Electronic Devices And Circuits Sanjeev Gupta

This comprehensive test on Network Analysis and Synthesis is designed for undergraduate students of Electronics and Communication Engineering, Electrical and Electronics Engineering, Electronics and Instrumentation Engineering, Electronics and Computer Engineering and Biomedical Engineering. The book will also be useful to AMIE and IETE students. Written with student-centered, pedagogically driven approach, the text provides a self-centered introduction to the theory of network analysis and synthesis. Striking a balance between theory and practice, it covers topics ranging from circuit elements and Kirchhoff's laws, network theorems, loop and node analysis of dc and ac circuits, resonance, transients, coupled circuits, three-phase circuits, graph theory, Fourier and Laplace analysis, Filters, attenuators and equalizers to network synthesis. All the solved and unsolved problems in this book are designed to illustrate the topics in a clear way. KEY FEATURES ? Numerous worked-out examples in each chapter. ? Short questions with answers help students to prepare for examinations. ? Objective type questions, Fill in the blanks, Review questions and Unsolved problems at the end of each chapter to test the level of understanding of the subject. ? Additional examples are available at: www.phindia.com/anand_kumar_network_analysis

The book 'Electronic Principles' is a comprehensive textbook for the students of B. E., B. Tech, B.Sc., diploma and various other Engineering Disciplines. The book provides an in-depth coverage and comprehensive discussion on essential concepts of Electronics Engineering. The book begins with detailed explanation of classification of semiconductors, transport phenomena in semiconductor and Junction diodes. It also covers circuit modeling techniques for bipolar junction transistors, used in designing amplifiers. The textbook discusses design construction and operation principle for junction gate field-effect transistor, silicon controlled rectifier and operational amplifier. It also includes chapters on Introduction to logic circuits, De Morgan's theorem and digital circuits. Applications of oscillators, silicon controlled rectifier and operational amplifier have also been covered in great details. Pedagogical features including solved problems, multiple choice questions and unsolved exercises are interspersed throughout the book for better understating of concepts. This text is the ideal resource for first year undergraduate engineering students taking an introductory course in fundamentals of electronics engineering/principles of electronics engineering.

The modern financial industry has been required to deal with large and diverse portfolios in a variety of asset classes often with limited market data available. Financial Signal Processing and Machine Learning unifies a number of recent advances made in signal processing and machine learning for the design and management of investment portfolios and financial engineering. This book bridges the gap between these disciplines, offering the latest information on key topics including characterizing statistical dependence and correlation in high dimensions, constructing effective and robust risk measures, and their use in portfolio optimization and rebalancing. The book focuses on signal processing approaches to model return, momentum, and mean reversion, addressing theoretical and implementation aspects. It highlights the connections between portfolio theory, sparse learning and compressed sensing, sparse eigen-portfolios, robust optimization, non-Gaussian data-driven risk measures, graphical

models, causal analysis through temporal-causal modeling, and large-scale copula-based approaches. Key features: Highlights signal processing and machine learning as key approaches to quantitative finance. Offers advanced mathematical tools for high-dimensional portfolio construction, monitoring, and post-trade analysis problems. Presents portfolio theory, sparse learning and compressed sensing, sparsity methods for investment portfolios. including eigen-portfolios, model return, momentum, mean reversion and non-Gaussian data-driven risk measures with real-world applications of these techniques. Includes contributions from leading researchers and practitioners in both the signal and information processing communities, and the quantitative finance community.

Fractional-Order Design: Devices, Circuits, and Systems introduces applications from the design perspective so that the reader can learn about, and get ready to, design these applications. The book also includes the different techniques employed to comprehensively and straightforwardly design fractional-order systems/devices. Furthermore, a lot of mathematics is available in the literature for solving the fractional-order calculus for system application. However, a small portion is employed in the design of fractional-order systems. This book introduces the mathematics that has been employed explicitly for fractional-order systems. Students and scholars who wants to quickly understand the field of fractional-order systems and contribute to its different domains and applications will find this book a welcomed resource. Presents a simple and comprehensive understanding of the field of fractional-order systems Offers practical knowledge on the design of fractional-order systems for different applications Exposes users to the possible new areas of applications of fractional-order systems

For undergraduate electrical engineering students or for practicing engineers and scientists interested in updating their understanding of modern electronics One of the most widely used introductory books on semiconductor materials, physics, devices and technology, Solid State Electronic Devices aims to: 1) develop basic semiconductor physics concepts, so students can better understand current and future devices; and 2) provide a sound understanding of current semiconductor devices and technology, so that their applications to electronic and optoelectronic circuits and systems can be appreciated. Students are brought to a level of understanding that will enable them to read much of the current literature on new devices and applications. Teaching and Learning Experience This program will provide a better teaching and learning experience–for you and your students. It will help: Provide a Sound Understanding of Current Semiconductor Devices: With this background, students will be able to see how their applications to electronic and optoelectronic circuits and systems are meaningful. Incorporate the Basics of Semiconductor Materials and Conduction Processes in Solids: Most of the commonly used semiconductor terms and concepts are introduced and related to a broad range of devices. Develop Basic Semiconductor Physics Concepts: With this background, students will be better able to understand current and future devices.

Electronic Devices and Circuits is designed specifically to cater to the needs of the students of B.Tech. in Electronics and Communication Engineering. The book has a perfect blend of focused content and complete coverage. Simple, easy-to-understand and jargon-free text elucidates the fundamentals of electronics. Several solved examples, circuit diagrams and

adequate questions further help students understand and apply the concepts Salient Features: - Comprehensive coverage of syllabus requirements - Topics illustrated with diagrams for better understanding - Equal emphasis on mathematical derivations and physical interpretations

New and classical results in computational complexity, including interactive proofs, PCP, derandomization, and quantum computation. Ideal for graduate students.

3D printing is slowly making its grip in the industry making the works easier and faster. Here is the February issue of Electronics For You to not only inform you about the amazing advancements that arising due to 3D printing in India but also to find out the different causes of concern. Additionally, check out the buyer's guide on handheld instruments, the use of vedic mathematics in Embedded Systems,...

The Department of Electronics and Communication Engineering of KIET Group of Institutions, Delhi-NCR organized the 4th International Conference ICCE-2020 during November 28-29, 2020. Information compiled in this book is based on the 114 research papers of excellent quality covering different domains of Electronics and Communication Engineering, Computer Science Engineering, Information Technology, Electrical Engineering, Electronics and Instrumentation Engineering. The subject areas treated in the book are: Satellite, Radar and Microwave Techniques, Secure, Smart, and Reliable Networks, Next Generation Networks, Devices & Circuits, Signal & Image Processing, New Emerging Technologies, having the central focus on Recent Trends in Communication & Electronics (ICCE-2020). In addition, a few themes based on Special Sessions have also been conducted in ICCE-2020. The objective of the book resulting from the 4th International Conference on Recent Trends in Communication & Electronics (ICCE-2020) is to provide a resource for the study and research work for an interested audience comprising of researchers, students, audience, and practitioners in the areas of Communications & Computing Systems.

Bendable wearable materials like conductive strands, fluid metallic mixes, and polymer in paper are generally utilized as a part of the current adaptable electronic gadgets. Extra necessities are implemented in wearable applications. Characteristic elastic, for example, is an appealing exchange adaptable material that is biocompatible and offers high conductivity, low lost, simplicity to make, and most importantly, it is water/climate safe and condition amicable. The wearable antenna is one of the key components to establish body area network (BAN) for wireless communication, which is why it has become such an important part of antenna research. Wearable antennas are being applied successfully in various parts of life such as health monitoring, physical training, navigation, RFID, medicine, military, and more. Emerging Materials and Advanced Designs for Wearable Antennas explores how wearable antenna technology is being employed to enhance the quality of life in various industries. The technologies implemented and success of these

antenna technologies is essential in the emerging field of wearable computing and is discussed in detail within the contents of this book. While covering essential topics such as the optimization of antenna material, improvement in flexible antenna performance, synthesis and design aspects of antennas, and transmission and receiving of the bendable antenna, this book is ideal for the military field, scientists, the medical field, practitioners, stakeholders, researchers, academicians, and students looking for the most advanced and updated research on the technology and implementation of wearable antennas spanning multiple industries.

NCERT Exemplar Problems - Solutions Physics (Class 12) is a comprehensive book for students of standard XII studying in schools affiliated to the Central Board of Secondary Education. The book comprises chapters on electric charges and fields, electrostatic potential and capacitance, current electricity, magnetism and matter, alternating current, electromagnetic waves, wave optics and dual nature of radiation and matter. In addition, the book consists of several multiple choice questions for thorough revision and final practice. This book is essential for students preparing for various engineering entrance examinations.

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.

A multicolor edition of Vol.II of A Textbook of Electrical Technology to keep pace with the ever-increasing scope of essential and morden technical information,the syllabi are frequently revised.This often result into compressing established facts to accommodate recent information in the syllabi.Fields of power-electronics and industrial power-

conditioners have grown considerably resulting into changed priority of topics related to electrical machines.Switched reluctance-motors tend to threaten the most popular squirrel-cage induction motors due to their increased ruggedness,better performance including controllability and equal ease with which they suit rotary as well as linear-motion-applications.

Despite significant progress in materials and fabrication technologies related to non-crystalline semiconductors, fundamental drawbacks continue to limit real-world application of these devices in electronic circuits. To help readers deal with problems such as low mobility and intrinsic time variant behavior, Circuit Design Techniques for Non-Crystalline Semiconductors outlines a systematic design approach, including circuit theory, enabling users to synthesize circuits without worrying about the details of device physics. This book: Offers examples of how self-assembly can be used as a powerful tool in circuit synthesis Covers theory, materials, techniques, and applications Provides starting threads for new research This area of research is particularly unique since it employs a range of disciplines including materials science, chemistry, mechanical engineering and electrical engineering. Recent progress in complementary polymer semiconductors and fabrication techniques such as ink-jet printing has opened doors to new themes and ideas. The book focuses on the central problem of threshold voltage shift and concepts related to navigating this issue when using non-crystalline semiconductors in electronic circuit design. Designed to give the non-electrical engineer a clear, simplified overview of fundamentals and tools to facilitate practical application, this book highlights design roadblocks and provides models and possible solutions for achieving successful circuit synthesis.

By helping students develop an intuitive understanding of the subject, Microelectronics teaches them to think like engineers. The second edition of Razavi's Microelectronics retains its hallmark emphasis on analysis by inspection and building students' design intuition, and it incorporates a host of new pedagogical features that make it easier to teach and learn from, including: application sidebars, self-check problems with answers, simulation problems with SPICE and MULTISIM, and an expanded problem set that is organized by degree of difficulty and more clearly associated with specific chapter sections.

Nanotechnology: Advances and Real-Life Applications offers a comprehensive reference text about advanced concepts and applications in the field of nanotechnology. The text – written by researchers practicing in the field – presents a detailed discussion of key concepts including nanomaterials and their synthesis, fabrication and characterization of nanomaterials, carbon-based nanomaterials, nano-bio interface, and nanoelectronics. The applications of nanotechnology in the fields of renewable energy, medicine and agriculture are each covered in a dedicated chapter. The text will be invaluable for senior undergraduate and graduate students in the fields of electrical engineering, electronics

engineering, nanotechnology and nanoscience. Dr. Cherry Bhargava is an Associate Professor and Head, VLSI domain, at the School of Electrical and Electronics Engineering of Lovely Professional University, Jalandhar, India. Dr. Amit Sachdeva is an Associate Professor at Lovely Professional University, Jalandhar, India.

This new text derived from class tested lecturer notes by the author fulfills the needs for a core course in Electrical, Electronics, Instrumentation and Control Engineering. Written in a lucid manner covering the fundamentals of electronic devices and circuits will help the students build a firm foundation on the subject. Key Features: Worked examples Short questions & answers

This book is designed to help readers gain a basic understanding of semiconductor devices and the physical operating principles behind them. This two-fold approach 1) provides the user with a sound understanding of existing devices, and 2) helps them develop the basic tools with which they can later learn about applications and the latest devices. The piece provides one of the most comprehensive treatments of all the important semiconductor devices, and reflects the most current trends in the technology and theoretical understanding of the devices. FEATURES/BENEFITS *NEW--Thoroughly updated to reflect the most current trends in the technology and theoretical understanding of devices. *NEW--Expanded description of silicon Czochralski growth, wafer production, and vapor phase epitaxy (Ch. 1). *NEW--Clearer discussion of chemical bonding, energy band formation and hole transport (Chs. 2, 3 and 4). *NEW--Consolidated coverage of p-n junction diodes and its applications (Ch. 5). *NEW--Greatly expanded/updated discussion of device fabrication processes (Ch. 5 and appendices). *NEW--Earlier discussion of MOS devices (Ch. complementary MOS field effect transistors (MOSFETs) in integrated circuits today. *NEW--Major revision of chapter on Field Effect Transistors (Ch. 6)--Both in the underlying theory as well as discussion of a variety of short channel, high field and hot carrier effects in scaled, ultra-small MOSFETs. Includes extensive discussions of the current-voltage and capacitance-voltage characteristics of these devices--and the information that can be gleaned from such measurements. *NEW--Updated chapter on Bipolar Junction Transistors (BJTs) (Ch. 7)--To reflect current technology. Describes higher-order effects (including the Kirk effect and Webster effect); discusses the Gummel-Poon model (which is more elaborate and physically more accurate than the Ebers-Moll model); and updates the fabrication aspects of BJTs. *NEW--Consolidated coverage of optoelectronic devices in a single chapter (Ch. 8)--Brings the discussion of semiconductor lasers into the same chapter as LEDs and detectors *Reflects the growing importance of optoelectronics. *NEW--Updated coverage of integrated circuits (Ch. concerted shift to CMOS applications, such as logic and memory integrated circuits. *NEW--A section on the insulated gate bipolar transistor (Ch. 11)--A device that is gradually supplanting the semiconductor-controlled rectifier. *NEW--Real data--Wherever feasible, replaces idealized current-voltage and capacitance-voltage plots with real data.

Designed as a text for the students of various engineering streams such as electronics/electrical engineering, electronics and communication engineering, computer science and engineering, IT, instrumentation and control and mechanical engineering, this well-written text provides an introduction to electronic devices and circuits. It introduces to the readers electronic circuit analysis and design techniques with emphasis on the operation and use of semiconductor devices. It covers principles of operation, the characteristics and applications of fundamental electronic devices such as p-n junction diodes, bipolar junction transistors (BJTs), and field effect transistors (FETs), and special purpose diodes and transistors. In its second edition, the book includes a new chapter on "special purpose devices". What distinguishes this text is that it explains the concepts and applications of the subject in such a way that even an average student will be able to understand working of electronic devices, analyze, design and simulate electronic circuits. This comprehensive book provides: • A large number of solved examples. • Summary highlighting the important points in the chapter. • A number of Review Questions at the end of each chapter. • A fairly large number of unsolved problems with answers.

This textbook comprehensively covers on-chip interconnect dimension and application of carbon nanomaterials for modeling VLSI interconnect and buffer circuits. It provides analysis of ultra-low power high speed nano-interconnects based on different facets such as material modeling, circuit modeling and the adoption of repeater insertion strategies and measurement techniques. It covers important topics including on-chip interconnects, interconnect modeling, electrical impedance modeling of on-chip interconnects, modeling of repeater buffer and variability analysis. Pedagogical features including solved problems and unsolved exercises are interspersed throughout the text for better understanding. Aimed at senior undergraduate and graduate students in the field of electrical engineering, electronics and communications engineering for courses on Advanced VLSI Interconnects/Advanced VLSI Design/VLSI Interconnects/VLSI Design Automation and Techniques, this book: Provides comprehensive coverage of fundamental concepts related to nanotube transistors and interconnects. Discusses properties and performance of practical nanotube devices and related applications. Covers physical and electrical phenomena of carbon nanotubes, as well as applications enabled by this nanotechnology. Discusses the structure, properties, and characteristics of graphene-based on-chip interconnect. Examines interconnect power and interconnect delay issues arising due to downscaling of device size.

Legumes in the Omic Era provides a timely review of recent advances in legume genomics research and application. In this post-genomic era enormous amount of biological information is available which could be of huge potential use for crop improvement applications. This aspect of genomics assisted plant breeding is focused throughout the book for all the important grain legume crops. Role of functional genomics and importance of bioinformatics tools in present day genomics and molecular breeding research is also discussed in detail. Use of molecular tools for nutritional fortification of grain legume is briefly presented. A chapter also been contributed on fungal disease resistance to elucidate potential application of genomic tools in molecular breeding of grain legume species. The book contains fifteen chapters contributed by 50 scientists from different countries who are actively involved in analyzing and improving particular legume genome. This book will serve as reference resource to legumes researchers for use of genome information in improvement of major legume crops. Dr Sanjeev Gupta is Principal Scientist/Project Coordinator-All India Coordinated Research Project on Vigna Crops at Indian Institute of Pulses Research (IIPR), Kanpur. He has more than two decades of research experience in grain legume breeding and developed a number of high yielding cultivars in grain legumes. He is authored numerous research papers published in peer-reviewed journals and edited several books in plant breeding aspects. He was the Organizing Secretary of the International Grain Legume Conference, 2009 held in the Indian Institute of Pulses

Research, Kanpur, India. He has travelled across the continents to present his research several times. He is recipient of several awards for his research and literary contributions Dr. Nagasamy Nadarajan is the Director of the Indian Institute of Pulses Research (IIPR), Kanpur. He has more than three decades of teaching and research experience and developed more than fifteen legume and cereal cultivars. He has to his credits more than 200 peer-reviewed research publications. He has guided several graduate students for Masters and Doctoral degrees in food legume breeding and genetics research. He has authored a book in biometrics which is one of the most popular books among the agriculture graduate students in India. He is the recipient of three international and six national awards and honours for his outstanding contributions Mr. Debjyoti Sen Gupta is the ICAR International Fellow and Ph.D. candidate at North Dakota State University (NDSU), Fargo, USA. Recently, he visited Department of Crop and Soil Sciences, Washington State University, Pullman, USA for high throughput genotyping work. Before joining at NDSU he was serving as the Scientist in the Indian Institute of Pulses Research (IIPR). He has authored several research articles, review articles and book chapters in the peer-reviewed journals and books from reputed publishers like Springer, CABI etc. He is recipient of several fellowships like CSIR-JRF, New Delhi; ICAR-JRF, New Delhi throughout his graduate study programs.

This book features selected papers presented at the Fourth International Conference on Nanoelectronics, Circuits and Communication Systems (NCCS 2018). Covering topics such as MEMS and nanoelectronics, wireless communications, optical communications, instrumentation, signal processing, the Internet of Things, image processing, bioengineering, green energy, hybrid vehicles, environmental science, weather forecasting, cloud computing, renewable energy, RFID, CMOS sensors, actuators, transducers, telemetry systems, embedded systems, and sensor network applications in mines, it offers a valuable resource for young scholars, researchers, and academics alike.

The book features selected high-quality papers presented in International Conference on Computing, Power and Communication Technologies 2019 (GUCON 2019), organized by Galgotias University, India, in September 2019. Discussing in detail topics related to electronics devices, circuits and systems; signal processing; and bioinformatics, multimedia and machine learning, the papers in this book provide interesting reading for researchers, engineers, and students.

Featuring contributions from the renowned researchers and academicians in the field, this book covers key conventional and emerging cooling techniques and coolants for electronics cooling. It includes following thematic topics: - Cooling approaches and coolants - Boiling and phase change-based technologies - Heat pipes-based cooling - Microchannels cooling systems - Heat loop cooling technology - Nanofluids as coolants - Theoretical development for the junction temperature of package chips. This book is intended to be a reference source and guide to researchers, engineers, postgraduate students, and academicians in the fields of thermal management and cooling technologies as well as for people in the electronics and semiconductors industries.

Electric Circuits and Networks is designed to serve as a textbook for a two-semester undergraduate course on basic electric circuits and networks. The book builds on the subject from its basic principles. Spread over seventeen chapters, the book can be taught with varying degree of emphasis on its six subsections based on the course requirement. Written in a student-friendly manner, its narrative style places adequate stress on the principles that govern the behaviour of electric circuits and networks.

This book presents high-quality papers from the Fourth International Conference on Microelectronics, Computing & Communication Systems (MCCS 2019). It discusses the latest technological trends and advances in MEMS and nanoelectronics, wireless communication, optical communication, instrumentation, signal processing, image processing, bioengineering, green energy, hybrid vehicles, environmental science,

weather forecasting, cloud computing, renewable energy, RFID, CMOS sensors, actuators, transducers, telemetry systems, embedded systems and sensor network applications. It includes papers based on original theoretical, practical and experimental simulations, development, applications, measurements and testing. The applications and solutions discussed here provide excellent reference material for future product development.

For undergraduate electrical engineering students or for practicing engineers and scientists interested in updating their understanding of modern electronics One of the most widely used introductory books on semiconductor materials, physics, devices and technology, Solid State Electronic Devices aims to: 1) develop basic semiconductor physics concepts, so students can better understand current and future devices; and 2) provide a sound understanding of current semiconductor devices and technology, so that their applications to electronic and optoelectronic circuits and systems can be appreciated. Students are brought to a level of understanding that will enable them to read much of the current literature on new devices and applications. Teaching and Learning Experience This program will provide a better teaching and learning experience-for you and your students. It will help: *Provide a Sound Understanding of Current Semiconductor Devices: With this background, students will be able to see how their applications to electronic and optoelectronic circuits and systems are meaningful.*Incorporate the Basics of Semiconductor Materials and Conduction Processes in Solids: Most of the commonly used semiconductor terms and concepts are introduced and related to a broad range of devices. *Develop Basic Semiconductor Physics Concepts: With this background, students will be better able to understand current and future devices.

In this book we have included more examples,tutorial problems and objective test questions in almost all the chapters.The chapter on Optoelectronic Devices has been expanded to include more application examples in the area of optical fibre networks.The chapter on Regulated Power Supply carries more detailed study of fixed positive-Fixed negative and adjustable-linear IC voltage regulators as well as swithching voltage regulator.The topic on OP-AMPs has been separated from the chapter on integrated Circuits.A new chapter is prepard on OP-AMPs and its Applications.The Chapter on OP-AMPs and its Applications includes OP-AMP based Oscillator circuits,active filters etc.

Nanowires are an important sector of circuit design whose applications in very-large-scale integration design (VLSI) have huge impacts for bringing revolutionary advancements in nanoscale devices, circuits, and systems due to improved electronic properties of the nanowires. Nanowires are potential devices for VLSI circuits and system applications and are highly preferred in novel nanoscale devices due to their high mobility and high-driving capacity. Although the knowledge and resources for the fabrication of nanowires is currently limited, it is predicted that, with the advancement of technology, conventional fabrication flow can be used for nanoscale devices, specifically nanowires. Innovative Applications of Nanowires for Circuit Design provides relevant theoretical frameworks that include device physics, modeling, circuit design, and the latest developments in experimental fabrication in the field of nanotechnology. The book covers advanced modeling concepts of nanowires along with their role as a key enabler for innovation in GLSI devices, circuits, and systems. While highlighting topics such as design, simulation, types and applications, and performance analysis of nanowires, this book is ideally intended for engineers, practitioners, stakeholders, academicians, researchers, and students interested in electronics engineering, nanoscience, and nanotechnology.