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The Book Was Organized In The Presented Way To Avoid Unnecessary Repetitions And Particularly Not To Be In Need Of Citing Facts Of Chapters Ahead. This Approach Proved To Be Applicable From The Didactic Standpoint And It Allows A High Density Of Information Without Sacrificing The Easy Access To It. This Way The Level Of Presentation Gets Gradually More And More Demanding Finally Satisfying The Needs Of B.Sc. Students To Make Them Fit For Measurements. Problems Derived From Practice Are Integrated Parts Within The Sequence Of presentation. This Approach Is Of Engineering Nature Rather Than To Present Separate Tutorials. According To The State Of The Art Analog And Digital Instruments Are Equally Important. Quite Often They Are Combined In Measurement Apparatus. So They Should Have Equal Weights. The Practical Background Which Is Carefully Underlaid Throughout Is Paid Credit To By Combining Both Techniques. Even Sophisticated Equipment May Be Made Up Including Sensors For Non-Electrical Quantities. Their Output Voltages Or Currents May Be Transformed, Transferred, Or Otherwise Be Subjected To Certain Operations. This Means At The Same Time To Design Or To Select Special Transducers Or To Place Them Properly Into A Measurement System. To Meet The Challenge Which Derives From Practice Is A Major Goal For The Elaborated Methodology Of The Book Which Also Tries To Satisfy Common Academic Needs Of Other Fields Within The Scope Of Technical Sciences.

Volume is indexed by Thomson Reuters BCI (WoS). A forum of researchers, educators and engineers involved in various aspects of Machine Design provided the inspiration for this collection of peer-reviewed papers. The resultant dissemination of the latest research results, and the exchange of views concerning the future research directions to be taken in this field will make the work of immense value to all those having an interest in the topics covered. The book reflects the cooperative efforts made in seeking out the best strategies for effecting improvements in the quality and the reliability of machines and machine parts and for extending their fields of application.

Through three editions, Cryptography: Theory and Practice, has been embraced by instructors and students alike. It offers a comprehensive primer for the subject's fundamentals while presenting the most current advances in cryptography. The authors offer comprehensive, in-depth treatment of the methods and protocols that are vital to safeguarding the seemingly infinite and increasing amount of information circulating around the world. Key Features of the Fourth Edition: New chapter on the exciting, emerging new area of post-quantum cryptography (Chapter 9). New high-level, nontechnical overview of the goals and tools of cryptography (Chapter 1). New mathematical appendix that

summarizes definitions and main results on number theory and algebra (Appendix A). An expanded treatment of stream ciphers, including common design techniques along with coverage of Trivium. Interesting attacks on cryptosystems, including: padding oracle attack correlation attacks and algebraic attacks on stream ciphers attack on the DUAL-EC random bit generator that makes use of a trapdoor. A treatment of the sponge construction for hash functions and its use in the new SHA-3 hash standard. Methods of key distribution in sensor networks. The basics of visual cryptography, allowing a secure method to split a secret visual message into pieces (shares) that can later be combined to reconstruct the secret. The fundamental techniques cryptocurrencies, as used in Bitcoin and blockchain. The basics of the new methods employed in messaging protocols such as Signal, including deniability and Diffie-Hellman key ratcheting.

This book has been written for the students of third semester of electrical engineering of Gujarat Technological University (GTU). It would also be useful for the students of third semester of power electronics branch. The book provides comprehensive knowledge of the DC machines and transformers and has an extended summary in the form of 'Key points to remember', and a large number of solved and unsolved problems. In the exercise, the questions have been presented in accordance with the GTU examination pattern. Key Features • Strictly as per the GTU syllabus • Over 125 descriptive questions • Examinations oriented approach • Includes questions of the last five years of GTU examinations

Drawn from the 7th Glion Colloquium held in 2009, this volume considers the role of research universities in an innovation-driven global society. Whether in the "old world" of Europe and North America or in rapidly developing nations, the message is clear: innovation has become the key to prosperity and social well-being in a hypercompetitive global economy. Part I introduces several forms of economic, technological, and social innovation. Part II discusses agents of innovation from the points of view of a research university, industry, and national innovation policies. Part III presents university leaders from long-established and emerging institutions to compare how regional and institutional characteristics shape innovation strategies. Part IV focuses on approaches to innovation at national and institutional levels, including a U.S. approach to energy challenges, the shift of high-tech industry toward open innovation, and the challenges of creating world-class universities. Part V addresses the intellectual character of innovation and its relationship to the university's mission. Today's economy requires not only leadership in innovation but also educated citizens capable of applying technology, talent, and capital in new ways. Institutions of higher learning must collaborate with industry and government to create a climate and culture that enable innovation to thrive.

This is an introduction to power system analysis and design. The text contains fundamental concepts and modern topics with applications to real-world problems, and integrates MATLAB and SIMULINK throughout.

This book bridges the gap between theory and practice. It provides fundamental information on heterogeneous catalysis and the practicalities of the catalysts and processes used in producing ammonia, hydrogen and methanol via hydrocarbon steam reforming. It also covers the oxidation reactions in making formaldehyde from methanol, nitric acid from ammonia and sulphuric acid from sulphur dioxide. Designed for use in the chemical industry and by those in teaching, research and the study of industrial catalysts and catalytic processes. Students will also find this book extremely useful for obtaining practical information which is not available in more conventional textbooks.

The subject of power systems has assumed considerable importance in recent years and growing demand for a compact work has resulted in this book. A new chapter has been added on Neutral Grounding.

Encouraged by the response to the first edition and to keep pace with recent developments, Fundamentals of Electrical Drives, Second Edition incorporates greater details on semi-conductor controlled drives, includes coverage of permanent magnet AC motor drives and switched reluctance motor drives, and highlights new trends in drive technology. Contents were chosen to satisfy the changing needs of the industry and provide the appropriate coverage of modern and conventional drives. With the large number of examples, problems, and solutions provided, Fundamentals of Electrical Drives, Second Edition will continue to be a useful reference for practicing engineers and for those preparing for Engineering Service Examinations.

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.

The third edition of the book on Industrial Electronics and Control including Programmable Logic Controller is aimed at providing an explicit explanation of the mode of operation of different electronic power devices in circuits and systems that are in wide use today in modern industry for the control and conversion of electric power. The book strives to fulfil this need for a fundamental treatment that allows students to understand all aspects of circuit functions through its neatly-drawn illustrations and wave diagrams. Several colour diagrams are included to explain difficult circuits and waveforms. This approach will help students in assimilating the operation of power electronics circuits with more clarity. Same as in previous editions, the book commences with a discussion on rectifiers, differential amplifiers, operational amplifiers, multivibrators, timers and goes on to provide in-depth coverage of power devices and power electronics circuits such as silicon controlled rectifiers (SCRs), inverters, dual converters, choppers, cycloconverters and their applications in the control of ac/dc motors, and heating and welding processes. The book also presents an overview of the modern developments in the field of optoelectronics and fibre optics. Finally, the book ends with a discussion on Programmable Logic Controller (PLC). The book has an added advantage of multiple-choice questions, true/false statements, review questions and numerical problems at the end of each chapter,

designed to reinforce the student's understanding of the concepts and mathematical derivations introduced in the text. The book is intended as a textbook for polytechnic students pursuing courses in electrical engineering, electronics and communication engineering, and electronics and instrumentation engineering. This tailor-made book with its exhaustive explanations of circuit operations and its student-friendly approach should prove to be a boon to the students and teachers alike. AUDIENCE: Polytechnic Students - pursuing courses in Electrical Engineering, Electronics and Communication Engineering, and Electronics and Instrumentation Engineering

This third edition has been revised to encompass the new AutoCAD release 10. New features covered include the user coordinate system, 3D meshes, multiple viewports and more.

The purpose of this book is to discuss the state of the art and future trends in the field of computerized production management systems. It is composed of a number of independent papers, each presented in a chapter. Some of the widely recognized experts in the field around the world have been asked to contribute. I owe each of them my sincere gratitude for their kind cooperation. I am also grateful to Peter Falster and Jim Browne for their kind support in helping me to review topics to be covered and to select the authors. This book is a result of the professional work done in the International Federation of Information Processing Technical Committee IFIP TC5 "Computer Applications in Technology" and especially in the Working Group WG5.7 "Computer-Aided Production Management". This group was established in 1978 with the aim of promoting and encouraging the advancement of the field of computer systems for the production management of manufacturing, off shore, construction, electronic and similar and related industries. The scope of the work includes, but is not limited to, the following topics: 1) design and implementation of new production planning and control systems taking into account new technology and management philosophy; 2) CAPM in a CIM environment including interfaces to CAD and CAM; 3) project management and cost engineering; 4) knowledge engineering in CAPM; 5) CAPM for Flexible Manufacturing Systems (FMS) and Flexible Assembly Systems (FAS); 6) methods and concepts in CAPM; 7) economic and social implications of CAPM.

Pentium Microprocessor Historical evolution of 80286, 386 and 486 processors, Pentium features and architecture, Pin description, Functional description, Pentium real mode, Pentium RISC features, Pentium super-scalar architecture - pipelining, Instruction parsing rules, Branch prediction, Instruction and data caches The floating-point unit. Bus Cycles and Memory Organisation Initialization and configuration, Bus operations-reset, Non pipelined and pipelined (read and write), Memory organisation and I/O organisation, Data transfer mechanism-8 bit, 16 bit, 32 bit data bus interface. Pentium programming Programmer's model, Register set, Addressing modes, Instruction set, Data types, Data transfer instructions, String instructions, Arithmetic instructions, Logical instructions, Bit manipulation instructions, Program transfer instructions and Processor control instructions. Protected Mode Introduction, Segmentation-support registers, Related instructions descriptors, Memory management through segmentation, Logical to linear address translation, Protection by segmentation, Privilege level-protection, Related instructions, Inter-privilege level transfer of control, Paging-support registers, descriptors, Linear to physical address translation, TLB, Page level protection, Virtual memory.- Multitasking, Interrupts Exceptions and I/O Multitasking - Support registers, Related descriptors, Task switching, I/O Permission bit map. Virtual mode - features, Address generation, Privilege level, In-

structions and registers available, entering and leaving V86 mode. Interrupt structure - Real, Protected and Virtual 8086 modes, I/O handling in Pentium, Comparison of all three modes. 8051 Micro-controller Micro-controller MCS-51 family architecture, On-chip data memory and program memory organization - Register set, Register bank, SFRs, External data memory and program memory, Interrupts structure, Timers and their programming, Serial port and programming, Other features, Design of minimum system using 8051 micro-controller for various applications. PIC Micro-controller Overview and features of PIC16C, PIC 16F8XX, Pin diagram, Capture mode, Compare mode, PWM mode, Block diagram, Programmer's model PIC, Reset and clocking. Memory organization - program memory, data memory, Flash, EEPROM, PIC 16F8XX addressing modes, Instruction set, programming, I/O ports, Interrupts, Timers, ADC.

Each edition of Introduction to Data Compression has widely been considered the best introduction and reference text on the art and science of data compression, and the third edition continues in this tradition. Data compression techniques and technology are ever-evolving with new applications in image, speech, text, audio, and video. The third edition includes all the cutting edge updates the reader will need during the work day and in class. Khalid Sayood provides an extensive introduction to the theory underlying today's compression techniques with detailed instruction for their applications using several examples to explain the concepts. Encompassing the entire field of data compression Introduction to Data Compression, includes lossless and lossy compression, Huffman coding, arithmetic coding, dictionary techniques, context based compression, scalar and vector quantization. Khalid Sayood provides a working knowledge of data compression, giving the reader the tools to develop a complete and concise compression package upon completion of his book. New content added on the topic of audio compression including a description of the mp3 algorithm New video coding standard and new facsimile standard explained Completely explains established and emerging standards in depth including JPEG 2000, JPEG-LS, MPEG-2, Group 3 and 4 faxes, JBIG 2, ADPCM, LPC, CELP, and MELP Source code provided via companion web site that gives readers the opportunity to build their own algorithms, choose and implement techniques in their own applications

Generation and Utilization of Electrical Energy is a comprehensive text designed for undergraduate courses in electrical engineering. The text introduces the reader to the generation of electrical energy and then goes on to explain how this energy

Dynamics of machinery is concerned with the motion of the parts of the machines and the forces acting on these parts. Dynamic loads and undesired oscillations increase with higher speed of machines. At the same time, industrial safety standards require better vibration isolation. This book covers balancing of mechanisms, torsion vibrations, vibration isolation and the dynamic behaviour of drives and machine frames as complex systems. Typical dynamic effects such as the gyroscopic effect, damping and absorption, shocks are explained using practical examples. The substantial benefit of this dynamics of machinery lies in the combination of theory and practical applications and the numerous descriptive examples based on practical data. Our hope is that this book, through its careful explanations of concepts, practical examples and figures bridges the gap between knowledge and proper application of that knowledge.

The comprehensive study of electric, magnetic and combined fields is nothing but electromagnetic engineering. Along with electronics, electromagnetics plays an important role in other branches. The

book is structured to cover the key aspects of the course Electromagnetic Field Theory for undergraduate students. The knowledge of vector analysis is the base of electromagnetic engineering. Hence book starts with the discussion of vector analysis. Then it introduces the basic concepts of electrostatics such as Coulomb's law, electric field intensity due to various charge distributions, electric flux, electric flux density, Gauss's law, divergence and divergence theorem. The book continues to explain the concept of elementary work done, conservative property, electric potential and potential difference and the energy in the electrostatic fields. The detailed discussion of current density, continuity equation, boundary conditions and various types of capacitors is also included in the book. The book provides the discussion of Poisson's and Laplace's equations and their use in variety of practical applications. The chapter on magnetostatics incorporates the explanation of Biot-Savart's law, Ampere's circuital law and its applications, concept of curl, Stoke's theorem, scalar and vector magnetic potentials. The book also includes the concept of force on a moving charge, force on differential current element and magnetic boundary conditions. The book covers all the details of Faraday's laws, time varying fields, Maxwell's equations and Poynting theorem. Finally, the book provides the detailed study of uniform plane waves including their propagation in free space, perfect dielectrics, lossy dielectrics and good conductors. The book uses plain, lucid language to explain each topic. The book provides the logical method of explaining the various complicated topics and stepwise methods to make the understanding easy. The variety of solved examples is the feature of this book which helps to inculcate the knowledge of the electromagnetics in the students. Each chapter is well supported with necessary illustrations and self-explanatory diagrams. The book explains the philosophy of the subject which makes the understanding of the concepts very clear and makes the subject more interesting.

One of the most comprehensive, clearly written books on electronic technology, Simpon's invaluable guide offers a concise and practical overview of the basic principles, theorems, circuit behavior and problem-solving procedures of this intriguing and fast-paced science. Examines a broad spectrum of topics, such as atomic structure, Kirchhoff's laws, energy, power, introductory circuit analysis techniques, Thevenin's theorem, the maximum power transfer theorem, electric circuit analysis, magnetism, resonance semiconductor diodes, electron current flow, and much more. Smoothly integrates the flow of material in a nonmathematical format without sacrificing depth of coverage or accuracy to help readers grasp more complex concepts and gain a more thorough understanding of the principles of electronics. Includes many practical applications, problems and examples emphasizing troubleshooting, design, and safety to provide a solid foundation in the field of electronics. An ideal reference source for electronic engineering technicians and those involved in the electronic technology field.

This book was properly written and design to equip, transform, enlighten and motivated their youth and exposes them to life changing opportunity on how to overcome financial challenges.

Chemical Engineering Design, Second Edition, deals with the application of chemical engineering principles to the design of chemical processes and equipment. Revised throughout, this edition has been specifically developed for the U.S. market. It provides the latest US codes and standards, including API, ASME and ISA design codes and ANSI standards. It contains new discussions of conceptual plant design, flowsheet development, and revamp design; extended coverage of capital cost esti-

mation, process costing, and economics; and new chapters on equipment selection, reactor design, and solids handling processes. A rigorous pedagogy assists learning, with detailed worked examples, end of chapter exercises, plus supporting data, and Excel spreadsheet calculations, plus over 150 Patent References for downloading from the companion website. Extensive instructor resources, including 1170 lecture slides and a fully worked solutions manual are available to adopting instructors. This text is designed for chemical and biochemical engineering students (senior undergraduate year, plus appropriate for capstone design courses where taken, plus graduates) and lecturers/tutors, and professionals in industry (chemical process, biochemical, pharmaceutical, petrochemical sectors). New to this edition: Revised organization into Part I: Process Design, and Part II: Plant Design. The broad themes of Part I are flowsheet development, economic analysis, safety and environmental impact and optimization. Part II contains chapters on equipment design and selection that can be used as supplements to a lecture course or as essential references for students or practicing engineers working on design projects. New discussion of conceptual plant design, flowsheet development and revamp design Significantly increased coverage of capital cost estimation, process costing and economics New chapters on equipment selection, reactor design and solids handling processes New sections on fermentation, adsorption, membrane separations, ion exchange and chromatography Increased coverage of batch processing, food, pharmaceutical and biological processes All equipment chapters in Part II revised and updated with current information Updated throughout for latest US codes and standards, including API, ASME and ISA design codes and ANSI standards Additional worked examples and homework problems The most complete and up to date coverage of equipment selection 108 realistic commercial design projects from diverse industries A rigorous pedagogy assists learning, with detailed worked examples, end of chapter exercises, plus supporting data and Excel spreadsheet calculations plus over 150 Patent References, for downloading from the companion website Extensive instructor resources: 1170 lecture slides plus fully worked solutions manual available to adopting instructors

Electric Power Transmission and Distribution is a comprehensive text, designed for undergraduate courses in power systems and transmission and distribution. A part of the electrical engineering curriculum, this book is designed to meet the requirements of students taking elementary courses in electric power transmission and distribution. Written in a simple, easy-to-understand manner, this book introduces the reader to electrical, mechanical and economic aspects of the design and construction of electric power transmission and distribution systems.

Electronic Measurements and Instrumentation provides a comprehensive blend of the theoretical and practical aspects of electronic measurements and instrumentation. Spread across eight chapters, this book provides a comprehensive coverage of each topic in the syllabus with a special focus on oscilloscopes and transducers. The key features of the book are clear illustrations and circuit diagrams for enhanced comprehension; points to remember that help students grasp the essence of each chapter; objective-type questions, review questions, and unsolved problems provided at the end of each chapter, which help students prepare for competitive examinations; solved numerical problems and examples are provided, which enable the reader to understand design aspects better and to enable students to comprehend basic principles; and summaries at the end of each chapter that help students recapitulate all the concepts learnt.

The fundamentals and implementation of digital electronics are essential to understanding the design and working of consumer/industrial electronics, communications, embedded systems, computers, security and military equipment. Devices used in applications such as these are constantly decreasing in size and employing more complex technology. It is therefore essential for engineers and students to understand the fundamentals, implementation and application principles of digital electronics, devices and integrated circuits. This is so that they can use the most appropriate and effective technique to suit their technical need. This book provides practical and comprehensive coverage of digital electronics, bringing together information on fundamental theory, operational aspects and potential applications. With worked problems, examples, and review questions for each chapter, Digital Electronics includes: information on number systems, binary codes, digital arithmetic, logic gates and families, and Boolean algebra; an in-depth look at multiplexers, de-multiplexers, devices for arithmetic operations, flip-flops and related devices, counters and registers, and data conversion circuits; up-to-date coverage of recent application fields, such as programmable logic devices, microprocessors, microcontrollers, digital troubleshooting and digital instrumentation. A comprehensive, must-read book on digital electronics for senior undergraduate and graduate students of electrical, electronics and computer engineering, and a valuable reference book for professionals and researchers.

Microprocessors and Interfacing is a textbook for undergraduate engineering students who study a course on various microprocessors, its interfacing, programming and applications.

Effective from 2008-09 session, U.P.T.U. has introduced the subject of manufacturing processes for first year engineering students of all streams. This textbook covers the entire course material in a distilled form.