-Michael Modell 1983