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Introduction to Digital Systems Springer Nature

- Best Selling Book in English Edition for UGC NET Computer Science Paper II Exam with objective-type questions as per the latest syllabus given by the NTA.
- Increase your chances of selection by 16X.
- UGC NET Computer Science Paper II Kit comes with well-structured Content & Chapter wise Practice Tests for your self-evaluation
- Clear exam with good grades using thoroughly Researched Content by experts.

Computational Science and Its Applications
- ICCSA 2005 Technical Publications

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.

Springer Science & Business Media

Device testing represents the single largest manufacturing expense in the semiconductor industry, costing over \$40 billion a year. The most comprehensive and wide ranging book of its kind, Testing of Digital Systems covers everything you need to know about this vitally important subject. Starting right from the basics, the authors take the reader through automatic test pattern generation, design for testability and built-in self-test of digital circuits before moving on to more advanced topics such as IDDQ testing, functional testing, delay fault testing, memory testing, and fault diagnosis. The book includes detailed treatment of the latest techniques including test generation for various fault models, discussion of testing techniques at different levels of integrated circuit hierarchy and a chapter on system-on-a-chip test synthesis. Written for students and engineers, it is both an excellent senior/graduate level textbook and a valuable reference.

Digital Electronic Circuits Springer Nature

Computer Organization and Design: The Hardware/Software Interface, Sixth Edition, the leading, award-winning textbook from

Patterson and Hennessy used by more than 40,000 students per year, continues to present the most comprehensive and readable introduction to this core computer science topic. Improvements to this new release include new sections in each chapter on Domain Specific Architectures (DSA) and updates on all real-world examples that keep it fresh and relevant for a new generation of students. Covers parallelism in-depth, with examples and content highlighting parallel hardware and software topics Includes new sections in each chapter on Domain Specific Architectures (DSA) Discusses and highlights the "Eight Great Ideas" of computer architecture, including Performance via Parallelism, Performance via Pipelining, Performance via Prediction, Design for Moore's Law, Hierarchy of Memories, Abstraction to Simplify Design, Make the Common Case Fast and Dependability via Redundancy

Fundamentals of Digital Electronics Morgan & Claypool Publishers

FPGAs have almost entirely replaced the traditional Application Specific Standard Parts (ASSP) such as the 74xx logic chip families because of their superior size, versatility, and speed. For example, FPGAs provide over a million fold increase in gates compared to ASSP parts. The traditional approach for hands-on exercises has relied on ASSP parts, primarily because of their simplicity and ease of use for the novice. Not only is this approach technically outdated, but it also severely limits the complexity of the designs that can be implemented. By introducing the readers to FPGAs, they are being familiarized with current digital technology and the skills to implement complex, sophisticated designs. However, working with FPGAs comes at a cost of increased complexity, notably the mastering of an HDL language, such as Verilog. Therefore, this book accomplishes the following: first, it teaches basic digital design concepts and then applies them through exercises; second, it implements these digital designs by teaching the user the syntax of the Verilog language while implementing the exercises.

Finally, it employs contemporary digital hardware, such as the FPGA, to build a simple calculator, a basic music player, a frequency and period counter and it ends with a microprocessor being embedded in the fabric of the FGPA to communicate with the PC. In the process, readers learn about digital mathematics and digital-to-analog converter concepts through pulse width modulation.

Introduction to Digital Systems Routledge

Modern electronics is the most visible result of research in solid state physics. Transistors and integrated circuits are used everywhere in ever increasing numbers. The microprocessor controlled coffee-pot exists. Most experimental physicists, and, indeed, experimental scientists in most disciplines, study their subject with the aid of apparatus containing significant amounts of electronics and much of that electronics is digital. In order to design experiments and apparatus or simply to understand how a piece of equipment works, an under standing of electronics has become increasingly important. In recognition that electronics has pervaded so many areas, courses in digital electronics are now a recommended part of physics and many other science degree courses. At the introductory level, digital electronics is, primarily, a practical subject with relatively few basic concepts and any complex ity arises from the coupling together of many simple circuits and the extensive use of feedback. Designing an electronic circuit and then getting it to work correctly provides an experience, and a sense of achievement, which is significantly different from most undergradu ate work as it more closely resembles project work than standard laboratory practicals.

Applied Digital Logic Exercises Using FPGAs MIT Press

For the new millenium, Wai-Kai Chen introduced a monumental reference for the design, analysis, and prediction of VLSI circuits: The VLSI Handbook. Still a valuable tool for dealing with the most dynamic field in engineering, this second edition includes 13 sections comprising nearly 100 chapters focused on the key concepts, models, and equations. Written by a stellar international panel of expert contributors, this handbook is a reliable, comprehensive resource for real answers to practical problems. It emphasizes fundamental theory underlying professional applications and also reflects key areas of industrial and research focus. WHAT'S IN THE SECOND EDITION? Sections on... Low-power electronics and design VLSI signal processing Chapters on... CMOS fabrication Content-addressable memory Compound semiconductor RF circuits High-speed circuit design principles SiGe HBT technology Bipolar junction transistor amplifiers Performance modeling and analysis using SystemC Design

languages, expanded from two chapters to twelve Testing of digital systems Structured for convenient navigation and loaded with practical solutions, The VLSI Handbook, Second Edition remains the first choice for answers to the problems and challenges faced daily in engineering practice.

Computer Fundamentals PHI Learning Pvt. Ltd.

A practical introduction to the core mathematics required for engineering study and practice Now in its seventh edition, Engineering Mathematics is an established textbook that has helped thousands of students to succeed in their exams. John Bird's approach is based on worked examples and interactive problems. This makes it ideal for students from a wide range of academic backgrounds as the student can work through the material at their own pace. Mathematical theories are explained in a straightforward manner, being supported by practical engineering examples and applications in order to ensure that readers can relate theory to practice. The extensive and thorough topic coverage makes this an ideal text for a range of Level 2 and 3 engineering courses. This title is supported by a companion website with resources for both students and lecturers, including lists of essential formulae, multiple choice tests, full solutions for all 1,800 further questions contained within the practice exercises, and biographical information on the 24 famous mathematicians and engineers referenced throughout the book. The companion website for this title can be accessed from www.routledge.com/cw/bird

Principles and Structures of FPGAs Academic Publishers

The book is written for an undergraduate course on digital electronics. The book provides basic concepts, procedures and several relevant examples to help the readers to understand the analysis and design of various digital circuits. It also introduces hardware description language, VHDL. The book teaches you the logic gates, logic families, Boolean algebra, simplification of logic functions, analysis and design of combinational circuits using SSI and MSI circuits and analysis and design of the sequential circuits. This book provides in-depth information about multiplexers, demultiplexers, decoders, encoders, circuits for arithmetic operations, various types of flip-flops, counters and registers. It also covers asynchronous sequential circuits, memories and programmable logic devices.

SWITCHING THEORY AND LOGIC DESIGN Springer

This text is intended for a first course in digital logic design, at the sophomore or junior level, for electrical engineering, computer engineering and computer science programs, as well as for a number of other disciplines such as physics and mathematics. The book can also be used for

self-study or for review by practicing engineers and computer scientists not intimately familiar with the subject. After completing this text, the student should be prepared for a second (advanced) course in digital design, switching and automata theory, microprocessors or computer organization. *Higher Engineering Mathematics* Springer Science & Business Media

Computer Architecture/Software Engineering

Spreadsheet Proof of Arguments CRC Press

This report describes the use of a spreadsheet to solve simple problems in propositional logic. A spreadsheet can easily generate and recall truth tables, and with its built-in logical functions and connectives ft can calculate the truth value of logic expressions. Expressions can also be premises and together with a conclusion constitute an argument, which can be shown valid with a truth table. This report covers the application of a spreadsheet to truth table generation, evaluation of logical expressions, recasting arguments into spreadsheet form, and demonstration of validity. *Fundamentals of Logic and Computation* Walter de Gruyter GmbH & Co KG

"Cambridge International AS and A Level Computer Science Coursebook delivers an accessible guide to theoretical and practical skills in Computer Science, with a clear progression of tasks that help to consolidate and develop knowledge. Cambridge International AS and A Level Computer Science Coursebook offers students detailed descriptions of the concepts, reinforced with examples that outline complex subject matter in a clear way. Alongside fundamental definitions, higher level programming skills are developed through the explanation of processes and consolidated by practical exam-type questions for students to attempt."-- Publisher description.

Basic Digital Electronics Prentice Hall

This textbook introduces readers to the fundamental hardware used in modern computers. The only pre-requisite is algebra, so it can be taken by college freshman or sophomore students or even used in Advanced Placement courses in high school. This book presents both the classical approach to digital system design (i.e., pen and paper) in addition to the modern hardware description language (HDL) design approach (computer-based). This textbook enables readers to design digital systems using the modern HDL approach while ensuring they have a solid foundation of knowledge of the underlying hardware and theory of their designs. This book is designed to match the way the material is actually taught in the classroom. Topics are presented in a manner which builds foundational knowledge before moving onto advanced topics. The author has designed the content with learning goals and assessment at its core. Each section addresses a specific learning outcome that the learner should be able to "do" after its completion. The concept checks

and exercise problems provide a rich set of assessment tools to measure learner performance on each outcome. This book can be used for either a sequence of two courses consisting of an introduction to logic circuits (Chapters 1-7) followed by logic design (Chapters 8-13) or a single, accelerated course that uses the early chapters as reference material.

Electrical Engineering Jones & Bartlett Learning

This report describes the use of a spreadsheet to solve simple problems in propositional logic. A spreadsheet can easily generate and recall truth tables, and with its built-in logical functions and connectives it can calculate the truth value of logic expressions. Expressions can also be premises and together with a conclusion constitute an argument, which can be shown valid with a truth table. This report covers the application of a spreadsheet to truth table generation, evaluation of logical expressions, recasting arguments into spreadsheet form, and demonstration of validity.

Fundamentals of Computer Technology Routledge

A new and extensively revised edition of a popular textbook used in universities, coding boot camps, hacker clubs, and online courses. The best way to understand how computers work is to build one from scratch, and this textbook leads learners through twelve chapters and projects that gradually build the hardware platform and software hierarchy for a simple but powerful computer system. In the process, learners gain hands-on knowledge of hardware, architecture, operating systems, programming languages, compilers, data structures and algorithms, and software engineering. Using this constructive approach, the book introduces learners to a significant body of computer science knowledge and demonstrates how theoretical and applied techniques taught in other computer science courses fit into the overall picture. The outcome of these efforts is known as Nand to Tetris: a journey that starts with the most elementary logic gate, called Nand, and ends, twelve projects later, with a general-purpose computer system capable of running Tetris. The first edition of this popular textbook inspired Nand to Tetris classes in universities, coding boot camps, hacker clubs, and online course platforms. This second edition has been extensively revised. It has been restructured into two distinct parts—part I, Hardware, and part II, Software—with six projects in each part. All chapters and projects have been rewritten, with an emphasis on separating abstraction from implementation, and many new sections, figures, and examples have been added. Substantial new appendixes offer focused presentation on technical and theoretical topics.

Foundations of Digital Logic Design Morgan Kaufmann

This new approach to an established field introduces the concept of predicate logic in order to supersede propositional logic in switching theory. The author gives new insight into the theory of latches (memory circuits) for use in undergraduate and graduate courses.

Foundations of Analog and Digital Electronic Circuits PHI Learning Pvt. Ltd.

This textbook for courses in Digital Systems Design introduces students to the fundamental hardware used in modern computers. Coverage includes both the classical approach to digital system design (i.e., pen and paper) in addition to the modern hardware description language (HDL) design approach (computer-based). Using this textbook enables readers to design digital systems using the modern HDL approach, but they have a broad foundation of knowledge of the underlying hardware and theory of their designs. This book is designed to match the way the material is actually taught in the classroom. Topics are presented in a manner which builds foundational knowledge before moving onto advanced topics. The author has designed the presentation with learning Goals and assessment at its core. Each section addresses a specific learning outcome that the student should be able to “do” after its completion. The concept checks and exercise problems provide a rich set of assessment tools to measure student performance on each outcome.

The Essentials of Computer Organization and Architecture Wiley
FPGAs have almost entirely replaced the traditional Application Specific Standard Parts (ASSP) such as the 74xx logic chip families because of their superior size, versatility, and speed. For example, FPGAs provide over a million fold increase in gates compared to ASSP parts. The traditional approach for hands-on exercises has relied on ASSP parts, primarily because of their simplicity and ease of use for the novice. Not only is this approach technically outdated, but it also severely limits the complexity of the designs that can be implemented. By introducing the readers to FPGAs, they are being familiarized with current digital technology and the skills to implement complex, sophisticated designs. However, working with FPGAs comes at a cost of increased complexity, notably the mastering of an HDL language, such as Verilog. Therefore, this book accomplishes the following: first, it teaches basic digital design concepts and then applies them through exercises; second, it implements these digital designs by teaching the user the syntax of the Verilog language while implementing the exercises. Finally, it employs contemporary digital hardware, such as the FPGA, to build a simple calculator, a basic music player, a frequency and period counter and it ends with a microprocessor being embedded in the fabric of the FPGA to communicate with the PC. In the process, readers learn about digital mathematics and digital-to-analog converter concepts through pulse width modulation.

Switching Theory Springer

A unique guide to using both modeling and simulation in digital systems design Digital systems design requires rigorous modeling

and simulation analysis that eliminates design risks and potential harm to users. Introduction to Digital Systems: Modeling, Synthesis, and Simulation Using VHDL introduces the application of modeling and synthesis in the effective design of digital systems and explains applicable analytical and computational methods. Through step-by-step explanations and numerous examples, the author equips readers with the tools needed to model, synthesize, and simulate digital principles using Very High Speed Integrated Circuit Hardware Description Language (VHDL) programming. Extensively classroom-tested to ensure a fluid presentation, this book provides a comprehensive overview of the topic by integrating theoretical principles, discrete mathematical models, computer simulations, and basic methods of analysis. Topical coverage includes: Digital systems modeling and simulation Integrated logic Boolean algebra and logic Logic function optimization Number systems Combinational logic VHDL design concepts Sequential and synchronous sequential logic Each chapter begins with learning objectives that outline key concepts that follow, and all discussions conclude with problem sets that allow readers to test their comprehension of the presented material. Throughout the book, VHDL sample codes are used to illustrate circuit design, providing guidance not only on how to learn and master VHDL programming, but also how to model and simulate digital circuits. Introduction to Digital Systems is an excellent book for courses in modeling and simulation, operations research, engineering, and computer science at the upper-undergraduate and graduate levels. The book also serves as a valuable resource for researchers and practitioners in the fields of operations research, mathematical modeling, simulation, electrical engineering, and computer science.