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Wireless communication has emerged as an independent discipline in the past decades. Everything from cellular voice telephony to wireless data transmission using wireless sensor networks has profoundly impacted the safety, production, and productivity of industries and our lifestyle as well. After a decade of exponential growth, the wireless industry is one of the largest industries in the world. Therefore, it would be an injustice if the wireless communication is not explored for mining industry. Underground mines, which are characterized by their tough working conditions and hazardous environments, require fool-proof mine-wide communication systems for smooth functioning of mine workings and ensuring better safety. Proper and reliable communication systems not only save the machine breakdown time but also help in immediate passing of messages from the vicinity of underground working area to the surface for day-to-day normal mining operations as well as for speedy rescue operations in case of disaster. Therefore, a reliable and effective communication system is an essential requisite for safe working, and maintaining requisite production and productivity of underground mines. Most of the existing systems generally available in underground mines are based on line (wired) communication principle, hence these are unable to withstand in the disaster conditions and difficult to deploy in inaccessible places. Therefore, wireless communication is an indispensable, reliable, and convenient system and essential in case of day-to-day normal duty or disaster situations.

Presents various facets of laser surface treatment, emphasizing technologies that are expected to be important soon. The topics include fundamentals and types, surface texturing, heat treatment, metallic and intermetallic coating, the laser deposition of ceramic coatings, polymeric coatings, the cor

This book presents selected articles from the 3rd International Conference on Nanomaterials and Advanced Composites (NAC 2022) held at Tokushima University in Japan. This event brought together leading researchers and professionals from academia and industry to present their latest findings and served as a platform for the exchange of ideas aiming for further collaborations. Participants from over six countries shared their most up-to-date knowledge in their respective fields covering nanotechnology, nanomaterials, and advanced composites. Even though this conference had both on-site and remotely connected attendees, the main purpose to promote the networking among academics, engineers, and students was fully achieved. This book is part of the effort to disseminate the knowledge gathered during this meeting. The collection of articles covers topics on advanced composites, nanomaterials, ecological materials, energy, microfluidics, crystal growth, and photocatalysis. This representative account of the conference is intended to provide new and useful insights for prospective studies in materials science and engineering.

For cracking any competitive exam one need to have clear guidance, right kind of study material and thorough practice. When the preparation is done for the exams like JEE Main and NEET one need to have clear concept about each and every topic and understanding of the examination pattern are most important things which can be done by using the good collection of Previous Years' Solved Papers. Chapterwise Topicwise Solved Papers PHYSICS for Engineering Entrances is a master collection of exams questions to practice for JEE Main & Advanced 2020, which have been consciously revised as per the latest pattern of exam. It carries 15 Years of Solved Papers [2019-2005] in both Chapterwise and topicwise manner by giving the full coverage to syllabus. This book is divided into parts based on Class XI and XII NCERT syllabus covering each topic. This book gives the complete coverage of Questions asked in JEE Main & Advanced, AIEEE, IIT JEE & BITSAT, UPSEE, MANIPAL, EAMCET, WB JEE, etc., Thorough practice done from this book will the candidates to move a step towards their success. TABLE OF CONTENT Part I Based on Class XI NCERT – Units and Measurements, Motion in a Straight Line, Motion in a Plane I (Vectors), Motion in a Plane (Two and Three Dimensions), Laws of Motion, Work, Energy and Power, Systems of Particles and Rotational Motion, Gravitation, Mechanical Properties of Solids, Mechanical Properties of Fluids, Thermal Properties of Matter, Thermodynamics, Kinetic Theory of Gases, Oscillations, Waves, Part II Based on Class XII NCERT – Electrostatics I, Electrostatics II (Capacitance), Current Electricity, Current and Electricity II, Moving Charges and Magnetism, Magnetism and Matter, Electromagnetic Induction, Alternating Current, Electromagnetic Waves, Ray Optics, Wave Optics, Dual Nature of Radiation & Matter, Atoms and Nuclei, Semiconductor Devices, Communication System, Questions Asked in JEE Main 2015, Solved Papers 2016 (JEE Main, BITSAT, AP EAMCET, TS EAMCET, GGSIPU), Solved Papers 2017 (JEE

Main & Advanced, BITSAT, VIT & WBJEE), Solved Papers 2018 (JEE Main & Advanced, BITSAT, WBJEE & KCET), Solved Papers 2019 (JEE Main & Advanced, BITSAT & WBJEE).

Issues in Structural and Materials Engineering: 2011 Edition is a ScholarlyEditions™ eBook that delivers timely, authoritative, and comprehensive information about Structural and Materials Engineering. The editors have built Issues in Structural and Materials Engineering: 2011 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Structural and Materials Engineering in this eBook to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Structural and Materials Engineering: 2011 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at <http://www.ScholarlyEditions.com/>.

It is now more important than ever to implement approaches and methods that can be effective in extracting meaningful information from large data sets. Although data sets may be available for different aspects of society, we may not assess the intrinsic characteristics of their behavior effectively. Additionally, frameworks are needed that can store, process, and represent the data in such a manner that can be of practical significance. Interdisciplinary Approaches to Information Systems and Software Engineering is an essential reference publication that assesses the significance of robust information systems in characterizing events of varying nature and dimensions. Additionally, the book includes studies on the development and application of decision-making and prediction modeling frameworks using different approaches such as agent-based modeling, spatial decision support systems, and spatial data mining. Covering topics such as management information systems, knowledge discovery, and mathematical analysis, this book is ideal for professionals, researchers, and academicians in various disciplines including computer science, information technology, geographical information systems, remote sensing, and earth system sciences.

Metal oxide nanoparticles exhibit potential applications in energy and environmental fields, such as solar cells, fuel cells, hydrogen energy, and energy storage devices. This book covers all points from synthesis, properties, and applications of transition metal oxide nanoparticle materials in energy storage and conversion devices. Aimed at graduate-level students and researchers associated with the energy and environment sector, this book addresses the application of nontoxic and environmentally friendly metal oxide materials for a clean environment and deals with synthesis properties and application metal oxides materials for energy conversion, energy storage, and hydrogen generation.

According to the syllabus of 1st semester University of Mumbai.

This work focuses on designing multiband-printed single/Multiple Input Multiple Output (MIMO) CP antennas for WLAN/V2X and NR Sub-6GHz 5G applications. It also delves into the design and implementation of a Four-Port MIMO antenna for wireless applications, addressing theoretical foundations and challenges. Additionally, the book explores critical aspects of software-defined radios (SDR), including modulation, signal processing, radio systems, TX/RX blocks, SDR-enabled phased arrays, and beam hopping techniques, with relevance to 5G, 6G, and IoT applications. Features: • Explores advancements in planar monopole antennas, including bandwidth enhancement techniques. • Analyzes innovative antenna design structures, like miniaturized and conformal monopole antennas; and discusses modeling and implementation. • Spotlights WLAN and Wi-Fi 6/6E antenna design for next-gen laptops with practical insights. • Addresses the use of triple-band antenna arrays for MIMO applications in laptops. • Focuses on planar antenna advancements for diverse wireless bands and applications. • Explores multiband-printed single/MIMO CP antennas for WLAN/V2X and NR Sub-6GHz 5G. • Covers the design and implementation of a Four-Port MIMO antenna for wireless applications, including theoretical foundations and challenges. • Explores SDR, modulation, signal processing, radio systems, TX/RX blocks, SDR-enabled phased arrays, and beam hopping techniques for 5G, 6G, and IoT applications. This book is aimed at graduate students and researchers in electrical and electronic engineering, antennas, and wireless communication systems.

This book represents a collection of papers presented at the 2nd World Congress on Integrated Computational Materials Engineering (ICME), a specialty conference organized by The Minerals, Metals & Materials Society (TMS), and held in 2013.

Contributed articles presented at the Conference.

The application of sustainability practices at the system level begins with the supply chain. In the business realm, incorporating such practices allows organizations to redesign their operations more effectively. Emerging Applications in Supply Chains for Sustainable Business Development is a pivotal reference source that provides vital research on the models, strategies, and analyses that are essential for developing and managing a sustainable supply chain. While highlighting topics such as agile manufacturing and the world food crisis, this publication is ideally designed for business managers, academicians, business practitioners, researchers, academicians, and students seeking current research on sustainable supply chain management.

Dear students, I am extremely happy to come out with the first edition of "Engineering physics" for you. The topics within the chapters have been arranged in a proper sequence to ensure smooth flow of the subject. I am sure that this book will complete all your needs for this subject. I am thankful to Dr Sudhir Kumar (CCS Univ.Meerut), Shri Naresh Kumar (Registrar, Govt. Engg. College Chandpur Bijnor), Dr R.K.Shukla (Prof.& Head) Department of Physics Harcourt Buttlar Technical University Kanpur (up), Dr B.P.Singh (Prof.& Head) Department of Physics Institute of basic science khandari campus Agra,Dr Ashok Kumar (Prof.& Ex.Director) HBTU Kanpur, Dr Satendra Sharma (Prof. & Dean in science) Yobe State University Naizariya, Dr Pradeep Kumar (Principal) DAV (PG) Budhana Muzzarfarnagar up, Dr Satyavir Singh (Asso.Prof.& Head) Dept.of Chemistry DAV(PG) Budhana M.Nagar,Dr P.S.Negi (Prof.& Head) Meerut College Meerut, Prof. Ankit Kumar Dept.of Civil REC Bijnor, Prof.Sudhir Goswami Deptt..of IT REC Bijnor,Dr Pravesh Kumar, Asst.Prof.REC Bijnor, Dr Hemant Kumar,Asst.Prof Deptt. Of Physics, REC Bijnor, Dr Anjani Kumar IIT Kanpur Deptt..of Physics,Dr S.K Sharma Professor of Physics HBTU Kanpur,Er K.K.Singh (Er.RBI Patna),Er Sandeep Maheswary (Offset Printing Press) Software Er Vinay Baghel, Netherland, Dr V K Gupta (Prof. Physics) Dr Anil Kumar Sharma (Prof .Botany), Dr O.P.Singh (Prof .Botany), Dr Vikas Katoch (Prof & Head) Deptt..of Physics RKGIT Ghazibad,Dr Sangeeta Chaudhary (Prof.& Head) Deptt..of Sanscrite DAV (PG) Budhana M.Nagar, Dr R.Jha (Prof.& Head) Sky Line Institute Greater Noida,Elder Brother Shri R.P. Singh (Railway Engg. Deptt.), Yonger Brother K.P Singh, Prof. Ajay Kumar Yadav Computer science deptt. Pune .and all my dear students. I am also thankful to the staff members of Uttakarsh Publication and others for their effects to make this book as good as it is. I am also thankful to my Family members and relatives for their Patience and encouragement. Authror

This book proposes new technologies and discusses future solutions for ICT design infrastructures, as reflected in high-quality papers presented at the 7th International Conference on ICT for Sustainable Development (ICT4SD 2022), held in Goa, India, on 29–30 July 2022. The book covers the topics such as big data and data mining, data fusion, IoT programming toolkits and frameworks, green communication systems and network, use of ICT in smart cities, sensor networks and embedded system, network and information security, wireless and optical networks, security, trust, and privacy, routing and control protocols, cognitive radio and networks, and natural language processing. Bringing together experts from different countries, the book explores a range of central issues from an international perspective.

This book brings together ancient spiritual wisdom and modern science and philosophy to address age-old questions regarding our existence, free will and the nature of conscious awareness. Stuart Hameroff MD Professor, Anesthesiology and Psychology, and Director, Center for Consciousness Studies The University of Arizona, Tucson, Arizona This book presents a rich, broad-ranging overview of contemporary research and scholarship into consciousness and the self.... It is ... to their credit that the editors have assembled a highly stimulating set of scholars whose expertise cover all the relevant areas. I strongly recommend the book to anyone with an interest in understanding the directions in which contemporary thinking about the nature of consciousness is headed. B. Les Lancaster Emeritus Professor of Transpersonal Psychology Liverpool John Moores University, UK This volume is a collection of 23 essays that contribute to the emerging discipline of consciousness studies with particular focus on the concept of the self. The essays together argue that to understand consciousness is to understand the self that beholds consciousness. Two broad issues are addressed in the volume: the place of the self in the lives of humans and nonhuman primates; and the interrelations between the self and consciousness, which contribute to the understanding of cognitive functions, awareness, free will, nature of reality, and the complex experiential and behavioural attributes of consciousness. The book presents cutting-edge and original work

from well-known authors and scholars of philosophy, psychiatry, behavioural sciences and physics. This is a pioneering attempt to present to the reader multiple ways of conceptualizing and thus understanding the relation between consciousness and self in a nuanced manner.

This text covers topics which are still at research level, such as holography, production of three-dimensional photographs, superconductivity, fibre optics, and communications. Each chapter is accompanied by problems and question papers.

Leaders in the Making provides in-depth interviews of thirty HR leaders (drawn from public as well as private sectors), including stalwarts like Santrupt Misra, Rajeev Dubey, Aquil Busrai, Anil Sachdev, N.S. Rajan and Anil Khandelwal. These life stories provide highlights of early childhood, education and career over the years. They include the points of inflexion, major influencers and lessons learnt to become who they became. The authors provide an analysis of these thirty stories to establish a pattern of the life journeys, competencies and values these leaders displayed. The book has excellent lessons for parents, heads of schools and colleges, teachers, HR leaders and CEOs. The authors have included self-help tools to assess competencies, values and the careers of readers to plan for self-development.

Engineering Physics has been written keeping in mind the first year engineering students of all branches of various Indian universities. The second edition provides more examples with solution. It also offers university question papers of recent years with model solutions.

Separation and purification processes play a critical role in biorefineries and their optimal selection, design and operation to maximise product yields and improve overall process efficiency. Separations and purifications are necessary for upstream processes as well as in maximising and improving product recovery in downstream processes. These processes account for a significant fraction of the total capital and operating costs and also are highly energy intensive. Consequently, a better understanding of separation and purification processes, current and possible alternative and novel advanced methods is essential for achieving the overall techno-economic feasibility and commercial success of sustainable biorefineries. This book presents a comprehensive overview focused specifically on the present state, future challenges and

opportunities for separation and purification methods and technologies in biorefineries. Topics covered include: Equilibrium Separations: Distillation, liquid-liquid extraction and supercritical fluid extraction. Affinity-Based Separations: Adsorption, ion exchange, and simulated moving bed technologies. Membrane Based Separations: Microfiltration, ultrafiltration and diafiltration, nanofiltration, membrane pervaporation, and membrane distillation. Solid-liquid Separations: Conventional filtration and solid-liquid extraction. Hybrid/Integrated Reaction-Separation Systems: Membrane bioreactors, extractive fermentation, reactive distillation and reactive absorption. For each of these processes, the fundamental principles and design aspects are presented, followed by a detailed discussion and specific examples of applications in biorefineries. Each chapter also considers the market needs, industrial challenges, future opportunities, and economic importance of the separation and purification methods. The book concludes with a series of detailed case studies including cellulosic bioethanol production, extraction of algae oil from microalgae, and production of biopolymers. Separation and Purification Technologies in Biorefineries is an essential resource for scientists and engineers, as well as researchers and academics working in the broader conventional and emerging bio-based products industry, including biomaterials, biochemicals, biofuels and bioenergy.

This book focuses on the development of physical parameterization over the last 2 to 3 decades and provides a roadmap for its future development. It covers important physical processes: convection, clouds, radiation, land-surface, and the orographic effect. The improvement of numerical models for predicting weather and climate at a variety of places and times has progressed globally. However, there are still several challenging areas, which need to be addressed with a better understanding of physical processes based on observations, and to subsequently be taken into account by means of improved parameterization. And this is all the more important since models are increasingly being used at higher horizontal and vertical resolutions. Encouraging debate on the cloud-resolving approach or the hybrid approach with parameterized convection and grid-scale cloud microphysics and its impact on models' intrinsic predictability, the book offers a motivating reference guide for all researchers whose work involves physical parameterization problems and numerical models.

Made Easy Series is developed with an objective of meeting the re-

quirement of books that cover syllabi of important core engineering subjects focussing completely on the manner in which concepts will be tested in examinations. Books in this series are designed in a question-and-answer format to cater to undergraduate students of all major technological universities and to equip them with the desired knowledge in a simple yet comprehensive manner. They explore all the important concepts of the syllabi with the help of solved questions and numerical problems of previous years' question papers of these universities. Apart from being extremely student-friendly and lucid, the books in this series are rich in pedagogical features such as brief point-wise discussion of fundamental concepts, theoretical questions with answers, solved numerical problems, and objective questions and exercises for further practice (all taken from previous years' question papers) that aid students in preparing well for university examinations. Because of the fiercely competitive nature of the current academic scenario and the large number of books available for each topic, it is extremely difficult for students to spend too much time in an in-depth study of each book, especially during examinations when they are hard-pressed for time. Made Easy Series will empower students to prepare for university examinations in a systematic and thorough manner in a limited amount of time. The syllabi of the following universities have been covered in the book: UPTU, Anna Univ., JNTU, VTU, RTU, RGTU, WBUT, BPUT, PTU, Pune Univ., Mumbai Univ.

Polymer composite materials are of prime importance and play a vital role in numerous applications. 3D printed polymer composites have been adopted by the aerospace, medical, and automobile industries. However, many challenges and opportunities for the development and application of 3D printed polymer composites have yet to be covered. Development, Properties, and Industrial Applications of 3D Printed Polymer Composites concentrates on cutting-edge technologies and materials as well as processing methods and industrial applications. It further discusses case studies, process issues, challenges, and more. Covering topics such as additive manufacturing, medical engineering, and fused deposition modeling, this premier reference source is essential for manufacturers, engineers, business leaders and executives, hospital administrators, students and faculty of higher education, librarians, researchers, and academicians.