Networking Fundamentals Second Edition Richard M Roberts

Photonic MEMS devices represent the next major breakthrough in the silicon revolution. While many quality resources exist on the optic and photonic aspect of device physics, today's researchers are in need of a reference that goes beyond to include all aspects of engineering innovation. An extension on traditional design and analysis, Photonic MEMS Devices: Design, Fabrication, and Control describes a broad range of optical and photonic devices, from MEMS optical switches and bandgap crystal switches to optical variable attenuators (VOA) and injection locked tunable lasers. It deals rigorously with all these technologies at a fundamental level, systematically introducing critical nomenclature. Each chapter also provides analysis techniques, equations, and experimental results. The book focuses not only on traditional design analysis, but also provides extensive background on realistic simulation and fabrication processes. With a clear attention to experimental relevance, this book provides the fundamental knowledge needed to take the next-step in integrating photonic MEMS devices into commercial products and technology.

Research and applications in optical engineering require careful selection of materials. With such a large and varied array to choose from, it is important to understand a material's physical and optical properties before making a selection. Providing a convenient, concise, and logically organized collection of information, Physical Properties and Data of Optical Materials builds a thorough background for more than 100 optical materials and offers quick access to precise information. Surveying the most important and widely used optical materials, this handy reference includes data on a wide variety of metals, semiconductors, dielectrics, polymers, and other commonly used optical materials. For each material, the editors examine the crystal system; natural and artificial growth and production methods along with corrosives and processing; thermal, electrical, and mechanical properties; optical properties, such as transmittance and reflectance spectra, ranging from UV to IR wavelengths; and, where applicable, applications for spectroscopy and miscellaneous remarks such as handling concerns and chemical properties. Numerous tables illustrate important data such as numerical values of optical constants for important wavelength regions, extinction and absorption coefficients, and refractive index. Physical Properties and Data of Optical Materials offers a collection of data on an unprecedented variety of fundamental optical materials, making it the one quick-lookup guide that every optical scientist, engineer, and student should own.

A Student's Guide to the Study, Practice, and Tools of Modern Mathematics provides an accessible introduction to the world of mathematics. It offers tips on how to study and write mathematics as well as how to use various mathematical tools, from LaTeX and Beamer to Mathematica® and MapleTM to MATLAB® and R. Along with a color insert, the text includes exercises and challenges to stimulate creativity and improve problem solving abilities. The first section of the book covers issues pertaining to studying mathematics. The authors explain how to write mathematical proofs and papers, how to perform mathematical research, and how to give mathematical presentations. The second section focuses on the use of mathematical tools for mathematical typesetting, generating data, finding patterns, and much more. The text describes how to compose a LaTeX file, give a presentation using Beamer, create mathematical diagrams, use computer algebra systems, and display ideas on a web page. The authors cover both popular commercial software programs and free and open source software, such as Linux and R. Showing how to use technology to understand mathematics, this guide supports students on their way to becoming professional mathematicians. For beginning mathematics students, it helps them study for tests and write papers. As time

progresses, the book aids them in performing advanced activities, such as computer programming, typesetting, and research.

An in-depth look at the state-of-the-art in microwave filter design, implementation, and optimization Thoroughly revised and expanded, this second edition of the popular reference addresses the many important advances that have taken place in the field since the publication of the first edition and includes new chapters on Multiband Filters, Tunable Filters and a chapter devoted to Practical Considerations and Examples. One of the chief constraints in the evolution of wireless communication systems is the scarcity of the available frequency spectrum, thus making frequency spectrum a primary resource to be judiciously shared and optimally utilized. This fundamental limitation, along with atmospheric conditions and interference have long been drivers of intense research and development in the fields of signal processing and filter networks, the two technologies that govern the information capacity of a given frequency spectrum. Written by distinguished experts with a combined century of industrial and academic experience in the field, Microwave Filters for Communication Systems: Provides a coherent, accessible description of system requirements and constraints for microwave filters Covers fundamental considerations in the theory and design of microwave filters and the use of EM techniques to analyze and optimize filter structures Chapters on Multiband Filters and Tunable Filters address the new markets emerging for wireless communication systems and flexible satellite payloads and A chapter devoted to real-world examples and exercises that allow readers to test and fine-tune their grasp of the material covered in various chapters, in effect it provides the roadmap to develop a software laboratory, to analyze, design, and perform system level tradeoffs including EM based tolerance and sensitivity analysis for microwave filters and multiplexers for practical applications. Microwave Filters for Communication Systems provides students and practitioners alike with a solid grounding in the theoretical underpinnings of practical microwave filter and its physical realization using state-of-the-art EM-based techniques.

Once the privilege of a secret few, cryptography is now taught at universities around the world. Introduction to Cryptography with Open-Source Software illustrates algorithms and cryptosystems using examples and the open-source computer algebra system of Sage. The author, a noted educator in the field, provides a highly practical learning experience by progressing at a gentle pace, keeping mathematics at a manageable level, and including numerous end-of-chapter exercises. Focusing on the cryptosystems themselves rather than the means of breaking them, the book first explores when and how the methods of modern cryptography can be used and misused. It then presents number theory and the algorithms and methods that make up the basis of cryptography today. After a brief review of "classical" cryptography, the book introduces information theory and examines the public-key cryptosystems of RSA and Rabin's cryptosystem. Other public-key systems studied include the El Gamal cryptosystem, systems based on knapsack problems, and algorithms for creating digital signature schemes. The second half of the text moves on to consider bit-oriented secret-key, or symmetric, systems suitable for encrypting large amounts of data. The author describes block ciphers (including the Data Encryption Standard), cryptographic hash functions, finite fields, the Advanced Encryption Standard, cryptosystems based on elliptical curves, random number generation, and stream ciphers. The book concludes with a look at examples and applications of modern cryptographic systems, such as multi-party computation, zero-knowledge proofs, oblivious transfer, and voting protocols.

Lasers with a gaseous active medium offer high flexibility, wide tunability, and advantages in cost, beam quality, and power scalability. Gas lasers have tended to become overshadowed by the recent popularity and proliferation of semiconductor lasers. As a result of this shift in focus, details on modern developments in gas lasers are difficult to find. In addition, different types of gas lasers have unique properties that are not well-described in other references. Collecting expert contributions from authorities dealing with specific types of lasers, Gas Lasers

examines the fundamentals, current research, and applications of this important class of laser. It is important to understand all types of lasers, from solid-state to gaseous, before making a decision for any application. This book fills in the gaps by discussing the definition and properties of gaseous media along with its fluid dynamics, electric excitation circuits, and optical resonators. From this foundation, the discussion launches into the basic physics, characteristics, applications, and current research efforts for specific types of gas lasers: CO lasers, CO_2 lasers, HF/DF lasers, excimer lasers, iodine lasers, and metal vapor lasers. The final chapter discusses miscellaneous lasers not covered in the previous chapters. Collecting hard-to-find material into a single, convenient source, Gas Lasers offers an encyclopedic survey that helps you approach new applications with a more complete inventory of laser options.

Networking Fundamentals will prepare you for an in-demand career as a network technician. By studying this textbook, you will learn the basic knowledge required for specific networking fields, such as network administration, network design, and the support of specific network operating systems. Additionally, you will learn about CompTIA Network+ Certification Exam standards, helping you prepare for certification. Each chapter in the text begins with a list of the CompTIA Network+ Exam Objectives covered in that chapter. In addition, these same objectives are noted with an icon at the point of coverage in the text to illuminate where the objectives is met. Each chapter then concludes with a set of sample Network+ Exam questions to help you study and prepare for certification. To enhance your knowledge about information technology further, the text provides specific content about Microsoft and Unix/Linux operating systems to help you familiarize yourself with commonly encountered software in the industry. Also included is a complete chapter dedicated to employment and soft skills to prepare you for the workplace. Networking Fundamentals provides a thorough introduction to the work of computer networking to help you earn certification and get a head start on your career. In an increasingly competitive information technology workforce, certification can help you stand out in the crowd.

New advances offer flexible, low-cost fabrication methods for light-emitting materials, particularly in display technologies. As researchers continue to develop novel applications for these materials, feasible solutions for large-scale manufacturing are increasingly important. Organic Light-Emitting Materials and Devices covers all aspects o

Where conventional testing and inspection techniques fail at the micro-scale, optical techniques provide a fast, robust, and relatively inexpensive alternative for investigating the properties and quality of microsystems. Speed, reliability, and cost are critical factors in the continued scale-up of microsystems technology across many industries, and optical techniques are in a unique position to satisfy modern commercial and industrial demands. Optical Inspection of Microsystems is the first comprehensive, up-to-date survey of the most important and widely used full-field optical metrology and inspection technologies. Under the guidance of accomplished researcher Wolfgang Osten, expert contributors from industrial and academic institutions around the world share their expertise and experience with techniques such as image correlation, light scattering, scanning probe microscopy, confocal microscopy, fringe projection, grid and moiré techniques, interference microscopy, laser Doppler vibrometry, holography, speckle metrology, and spectroscopy. They also examine modern approaches to data acquisition and processing. The book emphasizes the evaluation of various properties to increase reliability and promote a consistent approach to optical testing. Numerous practical examples and illustrations reinforce the concepts. Supplying advanced tools for microsystem manufacturing and characterization, Optical Inspection of Microsystems enables you to reach toward a higher level of quality and reliability in modern micro-scale applications.

In 1993, the first edition of The Electrical Engineering Handbook set a new standard for breadth and depth of coverage in an engineering

reference work. Now, this classic has been substantially revised and updated to include the latest information on all the important topics in electrical engineering today. Every electrical engineer should have an opportunity to expand his expertise with this definitive guide. In a single volume, this handbook provides a complete reference to answer the questions encountered by practicing engineers in industry, government, or academia. This well-organized book is divided into 12 major sections that encompass the entire field of electrical engineering, including circuits, signal processing, electronics, electromagnetics, electrical effects and devices, and energy, and the emerging trends in the fields of communications, digital devices, computer engineering, systems, and biomedical engineering. A compendium of physical, chemical, material, and mathematical data completes this comprehensive resource. Every major topic is thoroughly covered and every important concept is defined, described, and illustrated. Conceptually challenging but carefully explained articles are equally valuable to the practicing engineer, researchers, and students. A distinguished advisory board and contributors including many of the leading authors, professors, and researchers in the field today assist noted author and professor Richard Dorf in offering complete coverage of this rapidly expanding field. No other single volume available today offers this combination of broad coverage and depth of exploration of the topics. The Electrical Engineering Handbook will be an invaluable resource for electrical engineers for years to come.

Reflecting rapid growth in research and development on organic/polymeric electronic and photonic materials and devices, Introduction to Organic Electronic and Optoelectronic Materials and Devices provides comprehensive coverage of the state-of-the-art in an accessible format. The book presents fundamentals, principles, and mechanisms complemented by examples, experimental data, and more than 600 figures, more than 500 equations, about 70 tables, more than 150 exercise questions, and more than 1500 reference citations.

Compiling the most influential papers from the IEICE Transactions in Communications, High-Performance Backbone Network Technology examines critical breakthroughs in the design and provision of effective public service networks in areas including traffic control, telephone service, real-time video transfer, voice and image transmission for a content delivery network (CDN), and Internet access. The contributors explore system structures, experimental prototypes, and field trials that herald the development of new IP networks that offer quality-of-service (QoS), as well as enhanced security, reliability, and function. Offers many hints and guidelines for future research in IP and photonic backbone network technologies

Here's easy-to-understand book that introduces you to fundamental network security concepts, principles, and terms, while providing you with practical techniques that you can apply on the job. It helps you identify the best type of intrusion detection system for your environment, develop organizational guidelines for passwords, set general computer security policies, and perform a security review and risk assessment .

Assembling an international team of experts, this book reports on the progress in the rapidly growing field of monolithic micro- and nanoresonators. The book opens with a chapter on photonic crystal-based resonators (nanocavities). It goes on to describe resonators in which the closed trajectories of light are supported by any variety of total internal reflection in curved and polygonal transparent dielectric structures. The book also covers distributed feedback microresonators for slow light, controllable dispersion, and enhanced nonlinearity. A portion of coverage is dedicated to the unique properties of resonators, which are extremely efficient tools when conducting multiple applications.

Photoacoustics promises to revolutionize medical imaging and may well make as dramatic a contribution to modern medicine as the discovery of the x-ray itself once did. Combining electromagnetic and ultrasonic waves synergistically, photoacoustics can provide deep speckle-free imaging with high electromagnetic contrast at high ultrasonic resolution and without any health risk. While photoacoustic imaging

is probably the fastest growing biomedical imaging technology, this book is the first comprehensive volume in this emerging field covering both the physics and the remarkable noninvasive applications that are changing diagnostic medicine. Bringing together the leading pioneers in this field to write about their own work, Photoacoustic Imaging and Spectroscopy is the first to provide a full account of the latest research and developing applications in the area of biomedical photoacoustics. Photoacoustics can provide functional sensing of physiological parameters such as the oxygen saturation of hemoglobin. It can also provide high-contrast functional imaging of angiogenesis and hypermetabolism in tumors in vivo. Discussing these remarkable noninvasive applications and so much more, this reference is essential reading for all researchers in medical imaging and those clinicians working at the cutting-edge of modern biotechnology to develop diagnostic techniques that can save many lives and just as importantly do no harm.

Bringing the material up to date to reflect modern applications, Algebraic Number Theory, Second Edition has been completely rewritten and reorganized to incorporate a new style, methodology, and presentation. This edition focuses on integral domains, ideals, and unique factorization in the first chapter; field extensions in the second chapter; and

Synergy is the key to creating more intelligent biosensors. Engineers develop smaller, more integrated technologies; biologists and chemists develop increasingly selective and sensitive sensor elements; material scientists develop ways to bring it all together. However, most books focus only on the chemistry aspects of biosensor technologies. With

As the limits of electrical performance come within sight, photons are poised to take over for the electron. But the search continues for the materials, topologies, and fabrication technologies capable of producing photonic devices at a reasonable speed and cost. Taking a fundamentallook at the development of photonic technology from the macro- to the microscale, Applied Microphotonics introduces the major principles and technologies underlying the field. Following an overview of historical and commercial driving forces, the authors briefly review the underlying physics, emphasizing the practical and design implications for photonic systems. This general discussion lays the foundation for the remainder of the book, where the authors first introduce the photonic node and then discuss each subsystem in detail, including transmitters, couplers and switches, multiplexers and demultiplexers, receivers, amplifiers, and compensators. The following chapters explore new technologies such as photonic band gap structures, materials and fabrication processes, integration methodologies, and advanced devices such as photonic computers. The book concludes with a brief introduction to quantum photonics and a forward look at potential directions of photonics. Applied Microphotonics encapsulates the recent push toward all-optical networks and devices with an applications-oriented perspective. It is ideal for newcomers to the field as well as anyone curious to know how photonic technology can benefit their own field.

One of the Top Selling Physics Books according to YBP Library Services The exotic effects of slow light have been widely observed in the laboratory. However, current literature fails to explore the wider field of slow light in photonic structures and optical fibers. Reflecting recent research, Slow Light: Science and Applications presents a comprehensive

introduction to slow light and its potential applications, including storage, switching, DOD applications, and nonlinear optics. The book covers fundamentals of slow light in various media, including atomic media, semiconductors, fibers, and photonic structures. Leading authorities in such diverse fields as atomic vapor spectroscopy, fiber amplifiers, and integrated optics provide an interdisciplinary perspective. They uncover potential applications in both linear and nonlinear optics. While it is impossible to account for all the captivating developments that have occurred in the last few years, this book provides an exceptional survey of the current state of the slow light field.

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. This new All-in-One Exam Guide covers every topic on the current version of Cisco's CCT and CCNA exams Take the 2020 versions of the Cisco Certified Technician (CCT) and Cisco Certified Network Associate (CCNA) exams with complete confidence using the detailed information contained in this highly effective self-study system. Written by a pair of Cisco networking professionals and training experts, CCT®/CCNA® Routing and Switching All-in-One Exam Guide (Exams 100-490 & 200-301) fully explains all subjects covered on both exams and contains practice questions that mirror those on the live test in tone, format, and content. Beyond fully preparing you for the challenging exam, the book also serves as a valuable on-the-job reference. Covers all topics on both exams, including: Network fundamentals OSI model TCP/IP protocol suite Subnetting and VLSM Cisco device and IOS basics Cisco device management Switching Static and dynamic routing IP services and IPv6 Wireless Security fundamentals Implementing security on Cisco devices Automation and programmability

The best-selling Distributed Sensor Networks became the definitive guide to understanding this far-reaching technology. Preserving the excellence and accessibility of its predecessor, Distributed Sensor Networks, Second Edition once again provides all the fundamentals and applications in one complete, self-contained source. Ideal as a tutorial for students or as research material for engineers, the book gives readers up-to-date, practical insight on all aspects of the field. Revised and expanded, this second edition incorporates contributions from many veterans of the DARPA ISO SENSIT program as well as new material from distinguished researchers in the field. Sensor Networking and Applications focuses on sensor deployment and networking, adaptive tasking, self-configuration, and system control. In the expanded applications section, the book draws on the insight of practitioners in the field. Readers of this book may also be interested in Distributed Sensor Networks, Second Edition: Image and Sensor Signal Processing (ISBN: 9781439862827).

Wireless, optical, and electronic networks continue to converge, prompting heavy research into the interface between microwave electronics, ultrafast optics, and photonic technologies. New developments arrive nearly as fast as the

photons under investigation, and their commercial impact depends on the ability to stay abreast of new findings, techni

Learn the Basics of LAN Switching and study valuable network switching reference materials.

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In the continuing push toward optical computing, the focus remains on finding and developing the right materials. Characterizing materials, understanding the behavior of light in these materials, and being able to control the light are key players in the search for suitable optical materials. Optics in Magnetic Multilayers and Nanostructures presents an accessible introduction to optics in anisotropic magnetic media. While most of the literature presents only final results of the complicated formulae for the optics in anisotropic media, this book provides detailed explanations and full step-by-step derivations that offer insight into the procedure and reveal any approximations. Based on more than three decades of experimental research on the subject, the author explains the basic concepts of magnetooptics; nonreciprocal wave propagation; the simultaneous effect of crystalline symmetry and arbitrarily oriented magnetization on the form of permittivity tensors; spectral dependence of permittivity; multilayers at polar, longitudinal, transverse, and arbitrary magnetization; the effect of normal or near-normal incidence on multilayers; and anisotropic multilayer gratings. Making the subject of magnetooptics and anisotropic media approachable by the nonspecialist, Optics in Magnetic Multilayers and Nanostructures serves as an ideal introduction to newcomers and an indispensable reference for seasoned researchers.

This volume reveals the latest research on commercial systems with up to 160 OC-48 channels, optical ATM switch architectures, optical multiprotocol lambda and label switching, synchronous optical networks and digital hierarchy, and the Internet Protocol layer. The text includes recent developments in the routing efficiency of multihop optical netw

Developing an information security program that adheres to the principle of security as a business enabler must be the first step in an enterprise's effort to build an effective security program. Following in the footsteps of its bestselling predecessor, Information Security Fundamentals, Second Edition provides information security professionals with a clear understanding of the fundamentals of security required to address the range of issues they will experience in the field. The book examines the elements of computer

security, employee roles and responsibilities, and common threats. It discusses the legal requirements that impact security policies, including Sarbanes-Oxley, HIPAA, and the Gramm-Leach-Bliley Act. Detailing physical security requirements and controls, this updated edition offers a sample physical security policy and includes a complete list of tasks and objectives that make up an effective information protection program. Includes ten new chapters Broadens its coverage of regulations to include FISMA, PCI compliance, and foreign requirements Expands its coverage of compliance and governance issues Adds discussions of ISO 27001, ITIL, COSO, COBIT, and other frameworks Presents new information on mobile security issues Reorganizes the contents around ISO 27002 The book discusses organization-wide policies, their documentation, and legal and business requirements. It explains policy format with a focus on global, topic-specific, and application-specific policies. Following a review of asset classification, it explores access control, the components of physical security, and the foundations and processes of risk analysis and risk management. The text concludes by describing business continuity planning, preventive controls, recovery strategies, and how to conduct a business impact analysis. Each chapter in the book has been written by a different expert to ensure you gain the comprehensive understanding of what it takes to develop an effective information security program. Featuring contributions from major technology vendors, industry consortia, and government and private research establishments, the Industrial Communication Technology Handbook, Second Edition provides comprehensive and authoritative coverage of wire- and wireless-based specialized communication networks used in plant and factory automation, automotive applications, avionics, building automation, energy and power systems, train applications, and more. New to the Second Edition: 46 brand-new chapters and 21 substantially revised chapters Inclusion of the latest, most significant developments in specialized communication technologies and systems Addition of new application domains for specialized networks The Industrial Communication Technology Handbook, Second Edition supplies readers with a thorough understanding of the application-specific requirements for communication services and their supporting technologies. It is useful to a broad spectrum of professionals involved in the conception, design, development, standardization, and use of specialized communication networks as well as academic institutions engaged in engineering education and vocational training. There is no shortage of lens optimization software on the market to deal with today's complex optical systems for all sorts of custom and standardized applications. But all of these software packages share one critical flaw: you still have to design a starting solution. Continuing the bestselling tradition of the author's previous books, Lens Design, Fourth Edition is still the most complete and reliable guide for detailed design information and procedures for a wide range of optical systems. Milton Laikin draws on his varied and extensive experience, ranging from innovative cinematographic and special-effects optical systems to infrared and underwater lens systems, to cover a vast range of special-purpose optical systems and their detailed design and analysis. This edition has been updated to replace obsolete glass types and now includes several new designs and sections on stabilized systems, the human eye, spectrographic systems, and diffractive systems. A new CD-ROM accompanies this edition, offering extensive lens prescription data and executable ZEMAX files corresponding to figures in the text. Filled with sage advice and

completely illustrated, Lens Design, Fourth Edition supplies hands-on guidance for the initial design and final optimization for a plethora of commercial, consumer, and specialized optical systems.

Provides a clear, coherent review of all major wireless broadband standards with an emphasis on managing the explosive growth in mobile video 802.11ac/ad, 802.16m, 802.22, and LTE-Advanced are the emerging broadband wireless standards that offer many powerful wireless features. This book gives an accessible overview of the various standards and practical information on 802.11 link adaptation, 4G smartphone antenna design, wireless video streaming, and smart grids. Broadband Wireless Multimedia Networks distills the many complex wireless features in a clean and concise manner so that the reader can understand the key principles. Topics covered include adaptive modulation and coding, orthogonal frequency-division multiple access, single-carrier frequency-division multiple access, multiple antenna systems, medium access control time and frequency-division duplex, transmission, and the frame formats. With wireless operators now carrying a much greater amount of video traffic than data and voice traffic, the book also covers adaptive bit rate streaming and bandwidth management for 3D and HD video delivery to multi-screen personal devices. Featured chapters in the book are: Overview of Broadband Wireless Networks IEEE 802.11 Standard IEEE 802.16 Standard Long-Term Evolution ATSC Digital TV and IEEE 802.22 Standards Mesh, Relay, and Interworking Networks Wireless Video Streaming Green Communications in Wireless Home Area Networks Including over 180 chapter-end exercises and 200 illustrative figures; and accessible recorded tutorials, Broadband Wireless Multimedia Networks is ideal for industry professionals and practitioners, graduate students, and researchers.

Explaining what CWDM is, how it is achieved, and why it should be deployed, Coarse Wavelength Division Multiplexing: Technologies and Applications merges coverage of isolated aspects of Coarse Wavelength Division Multiplexing (CWDM) traditionally found as device-related or specific system topics. Emphasizing cost savings and performance enhancement, the book integrates information on component issues, system architectures, concepts for extensions and upgrades, as well as practical applications into a comprehensive, single-volume resource. Beginning with a summary of the ITU-T standards defining CWDM, the book addresses the three essential component classes, optical fibers, transceivers, and WDM filters, which combine to form the basis for the CWDM transmission link. The following chapters include coverage of different architectures such as hubbed rings and meshed networks, and upgrade paths to overcome limitations of current CWDM systems. The book outlines the feasibility of optically amplified CWDM systems, investigates the challenges present with high-speed CWDM and bidirectional transmission, and finally elucidates the importance of CWDM for a wide range of applications. Each chapter provides sufficient information to be used independently and contains references to relevant papers and articles for further study. The last sections of the book focus on applications and case studies where CWDM plays an ever-increasing role. They include extensive studies on networking, reach extension by amplification, and the latest concepts of transmission capacity upgrades using increased bit-rates or new channel plans. Filled with practical information, the book provides a clear understanding of recent developments in the dynamic field of CWDM.

Handbook of Product Graphs, Second Edition examines the dichotomy between the structure of products and their subgraphs. It also features the design of efficient algorithms that recognize products and their subgraphs and explores the relationship between graph parameters of the product and factors. Extensively revised and expanded, the handbook pre

Since the invention of the laser, our fascination with the photon has led to one of the most dynamic and rapidly growing fields of technology. An explosion of new materials, devices, and applications makes it more important than ever to stay current with the latest advances. Surveying the field from fundamental concepts to state-of-the-art developments, Photonics: Principles and Practices builds a comprehensive understanding of the theoretical and practical aspects of photonics from the basics of light waves to fiber optics and lasers. Providing self-contained coverage and using a consistent approach, the author leads you step-by-step through each topic. Each skillfully crafted chapter first explores the theoretical concepts of each topic and then demonstrates how these principles apply to real-world applications by guiding you through experimental cases illuminated with numerous illustrations. Coverage is divided into six broad sections, systematically working through light, optics, waves and diffraction, optical fibers, fiber optics testing, and laboratory safety. A complete glossary, useful appendices, and a thorough list of references round out the presentation. The text also includes a 16-page insert containing 28 full-color illustrations. Containing several topics presented for the first time in book form, Photonics: Principles and Practices is simply the most modern, comprehensive, and hands-on text in the field.

Bijective proofs are some of the most elegant and powerful techniques in all of mathematics. Suitable for readers without prior background in algebra or combinatorics, Bijective Combinatorics presents a general introduction to enumerative and algebraic combinatorics that emphasizes bijective methods. The text systematically develops the mathematical tools, such as basic counting rules, recursions, inclusion-exclusion techniques, generating functions, bijective proofs, and linear-algebraic methods, needed to solve enumeration problems. These tools are used to analyze many combinatorial structures, including words, permutations, subsets, functions, compositions, integer partitions, graphs, trees, lattice paths, multisets, rook placements, set partitions, Eulerian tours, derangements, posets, tilings, and abaci. The book also delves into algebraic aspects of combinatorics, offering detailed treatments of formal power series, symmetric groups, group actions, symmetric polynomials, determinants, and the combinatorial calculus of tableaux. Each chapter includes summaries and extensive problem sets that review and reinforce the material. Lucid, engaging, yet fully rigorous, this text describes a host of combinatorial techniques to help solve complicated enumeration problems. It covers the basic principles of enumeration, giving due attention to the role of bijective proofs in enumeration theory.

This completely revised and expanded second edition of SSL and TLS: Theory and Practice provides an overview and a

comprehensive discussion of the Secure Sockets Layer (SSL), Transport Layer Security (TLS), and Datagram TLS (DTLS) protocols that are omnipresent in today's e-commerce and e-business applications and respective security solutions. It provides complete details on the theory and practice of the protocols, offering readers a solid understanding of their design principles and modes of operation. Updates to this edition include coverage of the recent attacks against the protocols, newly specified extensions and firewall traversal, as well as recent developments related to public key certificates and respective infrastructures. This book targets software developers, security professionals, consultants, protocol designers, and chief security officers who will gain insight and perspective on the many details of the SSL, TLS, and DTLS protocols, such as cipher suites, certificate management, and alert messages. The book also comprehensively discusses the advantages and disadvantages of the protocols compared to other Internet security protocols and provides the details necessary to correctly implement the protocols while saving time on the security practitioner's side.
Networking FundamentalsGoodheart-Wilcox Publisher
Provides information on designing effective security mechanisms for e-commerce sites, covering such topics as cryptography, authentication, information classification, threats and attacks, and certification.
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