

Engineering Physics By Navneet Gupta Qagnet

The book covers recent trends in the field of devices, wireless communication and networking. It presents the outcomes of the International Conference in Communication, Devices and Networking (ICCDN 2018), which was organized by the Department of Electronics and Communication Engineering, Sikkim Manipal Institute of Technology, Sikkim, India on 2–3 June, 2018. Gathering cutting-edge research papers prepared by researchers, engineers and industry professionals, it will help young and experienced scientists and developers alike to explore new perspectives, and offer them inspirations on addressing real-world problems in the field of electronics, communication, devices and networking.

This book presents articles from the International Conference on Modelling, Simulation and Intelligent Computing (MoSICom 2020), held at Birla Institute of Technology and Science Pilani, Dubai Campus, Dubai, UAE, in January 2020. Modelling and simulation are becoming increasingly important in a wide variety of fields, from Signal, Image and Speech Processing, and Microelectronic Devices and Circuits to Intelligent Techniques, Control and Energy Systems, and Power Electronics. Further, Intelligent Computational techniques are gaining significance in interdisciplinary engineering applications, such as Robotics and Automation, Healthcare Technologies, IoT and its Applications. Featuring the latest advances in the field of engineering applications, this book serves as a definitive reference resource for researchers, professors and practitioners interested in exploring advanced techniques in the field of modelling, simulation and computing.

The book includes current and emerging concepts in the areas of environmental biotechnology such as pollution sources, control and measurement, solid waste management, bioremediation, biofuels, biosensors, bioleaching, conservation biotechnology and more. The book also includes recent innovations made in this field and incorporates case studies to help in understanding the concepts. This book applies principles from multidisciplinary sciences of environmental engineering, metabolic engineering, rDNA technology and omics to study the role of microbes and plants in tackling environmental issues. It also includes content related to risk assessment and environmental management systems. Each chapter provides problems and solutions of different topics with diagrammatic illustrations and tables for students, researchers and other professionals in environmental biotechnology. Explores cutting-edge technologies, including nanotechnology-based bioremediation, value-added products from waste and emerging techniques related to environmental risk assessment and monitoring Reviews the current methods being applied in the environment field for pollution control, waste management, biodegradation of organic and inorganic pollutants and so on Provides in-depth knowledge of the latest advancements in the field of environmental biotechnology such as bioleaching, biomining and advances in biotechnology-based conservation of biodiversity Introduces undergraduate and post-graduate students to basic concepts of environmental biotechnology and allied fields Discusses different products such as biofuels, biopolymers and biosensors that are being produced using biotechnological methods, thus contributing towards the goal of sustainable development Dr. Neetu Sharma is Assistant Professor in the Department of Biotechnology, GGSDS College, Chandigarh, India. The main thrust of her research

centers on biotechnology, bioremediation and nanotechnology. Abhinashi Singh Sodhi is Assistant Professor in the Department of Biotechnology, GGSDS College, Chandigarh, India. His current research focuses on waste reduction, valorization and bioproduct formation. Dr. Navneet Batra is Associate Professor and Head, Department of Biotechnology, GGSDS College, Chandigarh, India. He has extensive academic and research experience of over 20 years with specialization in biotechnology and biochemical engineering.

Sensors and Biosensors, MEMS Technologies and its Applications Lulu.com Modelling, Simulation and Intelligent Computing Proceedings of MoSICom 2020 Springer Nature Sustainable Materials for Next Generation Energy Devices: Challenges and Opportunities presents the latest state-of-the-art knowledge and innovation related to environmentally-friendly functional materials that can be developed for, and employed in, producing a feasible next generation of energy storage and conversion devices. The book is broken up into three sections, covering Energy Storage, Energy Conversion and Advanced Concepts. It will be an important reference for researchers, engineers and students who want to gain extensive knowledge in green and/or sustainable functional materials and their applications. Provides a concise resource for readers interested in sustainable and green functional materials for energy conversion and storage devices Emphasizes sustainable and green concepts in the design of energy devices based on renewable functional materials Presents a survey of both the challenges and opportunities available for renewable functional materials in the development of energy devices

This open access book presents the proceedings of the 3rd Indo-German Conference on Sustainability in Engineering held at Birla Institute of Technology and Science, Pilani, India, on September 16–17, 2019. Intended to foster the synergies between research and education, the conference is one of the joint activities of the BITS Pilani and TU Braunschweig conducted under the auspices of Indo-German Center for Sustainable Manufacturing, established in 2009. The book is divided into three sections: engineering, education and entrepreneurship, covering a range of topics, such as renewable energy forecasting, design & simulation, Industry 4.0, and soft & intelligent sensors for energy efficiency. It also includes case studies on lean and green manufacturing, and life cycle analysis of ceramic products, as well as papers on teaching/learning methods based on the use of learning factories to improve students' problem-solving and personal skills. Moreover, the book discusses high-tech ideas to help the large number of unemployed engineering graduates looking for jobs become tech entrepreneurs. Given its broad scope, it will appeal to academics and industry professionals alike.

This book describes the physical operation of the Tunnel Field-effect Transistor (TFET) and circuits built with this device. Whereas the majority of publications on TFETs describe in detail the device, its characteristics, variants and performance, this will be the first book addressing TFET integrated circuits (TFET ICs). The authors describe the peculiarities of TFET ICs and their differences with MOSFETs. They also develop and analyze a number of logic circuits and memories. The discussion also includes complex circuits combining CMOS and TFET, as well as a potential fabrication process in Silicon.

This book gathers selected research papers presented at the Second International Conference on Energy Systems, Drives and Automations (ESDA 2019), held in Kolkata on 28–29 December 2019. It covers a broad range of topics in the fields of renewable energy, power

management, drive systems for electrical machines and automation. Also discussing a variety of related tools and techniques, the book offers a valuable resource for researchers, professionals and students in electrical and mechanical engineering disciplines.

The book comprises selected papers presented at the International Conference on Advanced Computing, Networking and Informatics (ICANI 2018), organized by Medi-Caps University, India. It includes novel and original research work on advanced computing, networking and informatics, and discusses a wide variety of industrial, engineering and scientific applications of the emerging techniques in the field of computing and networking.

General Knowledge is an important section of several competitive exams. Keeping an updated knowledge of it helps not only in exams, but at every aspects of life. General Knowledge 2020 has been revised for aspirants preparing for various upcoming exams to enhance eir general awareness so at ey can tackle e questions asked from numerous areas. It covers key subjects including History, Geography, Indian Polity, Indian Economy, General Science, and General Knowledge, wi latest facts and updates supported by figures, graphics and tables. It also provides a highly useful section on Current Affairs at e beginning which promotes factual knowledge from recent happening occurred at different areas. Providing accurate, perfect and complete coverage of facts, it is a complete general knowledge book, useful for e preparation of SSC, Bank, Railway, Police, NDA/CDS and various oer competitive exams. TOC Current Affairs, Indian History, Geography, Indian Polity, Indian Economy, General Science, General Knowledge

Divided into four parts: circuits, electronics, digital systems, and electromagnetics, this text provides an understanding of the fundamental principles on which modern electrical engineering is based. It is suitable for a variety of electrical engineering courses, and can also be used as a text for an introduction to electrical engineering.

Engineering Physics, 2e, provides a comprehensive overview of the subject for first year engineering students. It provides an excellent coverage of the syllabus for all major universities. The book emphasizes on tutorial approach (teach-by-example) towards the subject. Ample solved examples and rich pedagogical pool will help the students understand the subject matter and prepare them for the questions asked in examination. Salient Features:

- Revised chapter on Nanoscience and Nanotechnology in view of recent advances in the field
- New chapter on Simple Harmonic Motion and Sound Waves - Revised and updated topics like Sound Waves and Acoustics of Buildings, Applied Nuclear Physics and Quantum Mechanics - New topics on Ultrasonic Waves and Their Absorption, Length Contraction and Time Dilation - Rich pool of pedagogy -- Solved Examples : 540 -- Objective Type Questions : 480+ -- Short Answer Questions : 222 -- Practice Problems : 560 -- Unsolved Questions : 132
- Resistivity -- Carrier and doping density -- Contact resistance and Schottky barriers -- Series resistance, channel length and width, and threshold voltage -- Defects -- Oxide and interface trapped charges, oxide thickness -- Carrier lifetimes -- Mobility -- Charge-based and probe characterization -- Optical characterization -- Chemical and physical characterization -- Reliability and failure analysis.

Pratiyogita Darpan (monthly magazine) is India's largest read General Knowledge and Current Affairs Magazine. Pratiyogita Darpan (English monthly magazine) is known for quality content on General Knowledge and Current Affairs. Topics ranging from national and international news/ issues, personality development, interviews of examination toppers, articles/ write-up on topics like career, economy, history, public administration, geography, polity, social, environment, scientific, legal etc, solved papers of various examinations, Essay

and debate contest, Quiz and knowledge testing features are covered every month in this magazine.

Continuing the tradition of the best selling textbooks, this first edition "Engineering Thermodynamics" is a comprehensive reference to the broad spectrum of thermodynamics, encapsulating the theoretical and practical aspects of the field. The author addresses a myriad of topics, covering both traditional and innovative approaches. Additionally, the book includes numerous tables Handbook of Physics Formulae Book For IIT-JEE, NEET, KVPY, NTSE, Olympiad and all other Engineering Entrance Exams Many excellent books are available in the market & each of them represents the subject matter in a highly explanatory manner. However, the students preparing for the competitive examinations also need a comprehensive book on formulae for quick reference and revision. This hand-book of Physics Formulae, therefore, will address this need of students. This little book is an attempt to present the basic formulae in a quick reference format. A student may find this book as a handy aid for gaining rapid insight into the new formulae. Whether a student is doing exercises, homework, or preparing for the tests, this book will give them a quick easy reference to the formulae. The book contains most of the formulae from the syllabus of competitive examination, covering all the topics. Additionally, a systematic index incorporated at the beginning of the hand-book allows a user to locate the required formulae swiftly and simply. We have tried our best to keep errors out of this book. Though we shall be grateful to the readers if they point out any errors and/or make constructive suggestions. We wish to utilize the opportunity to place on record our special thanks to all members of the Content Development team for their efforts to create this wonderful book. Career Point Ltd, Kota (Rajasthan)

Emerging Technologies in Computing reviews the past, current, and future needs of emerging technologies in the computer science field, and discusses the importance of appropriate practices and advances, as well as their impact. It outlines principles, challenges and applications, as well as issues involved in the digital age. Key Features: includes high-quality research work by academics and industrial experts in the field of computing. includes case studies related to Artificial Intelligence, Blockchain, Internet of Things, Multimedia Big data, Blockchain, Augmented reality, Data Science, Robotics, Cybersecurity, 3D printing, Voice Assistants and Chat bots, and future communication networks. serves as a valuable reference guide for anyone seeking knowledge about the future of computing. With the rapid development of technologies, it becomes increasingly crucial to remain up to date. This book provides a clear overview for all those who have an interest in emerging computing technologies and their impacts on society.

The rapid growth of modern industry has resulted in a growing demand for construction materials with excellent operational properties. However, the improved features of these materials can significantly hinder their manufacture

and, therefore, they can be defined as hard-to-cut. The main difficulties during the manufacturing/processing of hard-to-cut materials are attributed especially to their high hardness and abrasion resistance, high strength at room or elevated temperatures, increased thermal conductivity, as well as resistance to oxidation and corrosion. Nowadays, the group of hard-to-cut materials is extensive and still expanding, which is attributed to the development of a novel manufacturing techniques (e.g., additive technologies). Currently, the group of hard-to-cut materials mainly includes hardened and stainless steels, titanium, cobalt and nickel alloys, composites, ceramics, as well as the hard clads fabricated by additive techniques. This Special Issue, "Advances in Hard-to-Cut Materials: Manufacturing, Properties, Process Mechanics and Evaluation of Surface Integrity", provides the collection of research papers regarding the various problems correlated with hard-to-cut materials. The analysis of these studies reveals the primary directions regarding the developments in manufacturing methods, characterization, and optimization of hard-to-cut materials.

This book provides an overview of facts, theories and methods from hydrology, geology, geophysics, law, ethics, economics, ecology, engineering, sociology, diplomacy and many other disciplines with relevance for concepts and practice of water resources management. It provides comprehensive, but also critical reading material for all communities involved in the ongoing water discourses and debates. The book refers to case studies in the form of boxes, sections, or as entire chapters. They illustrate success stories, but also lessons to be remembered, to avoid repeating the same mistakes. Based on consolidated state-of-the-art knowledge, it has been conceived and written to attract a multidisciplinary audience. The aim of this handbook is to facilitate understanding between the participants of the international water discourse and multi-level decision making processes. Knowing more about water, but also about concepts, methods and aspirations of different professional, disciplinary communities and stakeholders professionalizes the debate and enhances the decision making. The book in its present form is due to my interaction with the students for quite a long time. It had been my long-cherished desire to write a book covering most of the topics that form the syllabii of the Engineering and Science students at the degree level. Many students, although able to understand the various topics of the books, may not be able to put their knowledge to use. For this purpose a number of questions and problems are given at the end of each chapter.

B.Sc. Practical Physics

Biopolymer-Based Formulations: Biomedical and Food Applications presents the latest advances in the synthesis and characterization of advanced biopolymeric formulations and their state-of-the-art applications across biomedicine and food science. Sections cover the fundamentals, applications, future trends, environmental, ethical and medical considerations, and biopolymeric architectures that are organized in nano, micro and macro scales. The final section of the book focuses on novel applications and recent developments. This

book is an essential resource for researchers, scientists and advanced students in biopolymer science, polymer science, polymer chemistry, polymer composites, plastics engineering, biomaterials, materials science, biomedical engineering, and more. It will also be of interest to R&D professionals, scientists and engineers across the plastics, food, biomedical and pharmaceutical industries. Provides in-depth coverage of methods for the characterization of the physical properties of biopolymeric architectures Supports a range of novel applications, including scaffolds, implant coatings, drug delivery, and nutraceutical encapsulation systems Includes the use of experimental data and mathematical modeling, thus enabling the reader to analyze and compare the properties of different polymeric gels

Plants and microbes have co-evolved and interacted with each other in nature. Understanding the complex nature of the plant-microbe interface can pave the way for novel strategies to improve plant productivity in an eco-friendly manner. The microbes associated with plants, often called plant microbiota, are an integral part of plant life. The significance of the plant microbiome is a reliable approach toward sustainability to meet future food crises and rejuvenate soil health. Profiling plant-associate microbiomes (genome assemblies of all microbes) is an emerging concept in understanding plant-microbe interactions. Microbiota extends the plant capacity to acclimatize fluctuating environmental conditions through several mechanisms. Thus, unraveling the mystery of plant-microbe dynamics through latest technologies to better understand the role of metabolites and signal pathway mechanisms is very important. This book shares the latest insight on omics technologies to unravel plant-microbe dynamic interactions and other novel phytotechnologies for cleaning contaminated soils. Besides, it also provides brief insight on the recently discovered clustered regularly interspaced short palindromic repeats CRISPR-Cas9, which is a genome editing tool to explore plant-microbe interactions and how this genome editing tool helps to improve the ability of microbes/plants to combat abiotic/biotic stresses.

This book brings together selective and specific chapters on nanoscale carbon and applications, thus making it unique due to its thematic content. It provides access to the contemporary developments in carbon nanomaterial research in electronic applications. Written by professionals with thorough expertise in similar broad area, the book is intended to address multiple aspects of carbon research in a single compiled edition. It targets professors, scientists and researchers belonging to the areas of physics, chemistry, engineering, biology and medicine, and working on theory, experiment and applications of carbon nanomaterials. The book discusses the properties, characteristics, applications and limitations of engineering materials. Its emphasis is on materials available locally. It also incorporates useful data from the manufacturer's catalogues. The book gives a comprehensive coverage of the subject, with numerous illustrations for easy understanding. ISI standards are quoted wherever applicable. The book will

server as an excellent text for diploma, Degree and AMIE Students. It will also be a valuable reference book for industrial organizations.

This book presents the proceedings of the International Conference on Recent Trends in Materials and Devices, which was conceived as a major contribution to large-scale efforts to foster Indian research and development in the field in close collaboration with the community of non-resident Indian researchers from all over the world. The research articles collected in this volume - selected from among the submissions for their intrinsic quality and originality, as well as for their potential value for further collaborations - document and report on a wide range of recent and significant results for various applications and scientific developments in the areas of Materials and Devices. The technical sessions covered include photovoltaics and energy storage, semiconductor materials and devices, sensors, smart and polymeric materials, optoelectronics, nanotechnology and nanomaterials, MEMS and NEMS, as well as emerging technologies.

An in-depth review of sustainable concepts in water resources management under climate change Climate change continues to intensify existing pressures in water resources management, such as rapid population growth, land use changes, pollution, damming of rivers, and many others. Securing a reliable water supply—critical for achieving Sustainable Development Goals (SDGs)—requires understanding of the relation between finite water resources, climate variability/change, and various elements of sustainability. *Water, Climate Change, and Sustainability* is a timely and in-depth examination of the concept of sustainability as it relates to water resources management in the context of climate change risks. Featuring contributions by global authors, this edited volume is organized into three sections: Sustainability Concepts; Sustainability Approaches, Tools, and Techniques; and Sustainability in Practice. Detailed chapters describe the linkage between water and sustainable development, highlight the development and use of new measuring and reporting methods, and discuss the implementation of sustainability concepts in various water use sectors. Topics include localizing and mainstreaming global water sustainability initiatives, resilient water infrastructure for poverty reduction, urban water security for sustainable cities, climate actions and challenges for sustainable ecosystem services, and more. This important resource: Reviews contemporary scientific research and practical applications in the areas of water, climate change and sustainability in different regions of the world Discusses future directions of research and practices in relation to expected patterns of climate changes Covers a wide range of concepts, theories, and perspectives of sustainable development of water resources Features case studies of field and modelling techniques for analyzing water resources and evaluating vulnerability, security, and associated risks Discusses practical applications of water resources in contexts such as food security, global health, clean energy, and climate action *Water, Climate Change, and Sustainability* is an invaluable resource for policy

makers water managers, researchers, and other professionals in the field, and an ideal text for graduate students in hydrogeology, climate change, geophysics, geochemistry, geography, water resources, and environmental science.

This book focuses on the latest advances in the field of nanomaterials and their applications, and provides a comprehensive overview of the state-of-the-art of research in this rapidly developing field. The book comprises chapters exploring various aspects of nanomaterials. Given the depth and breadth of coverage, the book offers a valuable guide for researchers and students working in the area of nanomaterials.

There are more than one billion documents on the Web, with the count continually rising at a pace of over one million new documents per day. As information increases, the motivation and interest in data warehousing and mining research and practice remains high in organizational interest. The Encyclopedia of Data Warehousing and Mining, Second Edition, offers thorough exposure to the issues of importance in the rapidly changing field of data warehousing and mining. This essential reference source informs decision makers, problem solvers, and data mining specialists in business, academia, government, and other settings with over 300 entries on theories, methodologies, functionalities, and applications.

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