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[Foundations of Analog and Digital Electronic Circuits](#) Practical Design of Digital Circuits FUNDAMENTALS OF DIGITAL CIRCUITS [Digital Circuits](#) [Digital Electronic Circuits - The Comprehensive View](#) Power Management of Digital Circuits in Deep Sub-Micron CMOS Technologies Pulse and Digital Circuits Digital Circuits And Logic Design [Digital Electronics](#) [Digital Electronics 1](#) [Digital Circuits & Design](#) Fault Diagnosis of Digital Circuits [Digital Circuit Boards](#) Digital Electronics 2 [Digital Electronics](#) [Equivalence Checking of Digital Circuits](#) Simulation and Optimization of Digital Circuits Digital Electronics: A Primer - Introductory Logic Circuit Design [Principles of Digital Electronics](#) Digital Electronics 1 Digital Circuits and Design Synthesis and Optimization of Digital Circuits Digital Circuits and Logic Design [Semantics of Digital Circuits](#) [Digital Electronics: Principles and Theories](#) [Self-Consciousness](#) [Introduction to Digital Electronics](#) [An Introduction to Logic Circuit Testing](#) Handbook of Digital CMOS Technology, Circuits, and Systems PULSE AND DIGITAL CIRCUITS Analog and Digital Circuits for Electronic Control System Applications Random Testing of Digital Circuits [Fundamentals of Digital Electronics](#) Complex Digital Circuits Digital Circuits Digital Circuit Design for Computer Science Students Random Testing of Digital Circuits [Analog and Digital Electronic Circuits](#) Digital Electronics Demystified Digital Circuits and Microprocessors

[Digital Electronics: A Primer - Introductory Logic Circuit Design](#) May 16 2021 This practical introduction explains exactly how digital circuits are designed, from the basic circuit to the advanced system. It covers combinational logic circuits, which collect logic signals, to sequential logic circuits, which embody time and memory to progress through sequences of states. The primer also highlights digital arithmetic and the integrated circuits that implement the logic functions. Based on the author's extensive experience in teaching digital electronics to undergraduates, the book translates theory directly into practice and presents the essential information in a compact, digestible style. Worked problems and examples are accompanied by abbreviated solutions, with demonstrations to ensure that the design material and the circuits' operation are fully understood. This is essential reading for any electronic or electrical engineering student new to digital electronics and requiring a succinct yet comprehensive introduction.

[Digital Circuit Design for Computer Science Students](#) Oct 28 2019 The author is the leading programming language designer of our time and in this book, based on a course for 2nd-year students at, he closes the gap between hardware and software design. He encourages students to put the theory to work in exercises that include lab work culminating in the design of a simple yet complete computer. In short, a modern introduction to designing circuits using state-of-the-art technology and a concise, easy to master hardware description language (Lola).

[Handbook of Digital CMOS Technology, Circuits, and Systems](#) Jun 04 2020 This book provides a comprehensive reference for everything that has to do with digital circuits. The author focuses equally on all levels of abstraction. He tells a bottom-up story from the physics level to the finished product level. The aim is to provide a full account of the experience of designing, fabricating, understanding, and testing a microchip. The content is structured to be very accessible and self-contained, allowing readers with diverse backgrounds to read as much or as little of the book as needed. Beyond a basic foundation of mathematics and physics, the book makes no assumptions about prior knowledge. This allows someone new to the field to read the book from the beginning. It also means that someone using the book as a reference will be able to answer their questions without referring to any external sources.

[Analog and Digital Electronic Circuits](#) Aug 26 2019 This book introduces the foundations and fundamentals of electronic circuits. It broadly covers the subjects of circuit analysis, as well as analog and digital electronics. It features discussion of essential theorems required for simplifying complex circuits and illustrates their applications under different conditions. Also, in view of the emerging potential of Laplace transform method for solving electrical networks, a full chapter is devoted to the topic in the book. In addition, it covers the physics and technical aspects of semiconductor diodes and transistors, as well as discrete-time digital signals, logic gates, and combinational logic circuits. Each chapter is presented as complete as possible, without the reader having to refer to any other book or supplementary material. Featuring short self-assessment questions distributed throughout, along with a large number of solved examples, supporting illustrations, and chapter-end problems and solutions, this book is ideal for any physics undergraduate lecture course on electronic circuits. Its use of clear language and many real-world examples make it an especially accessible book for students unfamiliar or unsure about the subject matter.

[Semantics of Digital Circuits](#) Nov 09 2020

[Digital Electronics 2](#) Sep 19 2021 As electronic devices become increasingly prevalent in everyday life, digital circuits are becoming even more complex and smaller in size. This book presents the basic principles of digital electronics in an accessible manner, allowing the reader to grasp the principles of combinational and sequential logic and the underlying techniques for the analysis and design of digital circuits. Providing a hands-on approach, this work introduces techniques and methods for establishing logic equations and designing and analyzing digital circuits. Each chapter is supplemented with practical examples and well-designed exercises with worked solutions. This second of three volumes focuses on sequential and arithmetic logic circuits. It covers various aspects related to the following topics: latch and flip-flop; binary counters; shift registers; arithmetic and logic circuits; digital integrated circuit technology; semiconductor memory; programmable logic circuits. Along with the two accompanying volumes, this book is an indispensable tool for students at a bachelors or masters level seeking to improve their understanding of digital electronics, and is detailed enough to serve as a reference for electronic, automation and computer engineers.

[Digital Electronics](#) Aug 19 2021 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.

[Fault Diagnosis of Digital Circuits](#) Nov 21 2021 The continual explosion of computer development has led to inadequate coverage of proper &

useful on-line testing techniques. This text fills the gap in the literature by presenting the latest techniques available for digital devices used in the most popular computers. Initial chapters explore the classic problems of on-line testing, pointing out the limited applications of conventional approaches to the problem of diagnosing digital devices using LSI & VLSI chips. Chapters 4-7 cover compact testing methods used to diagnose complex digital circuits. Chapters 8 & 9 analyze the techniques of compressing output responses of a digital circuit, while chapter 10 surveys promising recent signature generation techniques for binary sequences. The final chapter covers multi-output digital circuits.

Introduction to Digital Electronics Aug 07 2020 This text takes the student from the very basics of digital electronics to an introduction of state-of-the-art techniques used in the field. It is ideal for any engineering or science student who wishes to study the subject from its basic principles as well as serving as a guide to more advanced topics for readers already familiar with the subject. The coverage is sufficiently in-depth to allow the reader to progress smoothly onto higher level texts.

Analog and Digital Circuits for Electronic Control System Applications Apr 02 2020 In system design (in particular, industrial control systems), there is, and has been, a continuous need to sense real-world analog quantities (such as temperature, pressure, or humidity), make computations with them, and then perform some action with the result. In today's systems, the computations need to be made at increased speeds and the accuracy with which the computations must be made, even as the speed increases, must be the same or higher as time progresses. The advent of the microcontroller, and its extensive use in all types of control applications, many of them battery powered, has led to new control system design approaches. Rather than computing using analog quantities, the analog quantities are sensed, conditioned, and converted to digital, processed digitally, and then converted back to an analog output, which is then used to perform the necessary output action. This practical textbook covers the latest techniques in microcontroller-based control system design. It is aimed at engineering students and engineers new to working with microcontrollers. It covers the fundamentals of: 1. Sensors and the electrical signals they output. 2. The design and application of the electronic circuits that receive and condition (change or modify) the sensor analog signals. 3. The design and application of the circuits that convert analog signals to digital and digital signals to analog. 4. The makeup and operation of a microcontroller and how to program it. 5. The application of electronic circuits for system power control. The book, written by an experienced microcontroller engineer and textbook author, is suitable for community college students, technical school students, technicians and engineers just being introduced to microcontroller system design. It is an introductory book, focusing on real-world implementation of a basic control system, with real-world circuit examples. Readers will find clearly written discussion coupled with lots of illustrations. They will also find worked-out examples that illustrate principles within each chapter and quizzes to aid understanding. Besides these specifics, a hands-on project, suitable for an electronics microcontroller laboratory course, using the popular and low-cost TI MSP430 microcontroller, is discussed in detail. The accompanying CD-ROM contains microcontrollers application notes, code for the software examples, and problem solutions. * Seasoned Texas Instruments designer provides a ground-up perspective on embedded control systems * Pedagogical style provides a self-learning approach with examples, quizzes and review features * CD-ROM contains source code and more!

An Introduction to Logic Circuit Testing Jul 06 2020 An Introduction to Logic Circuit Testing provides a detailed coverage of techniques for test generation and testable design of digital electronic circuits/systems. The material covered in the book should be sufficient for a course, or part of a course, in digital circuit testing for senior-level undergraduate and first-year graduate students in Electrical Engineering and Computer Science. The book will also be a valuable resource for engineers working in the industry. This book has four chapters. Chapter 1 deals with various types of faults that may occur in very large scale integration (VLSI)-based digital circuits. Chapter 2 introduces the major concepts of all test generation techniques such as redundancy, fault coverage, sensitization, and backtracking. Chapter 3 introduces the key concepts of testability, followed by some ad hoc design-for-testability rules that can be used to enhance testability of combinational circuits. Chapter 4 deals with test generation and response evaluation techniques used in BIST (built-in self-test) schemes for VLSI chips. Table of Contents: Introduction / Fault Detection in Logic Circuits / Design for Testability / Built-in Self-Test / References

Random Testing of Digital Circuits Sep 27 2019 "Introduces a theory of random testing in digital circuits for the first time and offers practical guidance for the implementation of random pattern generators, signature analyzers design for random testability, and testing results. Contains several new and unpublished results. "

Self-Consciousness Sep 07 2020 The study of self-consciousness helps humans understand themselves and restores their identities. But self-consciousness has been a mystery since the beginning of history, and this mystery cannot be resolved by conventional natural science. In *Self-Consciousness*, author Masakazu Shoji takes the mystery out of self-consciousness by proposing the idea that the human brain and body are a biological machine. A former VLSI microprocessor designer and semiconductor physicist, Shoji was guided by the ideas of ancient sages to create a conceptual design of a human machine brain model. He explains how it works, how it senses itself and the outside world, and how the machine creates the sense of existence of the subject SELF to itself, just as a living human brain does. A follow-up to Shoji's previous book, *Neuron Circuits, Electronic Circuits, and Self-Consciousness*, this new volume examines self-consciousness from three unconventional viewpoints to present a complex theory of the mind and how self-consciousness develops.

Digital Circuits & Design Dec 23 2021 This student friendly, practical and example-driven book gives students a solid foundation in the basics of digital circuits and design. The fundamental concepts of digital electronics such as analog/digital signals and waveforms, digital information and digital integrated circuits are discussed in detail using relevant pedagogy

Practical Design of Digital Circuits Oct 01 2022 *Practical Design of Digital Circuits: Basic Logic to Microprocessors* demonstrates the practical aspects of digital circuit design. The intention is to give the reader sufficient confidence to embark upon his own design projects utilizing digital integrated circuits as soon as possible. The book is organized into three parts. Part 1 teaches the basic principles of practical design, and introduces the designer to his "tools" — or rather, the range of devices that can be called upon. Part 2 shows the designer how to put these together into viable designs. It includes two detailed descriptions of actual design exercises. The first of these is a fairly simple exercise in CMOS design; the second is a much more complex design for an electronic game, using TTL devices. Part 3 focuses on microprocessors. It illustrates how a particular design problem changes emphasis when a microprocessor is introduced. This book is aimed at a fairly broad market: it is intended to aid the linear design engineer to cross the barrier into digital electronics; it should provide interesting supporting reading for students studying digital electronics from the more academic viewpoint; and it should enable the enthusiast to design much more ambitious and sophisticated projects than he could otherwise attempt if restricted to linear devices.

Digital Electronics 1 Mar 14 2021 The omnipresence of electronic devices in our everyday lives has been accompanied by the downscaling of chip feature sizes and the ever increasing complexity of digital circuits. This book is devoted to the analysis and design of digital circuits, where the signal can assume only two possible logic levels. It deals with the basic principles and concepts of digital electronics. It addresses all aspects of combinational logic and provides a detailed understanding of logic gates that are the basic components in the implementation of circuits used to perform functions and operations of Boolean algebra. Combinational logic circuits are characterized by outputs that depend only on the actual input values. Efficient techniques to derive logic equations are proposed together with methods of analysis and synthesis of combinational logic circuits. Each chapter is well structured and is supplemented by a selection of solved exercises covering logic design

practices.

Power Management of Digital Circuits in Deep Sub-Micron CMOS Technologies May 28 2022 This book provides an in-depth overview of design and implementation of leakage reduction techniques. The focus is on applicability, technology dependencies, and scalability. The book mainly deals with circuit design but also addresses the interface between circuit and system level design on the one side and between circuit and physical design on the other side.

Simulation and Optimization of Digital Circuits Jun 16 2021 This book describes new, fuzzy logic-based mathematical apparatus, which enable readers to work with continuous variables, while implementing whole circuit simulations with speed, similar to gate-level simulators and accuracy, similar to circuit-level simulators. The author demonstrates newly developed principles of digital integrated circuit simulation and optimization that take into consideration various external and internal destabilizing factors, influencing the operation of digital ICs. The discussion includes factors including radiation, ambient temperature, electromagnetic fields, and climatic conditions, as well as non-ideality of interconnects and power rails.

Fundamentals of Digital Electronics Jan 30 2020

Digital Circuit Boards Oct 21 2021 A unique, practical approach to the design of high-speed digital circuit boards The demand for ever-faster digital circuit designs is beginning to render the circuit theory used by engineers ineffective. Digital Circuit Boards presents an alternative to the circuit theory approach, emphasizing energy flow rather than just signal interconnection to explain logic circuit behavior. The book shows how treating design in terms of transmission lines will ensure that the logic will function, addressing both storage and movement of electrical energy on these lines. It covers transmission lines in all forms to illustrate how trace geometry defines where the signals can travel, then goes on to examine transmission lines as energy sources, the true nature of decoupling, types of resonances, ground bounce, cross talk, and more. Providing designers with the tools they need to lay out digital circuit boards for fast logic and to get designs working the first time around, Digital Circuit Boards: Reviews in simple terms the basic physics necessary to understand fast logic design Debunks the idea that electrical conductors carry power and signals, showing that signal travels in the spaces, not the traces, of circuit boards Explains logic circuit behavior through real-time analysis involving the fields and waves that carry signal and energy Provides new information on how ground/power planes work Outlines a software program for solving energy flow in complex networks

Digital Circuits and Logic Design Dec 11 2020

Synthesis and Optimization of Digital Circuits Jan 12 2021 This new graduate textbook in computer engineering offers a modern, up-to-date look at computer aided design of VLSI circuits at the functional and logic level by addressing an interesting topic in CAD for digital circuits: design synthesis of detailed specifications from abstract models. Topics covered include hardware modeling, compilation techniques for hardware models, high-level synthesis, logic synthesis, and library mapping algorithms. Course titles include Digital CAD, Advanced Logic Design or Complements of VLSI Design.

Equivalence Checking of Digital Circuits Jul 18 2021 Hardware verification is the process of checking whether a design conforms to its specification of functionality. In today's design processes it becomes more and more important. Very large scale integrated (VLSI) circuits and the resulting digital systems have conquered a place in almost all areas of our life, even in security sensitive applications. Complex digital systems control airplanes, have been used in banks and on intensive-care units. Hence, the demand for error-free designs is more important than ever. In addition, economic reasons underline this demand as well. The design and production process of present day VLSI-circuits is highly time- and cost-intensive. Moreover, it is nearly impossible to repair integrated circuits. Thus, it is desirable to detect design errors early in the design process and not just after producing the prototype chip. All these facts are reflected by developing and production statistics of present day companies. For example, nowadays about 60% to 80% of the overall design time is spent for verification. This shows that verifying logical correctness of the design of hardware systems is a major gate to the problem of time-to-market. With the chip complexity constantly increasing, the difficulty as well as the importance of functional verification of new product designs has been increased. It is not only more important to get error-free designs. Moreover, it becomes an increasingly difficult task for a team of human designers to carry out a full design without errors. The traditional training of new verification engineers has to be adapted to the new situation. New skills are necessary. For these reasons, nearly all major universities offer lectures on basic verification techniques such as propositional temporal logic, model checking, equivalence checking, and simulation coverage measures. The present book is designed as a textbook covering one of the most important aspects in the verification process – equivalence checking of Boolean circuits. Equivalence Checking of Digital Circuits is a textbook for advanced students in electrical and computer engineering, but is also intended for researchers who will find it useful as a reference text.

Foundations of Analog and Digital Electronic Circuits Nov 02 2022 Unlike books currently on the market, this book attempts to satisfy two goals: combine circuits and electronics into a single, unified treatment, and establish a strong connection with the contemporary world of digital systems. It will introduce a new way of looking not only at the treatment of circuits, but also at the treatment of introductory coursework in engineering in general. Using the concept of "abstraction," the book attempts to form a bridge between the world of physics and the world of large computer systems. In particular, it attempts to unify electrical engineering and computer science as the art of creating and exploiting successive abstractions to manage the complexity of building useful electrical systems. Computer systems are simply one type of electrical systems. +Balances circuits theory with practical digital electronics applications. +Illustrates concepts with real devices. +Supports the popular circuits and electronics course on the MIT OpenCourse Ware from which professionals worldwide study this new approach. +Written by two educators well known for their innovative teaching and research and their collaboration with industry. +Focuses on contemporary MOS technology.

Digital Electronics Feb 22 2022 An essential companion to John C Morris's 'Analogue Electronics', this clear and accessible text is designed for electronics students, teachers and enthusiasts who already have a basic understanding of electronics, and who wish to develop their knowledge of digital techniques and applications. Employing a discovery-based approach, the author covers fundamental theory before going on to develop an appreciation of logic networks, integrated circuit applications and analogue-digital conversion. A section on digital fault finding and useful ic data sheets completes the book.

FUNDAMENTALS OF DIGITAL CIRCUITS Aug 31 2022 The Fourth edition of this well-received text continues to provide coherent and comprehensive coverage of digital circuits. It is designed for the undergraduate students pursuing courses in areas of engineering disciplines such as Electrical and Electronics, Electronics and Communication, Electronics and Instrumentation, Telecommunications, Medical Electronics, Computer Science and Engineering, Electronics, and Computers and Information Technology. It is also useful as a text for MCA, M.Sc. (Electronics) and M.Sc. (Computer Science) students. Appropriate for self study, the book is useful even for AMIE and grad IETE students. Written in a student-friendly style, the book provides an excellent introduction to digital concepts and basic design techniques of digital circuits. It discusses Boolean algebra concepts and their application to digital circuitry, and elaborates on both combinational and sequential circuits. It provides numerous fully worked-out, laboratory tested examples to give students a solid grounding in the related design concepts. It includes a number of short questions with answers, review questions, fill in the blanks with answers, multiple choice questions with

answers and exercise problems at the end of each chapter.

PULSE AND DIGITAL CIRCUITS May 04 2020 The second edition of this well-received text continues to provide a coherent and comprehensive coverage of Pulse and Digital Circuits, suitable as a textbook for use by undergraduate students pursuing courses in Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering, and Telecommunication Engineering. It presents clear explanations of the operation and analysis of semiconductor pulse circuits. Practical pulse circuit design methods are investigated in detail. The book provides numerous fully worked-out, laboratory-tested examples to give students a solid grounding in the related design concepts. It includes a number of classroom-tested problems to encourage students to apply theory in a logical fashion. Review questions, fill in the blanks, and multiple choice questions offer the students the opportunity to test their understanding of the text material. This text will be also appropriate for self-study by AMIE and IETE students. **NEW TO THIS EDITION :**

- Includes two new chapters—Logic Gates and Logic Families—to meet the curriculum requirements.
- Provides short questions with answers at the end of each chapter.
- Presents several new illustrations, examples and exercises

Principles of Digital Electronics Apr 14 2021 This book teaches the basic principles of digital circuits. It is appropriate for an introductory course in digital electronics for the students of:

- B.Sc. (Computer Science)
- B.Sc. (Electronics)
- B.Sc. (Information Technology)
- B.Sc. (Physics)
- Bachelor of Computer Applications (BCA)
- Postgraduate Diploma in Computer Applications
- Master of Computer Applications (MCA)

The book emphasizes the must know concepts that should be covered in an introductory course and provides an abundance of clearly explained examples, so essential for a thorough understanding of the principles involved in the analysis and design of digital computers. The book takes students step-by-step through digital theory, focusing on:

- » Number representation systems and codes for representing information in digital systems
- » Use of logic gates in building digital circuits
- » Basic postulates and theorems of Boolean algebra
- » Karnaugh map method for simplifying Boolean functions
- » Arithmetic circuits such as adders and subtractors
- » Combinational circuit building blocks such as multiplexers, decoders and encoders
- » Sequential circuit building blocks such as flip-flops, counters and registers
- » Operation of memory elements such as RAM, DRAM, magnetic disk, magnetic bubble, optical disk, etc.

1. Number Systems and Codes
2. Logic Gates and Circuits
3. Boolean Algebra
4. Combinational Logic Circuits
5. Sequential Logic Circuits
6. Counters and Shift Registers
7. MEMORY ELEMENTS

Digital Electronics Demystified Jul 26 2019 **Publisher's Note:** Products purchased from Third Party sellers are not guaranteed by the publisher for quality, authenticity, or access to any online entitlements included with the product. The perfect resource for anyone learning digital logic and electronics, written by renowned digital "guru" Myke Predko in the audience-tested Demystified format The field of teaching digital electronics has not changed significantly in the past 20 years. Many of the same books that first became available in the late 1970s and early 1980s are still being used as basic texts. In the 20+ years since these were written, the basic rules have not changed, but they do not provide strong links to modern electronics including CMOS logic, Programmable Logic Devices and microprocessor/microcontroller interfacing. Courses teaching introductory digital electronics will fill in the missing areas of information for students, but neither the instructors nor students have resources to explain modern technology and interfaces. One assumption made by all the standard texts is that experimenting with digital electronics cannot be done easily - in the proposed book, "digital guru" Myke Predko will show how readers can set up their own apparatus for experimenting with digital electronics for less than \$10.

Digital Circuits and Microprocessors Jun 24 2019 A General Guide on Logic Design. The Book Expands upon the Applications of Logic Design in Relation to Microprocessors

Digital Circuits Jul 30 2022 This textbook is intended to introduce the student of electronics to the fundamentals of digital circuits, both combinational and sequential, in a reasonable and systematic manner. It proceeds from basic logic concepts to circuits and designs.

Pulse and Digital Circuits Apr 26 2022 Pulse and Digital Circuits is designed to cater to the needs of undergraduate students of electronics and communication engineering. Written in a lucid, student-friendly style, it covers key topics in the area of pulse and digital circuits. This is an introductory text that discusses the basic concepts involved in the design, operation and analysis of waveshaping circuits. The book includes a preliminary chapter that reviews the concepts needed to understand the subject matter. Each concept in the book is accompanied by self-explanatory circuit diagrams. Interspersed with numerous solved problems, the text presents detailed analysis of key concepts. Multivibrators and sweep generators are covered in great detail in the book.

Digital Circuits Nov 29 2019 **Partial Contents:** Transistor Theory; Mosfets; Logic Element Input and Output; Logic Circuit Design; Karnaugh Maps; ROMs, RAMs, Magnetic Memories, PROMs, EPROMs, and EEPROMS; Digital Signal Voltage Levels, and more. This is intended as an introductory text for courses in computer design, circuit theory, troubleshooting and servicing. All of the basic theory that is needed is developed in the text. 640 illustrations, including diagrams and charts. Index.

Digital Circuits and Design Feb 10 2021 Digital Circuits and Design is a textbook dealing with the basics of digital technology including the design aspects of circuits. The book fulfils the requirements of the students of electrical, electronics, and computer science engineering for the first course on the subject. The book is divided into 16 chapters. Each chapter begins with an introduction and ends with a set of review questions and problems. All the topics have been illustrated with clear diagrams. A variety of examples are given to enable students to design digital circuits efficiently. The fifth edition of the book provides discussion of Verilog, a popular hardware description language, to demonstrate solutions to problems in digital design. The current edition also provides additional example problems.

Digital Electronics 1 Jan 24 2022 The omnipresence of electronic devices in our everyday lives has been accompanied by the downscaling of chip feature sizes and the ever increasing complexity of digital circuits. This book is devoted to the analysis and design of digital circuits, where the signal can assume only two possible logic levels. It deals with the basic principles and concepts of digital electronics. It addresses all aspects of combinational logic and provides a detailed understanding of logic gates that are the basic components in the implementation of circuits used to perform functions and operations of Boolean algebra. Combinational logic circuits are characterized by outputs that depend only on the actual input values. Efficient techniques to derive logic equations are proposed together with methods of analysis and synthesis of combinational logic circuits. Each chapter is well structured and is supplemented by a selection of solved exercises covering logic design practices.

Digital Electronic Circuits - The Comprehensive View Jun 28 2022 This book deals with key aspects of design of digital electronic circuits for different families of elementary electronic devices. Implementation of both simple and complex logic circuits are considered in detail, with special attention paid to the design of digital systems based on complementary metal-oxide-semiconductor (CMOS) and Pass-Transistor Logic (PTL) technologies acceptable for use in planar microelectronics technology. It is written for students in electronics and microelectronics, with exercises and solutions provided.

Random Testing of Digital Circuits Mar 02 2020 "Introduces a theory of random testing in digital circuits for the first time and offers practical guidance for the implementation of random pattern generators, signature analyzers design for random testability, and testing results. Contains several new and unpublished results."

Digital Electronics: Principles and Theories Oct 09 2020 Digital electronics is the branch of physics that deals with electronic circuits that use

digital signals. In digital circuits, signals can be transmitted without degradation. A digital circuit is constructed using logic gates that are created from electrically controlled switches such as transistors. An integrated circuit consists of multiple transistors on a single silicon chip, and designed using electronic design automation software. Digital circuit complexity can be minimized using algorithms such as Espresso heuristic logic minimizer. Algorithms for the optimization of large logic systems employ binary decision diagrams or algebraic manipulations. This book is a valuable compilation of topics, ranging from the basic to the most complex theories and principles in the field of digital electronics. The various aspects of digital electronics along with technological progress that have future implications have also been glanced at. In this book, constant effort has been made to make the understanding of the difficult concepts of digital electronics as easy and informative as possible, for the readers.

Digital Circuits And Logic Design Mar 26 2022

Complex Digital Circuits Dec 31 2019 This textbook is designed for a second course on digital systems, focused on the design of digital circuits. It was originally designed to accompany a MOOC (Massive Open Online Course) created at the Autonomous University of Barcelona (UAB), currently available on the Coursera platform. Readers will learn to develop complex digital circuits, starting from a functional specification, will know the design alternatives that a development engineer can choose to reach the specified circuit performance, and will understand which design tools are available to develop a new circuit.

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