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FGQQTb - RICHARD QUINCY

Using a vectors-first approach, Elements of Electromagnetics, Seventh Edition, covers electrostatics, magnetostatics, fields, waves, and applications like transmission lines, waveguides, and antennas. The text also provides a balanced presentation of time-varying and static fields, preparing students for employment in today's industrial and manufacturing sectors. Streamlined to facilitate student understanding, Elements of Electromagnetics, Seventh Edition, features worked examples in every chapter that explain how to use the theory presented in the text to solve different kinds of problems. It also covers numerical methods, including MATLAB and vector analysis, to help students analyze situations that they are likely to encounter in industry practice.

Taking a vector-first approach, this text provides a balanced presentation of a host of topics including electrostatics, magnetostatics, fields, waves, and applications like transmission lines, waveguides, and antennas. The new edition includes new Application Notes detailing real-world connections, a revised math pre-test for professors to assess students' mathematical skills, and new and updated problems.

This book is designed to serve as a textbook for UG and PG students of Electronics and Communication, Electronics and Electrical, Electronics & Instrumentation and Telecommunication Engineering branches. It provides a thorough understanding of the electromagnetic theory and their properties, application and also the modern trends in Electromagnetism in detail. Book also describes transmission lines, wave guides, as well as the effects of EMI/EMC, including impedance matching and antennas. Written in an easy-to-understand manner, the book includes several illustrative examples, objective-type questions and exercise Questions to reinforce the theoretical understanding of subject. Appendices provide information and expressions as well as design data for references.

Demystifies the operation of electric machines by bridging electromagnetic fields, electric circuits, numerical analysis, and computer programming. Ideal for graduates and senior undergraduates taking courses on all aspects of electric machine design and control, and accompanied by downloadable Python code and instructor solutions.

This book provides students with a thorough theoretical understanding of electromagnetic field equations and it also treats a large number of applications. The text is a comprehensive two-semester textbook. The work treats most topics in two steps – a short, introductory chapter followed by a second chapter with in-depth extensive treatment; between 10 to 30 applications per topic; examples and exercises throughout the book; experiments, problems and summaries. The new edition includes: modifications to about 30-40% of the end of chapter problems; a new introduction to electromagnetics based on behavior of charges; a new section on units; MATLAB tools for solution of problems and demon-

stration of subjects; most chapters include a summary. The book is an undergraduate textbook at the Junior level, intended for required classes in electromagnetics. It is written in simple terms with all details of derivations included and all steps in solutions listed. It requires little beyond basic calculus and can be used for self-study. The wealth of examples and alternative explanations makes it very approachable by students. More than 400 examples and exercises, exercising every topic in the book Includes 600 end-of-chapter problems, many of them applications or simplified applications Discusses the finite element, finite difference and method of moments in a dedicated chapter

Based on familiar circuit theory and basic physics, this book serves as an invaluable reference for both analog and digital engineers alike. For those who work with analog RF, this book is a must-have resource. With computers and networking equipment of the 21st century running at such high frequencies, it is now crucial for digital designers to understand electromagnetic fields, radiation and transmission lines. This knowledge is necessary for maintaining signal integrity and achieving EMC compliance. Since many digital designers are lacking in analog design skills, let alone electromagnetics, an easy-to-read but informative book on electromagnetic topics should be considered a welcome addition to their professional libraries. Covers topics using conceptual explanations and over 150 lucid figures, in place of complex mathematics Demystifies antennas, waveguides, and transmission line phenomena Provides the foundation necessary to thoroughly understand signal integrity issues associated with high-speed digital design

This book is aimed to provide the basic preparatory material to the students who wish to study the electromagnetism as part of their course study. In the discussion of different concepts of electromagnetism, use of vectors and coordinates systems are unavoidable. Most of the books avoid details of these topics due to scope of the book or the syllabus. Most of the students take it for granted the formulae stated in the book. Some students when try to understand the three dimensional aspects of the coordinate systems they find some confusion. To help student clear their concepts on these aspects and to answer how different readily given expressions are derived we have come forward to write this book. The book starts discussion from very basic definitions of vector terminology and then relates this with the coordinate systems. Most needed coordinate systems are Cartesian, cylindrical and spherical coordinate systems. These systems are discussed from the basic level and culminate into the derivations of the longer expressions. As problems are already available in the books of similar nature authors have not included them in this book. It is hoped that this book would clear most of the concepts needed to study the electromagnetism.

Describing and evaluating the basic principles and methods of subsurface sensing and imaging, Introduction to Subsurface Imaging is a clear and comprehensive treatment that links theory to a

wide range of real-world applications in medicine, biology, security and geophysical/environmental exploration. It integrates the different sensing techniques (acoustic, electric, electromagnetic, optical, x-ray or particle beams) by unifying the underlying physical and mathematical similarities, and computational and algorithmic methods. Time-domain, spectral and multisensor methods are also covered, whilst all the necessary mathematical, statistical and linear systems tools are given in useful appendices to make the book self-contained. Featuring a logical blend of theory and applications, a wealth of color illustrations, homework problems and numerous case studies, this is suitable for use as both a course text and as a professional reference.

Accompanying CD-ROM contains a MATLAB tutorial.

Fundamentals of Applied Electromagnetics is intended for use in one- or two-semester courses in Electromagnetics. Widely acclaimed both in the U.S. and abroad, this authoritative text bridges the gap between circuits and electromagnetics material. Coverage begins with transmission lines, leading students from familiar concepts into more advanced topics and applications. A student-friendly approach, full-color figures and images, and a set of interactive simulations will help students develop a deeper understanding of electromagnetic concepts and applications.

Indoor Wireless Communications: From Theory to Implementation provides an in-depth reference for design engineers, system planners and post graduate students interested in the vastly popular field of indoor wireless communications. It contains wireless applications and services for in-building scenarios and knowledge of key elements in the design and implementation of these systems. Technologies such as Wireless Local Area Networks, Bluetooth, ZigBee, Indoor Optical Communications, WiMAX, UMTS and GSM for indoor environments are fully explained and illustrated with examples. Antennas and propagation issues for in-building scenarios are also discussed, emphasizing models and antenna types specifically developed for indoor communications. An exhaustive survey on indoor wireless communication equipment is also presented, covering all available technologies including antennas, distribution systems, transceivers and base stations.

Focusing on reducing emissions and improving fuel economy, automotive manufacturers are developing electric vehicles (EV) to replace fuel and diesel vehicles starting in 2030 onwards. The EVs, with their green power supplies maximize environmental benefits with zero emissions thereby lowering air pollution levels. There is now an increased demand for stable electric storage systems (ESS) that are part of the design of new electric vehicles. This timely reference gives an overview of modern electrical power systems applied in the current generation of electric vehicles which require an ESS, and how these can be utilized for simultaneous power and data communication. The book starts with an introduction to the topic, before giving a summary of the green power trend for the electric vehicle market. The book then delves into the theoretical and analytical framework required to understand adaptive compensation of the magnetic inductive system (ACMIS), based on zero voltage switch (ZVS). The chapters demonstrate how these systems are used for transmitting electric power from a single-end inverter combined with a compensated network of parallel to parallel (P-P) type and an auto-tuning impedance of LC tank. The book also covers the experimental method for a multifunctional contactless power flow of the G2V mode and bidirectional outer communication and inner communication with giant magnetoresistance (GMR) effect for car parking guidance. The experiment shows how to analyze data transferring performance including the current trimming method and how to evaluate data transmission quality according to the relevant parameters. Overall the book serves to familiarize automotive engineers

and industry professionals involved in the electric vehicle market with the issues that surround wireless power charging and data transfer systems for electric vehicles, and introduces them to more coherent designs.

Electromagnetics for Engineering Students starts with an introduction to vector analysis and progressive chapters provide readers with information about dielectric materials, electrostatic and magnetostatic fields, as well as wave propagation in different situations. Each chapter is supported by many illustrative examples and solved problems which serve to explain the principles of the topics and enhance the knowledge of students. In addition to the coverage of classical topics in electromagnetics, the book explains advanced concepts and topics such as the application of multi-pole expansion for scalar and vector potentials, an in depth treatment for the topic of the scalar potential including the boundary-value problems in cylindrical and spherical coordinates systems, metamaterials, artificial magnetic conductors and the concept of negative refractive index. Key features of this textbook include: • detailed and easy-to follow presentation of mathematical analyses and problems • a total of 681 problems (162 illustrative examples, 88 solved problems, and 431 end of chapter problems) • an appendix of mathematical formulae and functions. Electromagnetics for Engineering Students is an ideal textbook for first and second year engineering students who are learning about electromagnetism and related mathematical theorems.

Advanced topics of research in field computation are explored in this publication. Contributions have been sourced from international experts, ensuring a comprehensive specialist perspective. A unity of style has been achieved by the editor, who has specifically inserted appropriate cross-references throughout the volume, plus a single collected set of references at the end. The book provides a multi-faceted overview of the power and effectiveness of computation techniques in engineering electromagnetics. In addition to examining recent and current developments, it is hoped that it will stimulate further research in the field.

This book teaches the finite-difference frequency-domain (FDFD) method from the simplest concepts to advanced three-dimensional simulations. It uses plain language and high-quality graphics to help the complete beginner grasp all the concepts quickly and visually. This single resource includes everything needed to simulate a wide variety of different electromagnetic and photonic devices. The book is filled with helpful guidance and computational wisdom that will help the reader easily simulate their own devices and more easily learn and implement other methods in computational electromagnetics. Special techniques in MATLAB® are presented that will allow the reader to write their own FDFD programs. Key concepts in electromagnetics are reviewed so the reader can fully understand the calculations happening in FDFD. A powerful method for implementing the finite-difference method is taught that will enable the reader to solve entirely new differential equations and sets of differential equations in mere minutes. Separate chapters are included that describe how Maxwell's equations are approximated using finite-differences and how outgoing waves can be absorbed using a perfectly matched layer absorbing boundary. With this background, a chapter describes how to calculate guided modes in waveguides and transmission lines. The effective index method is taught as way to model many three-dimensional devices in just two-dimensions. Another chapter describes how to calculate photonic band diagrams and isofrequency contours to quickly estimate the properties of periodic structures like photonic crystals. Next, a chapter presents how to analyze diffraction gratings and calculate the power coupled into each diffraction order. This book shows that many devices can be simulated in the context of a diffraction grating including guided--

mode resonance filters, photonic crystals, polarizers, metamaterials, frequency selective surfaces, and metasurfaces. Plane wave sources, Gaussian beam sources, and guided-mode sources are all described in detail, allowing devices to be simulated in multiple ways. An optical integrated circuit is simulated using the effective index method to build a two-dimensional model of the 3D device and then launch a guided-mode source into the circuit. A chapter is included to describe how the code can be modified to easily perform parameter sweeps, such as plotting reflection and transmission as a function of frequency, wavelength, angle of incidence, or a dimension of the device. The last chapter is advanced and teaches FDFD for three-dimensional devices composed of anisotropic materials. It includes simulations of a crossed grating, a doubly-periodic guided-mode resonance filter, a frequency selective surface, and an invisibility cloak. The chapter also includes a parameter retrieval from a left-handed metamaterial. The book includes all the MATLAB codes and detailed explanations of all programs. This will allow the reader to easily modify the codes to simulate their own ideas and devices. The author has created a website where the MATLAB codes can be downloaded, errata can be seen, and other learning resources can be accessed. This is an ideal book for both an undergraduate elective course as well as a graduate course in computational electromagnetics because it covers the background material so well and includes examples of many different types of devices that will be of interest to a very wide audience.

CD-ROM contains: Demonstration exercises -- Complete solutions -- Problem statements.

The basic objective of this highly successful text--to present the concepts of electromagnetics in a style that is clear and interesting to read--is more fully-realized in this Second Edition than ever before. Thoroughly updated and revised, this two-semester approach to fundamental concepts and applications in electromagnetics begins with vector analysis--which is then applied throughout the text. A balanced presentation of time-varying fields and static fields prepares students for employment in today's industrial and manufacturing sectors. Mathematical theorems are treated separately from physical concepts. Students, therefore, do not need to review any more mathematics than their level of proficiency requires. Sadiku is well-known for his excellent pedagogy, and this edition refines his approach even further. Student-oriented pedagogy comprises: chapter introductions showing how the forthcoming material relates to the previous chapter, summaries, boxed formulas, and multiple choice review questions with answers allowing students to gauge their comprehension. Many new problems have been added throughout the text.

A four year Electrical and Electronic engineering curriculum normally contains two modules of electromagnetic field theories during the first two years. However, some curricula do not have enough slots to accommodate the two modules. This book, *Electromagnetic Field Theories*, is designed for Electrical and Electronic engineering undergraduate students to provide fundamental knowledge of electromagnetic fields and waves in a structured manner. A comprehensive fundamental knowledge of electric and magnetic fields is required to understand the working principles of generators, motors and transformers. This knowledge is also necessary to analyze transmission lines, substations, insulator flashover mechanism, transient phenomena, etc. Recently, academics and researches are working for sending electrical power to a remote area by designing a suitable antenna. In this case, the knowledge of electromagnetic fields is considered as important tool.

Electromagnetism for Engineers: An Introductory Course, Third Edition covers the principles of electromagnetism. The book dis-

cusses electric charges at rest; steady electric currents; and the magnetic field of steady electric currents. The text also describes electromagnetic induction; the magnetic effects of iron; and electromagnetic radiation. Mechanical and other kinds of engineers and engineering students who need knowledge on electromagnetism will find the book invaluable.

The first book to focus on the electromagnetic basis of signal integrity *The Foundations of Signal Integrity* is the first of its kind—a reference that examines the physical foundation of system integrity based on electromagnetic theory derived from Maxwell's Equations. Drawing upon the cutting-edge research of Professor Paul Huray's team of industrial engineers and graduate students, it develops the physical theory of wave propagation using methods of solid state and high-energy physics, mathematics, chemistry, and electrical engineering before addressing its application to modern high-speed systems. Coverage includes: All the necessary electromagnetic theory needed for a complete understanding of signal integrity Techniques for obtaining analytic solutions to Maxwell's Equations for ideal materials and boundary conditions Plane electromagnetic waves Plane waves in compound media Transmission lines and waveguides Ideal models vs. real-world systems Complex permittivity of propagating media Surface roughness Advanced signal integrity Signal integrity simulations Problem sets for each chapter With its thorough coverage of this relatively new discipline, the book serves as an ideal textbook for senior undergraduate and junior graduate students, as well as a resource for practicing engineers in this burgeoning field. At the end of each section, it typically stimulates the reader with open-ended questions that might lead to future theses or dissertation research.

This book starts at an introductory level and leads reader to the most advanced topics in fluorescence imaging and super-resolution techniques that have enabled new developments such as nanobioimaging, multiphoton microscopy, nanometrology and nanosensors. The interdisciplinary subject of fluorescence microscopy and imaging requires complete knowledge of imaging optics and molecular physics. So, this book approaches the subject by introducing optical imaging concepts before going in more depth about advanced imaging systems and their applications. Additionally, molecular orbital theory is the important basis to present molecular physics and gain a complete understanding of light-matter interaction at the geometrical focus. The two disciplines have some overlap since light controls the molecular states of molecules and conversely, molecular states control the emitted light. These two mechanisms together determine essential imaging factors such as, molecular cross-section, Stoke shift, emission and absorption spectra, quantum yield, signal-to-noise ratio, Forster resonance energy transfer (FRET), fluorescence recovery after photobleaching (FRAP) and fluorescence lifetime. These factors form the basis of many fluorescence based devices. The book is organized into two parts. The first part deals with basics of imaging optics and its applications. The advanced part takes care of several imaging techniques and related instrumentation that are developed in the last decade pointing towards far-field diffraction unlimited imaging.

Electromagnetics is too important in too many fields for knowledge to be gathered on the fly. A deep understanding gained through structured presentation of concepts and practical problem solving is the best way to approach this important subject. *Fundamentals of Engineering Electromagnetics* provides such an understanding, distilling the most important theoretical aspects and applying this knowledge to the formulation and solution of real engineering problems. Comprising chapters drawn from the critically acclaimed *Handbook of Engineering Electro-*

magnetics, this book supplies a focused treatment that is ideal for specialists in areas such as medicine, communications, and remote sensing who have a need to understand and apply electromagnetic principles, but who are unfamiliar with the field. Here is what the critics have to say about the original work "...accompanied with practical engineering applications and useful illustrations, as well as a good selection of references ... those chapters that are devoted to areas that I am less familiar with, but currently have a need to address, have certainly been valuable to me. This book will therefore provide a useful resource for many engineers working in applied electromagnetics, particularly those in the early stages of their careers." -Alastair R. Ruddle, The IEE Online "...a tour of practical electromagnetics written by industry experts ... provides an excellent tour of the practical side of electromagnetics ... a useful reference for a wide range of electromagnetics problems ... a very useful and well-written compendium..." -Alfy Riddle, IEEE Microwave Magazine *Fundamentals of Engineering Electromagnetics* lays the theoretical foundation for solving new and complex engineering problems involving electromagnetics.

"Now in its Seventh Edition, Bill Hayt and John Buck's *Engineering Electromagnetics* is a classic book that has been updated for electromagnetics today. - This widely respected book stresses fundamentals and problem solving, and discusses the material in an understandable, readable way. Numerous illustrations and analogies are provided to aid the reader in grasping difficult concepts. - In addition, independent learning is facilitated by the presence of many examples and problems."--Jacket.

Discover an innovative and fresh approach to teaching classical electromagnetics at a foundational level *Introduction to Electromagnetic Waves with Maxwell's Equations* delivers an accessible and practical approach to teaching the wellknown topics all electromagnetics instructors must include in their syllabus. Based on the author's decades of experience teaching the subject, the book is carefully tuned to be relevant to an audience of engineering students who have already been exposed to the basic curricula of linear algebra and multivariate calculus. Forming the backbone of the book, Maxwell's equations are developed step-by-step in consecutive chapters, while related electromagnetic phenomena are discussed simultaneously. The author presents accompanying mathematical tools alongside the material provided in the book to assist students with retention and comprehension. The book contains over 100 solved problems and examples with stepwise solutions offered alongside them. An accompanying website provides readers with additional problems and solutions. Readers will also benefit from the inclusion of: A thorough introduction to preliminary concepts in the field, including scalar and vector fields, cartesian coordinate systems, basic vector operations, orthogonal coordinate systems, and electrostatics, magnetostatics, and electromagnetics An exploration of Gauss' Law, including integral forms, differential forms, and boundary conditions A discussion of Ampere's Law, including integral and differential forms and Stoke's Theorem An examination of Faraday's Law, including integral and differential forms and the Lorentz Force Law Perfect for third-and fourth-year undergraduate students in electrical engineering, mechanical engineering, applied maths, physics, and computer science, *Introduction to Electromagnetic Waves with Maxwell's Equations* will also earn a place in the libraries of graduate and postgraduate students in any STEM program with applications in electromagnetics.

The book is primarily designed to cater to the needs of undergraduate and postgraduate students of Electronics and Communication Engineering and allied branches. It also caters for fundamental requirements of professionals working on design and develop-

ment of antenna and wave propagation related equipment either in research laboratories or industries or academic institutions elsewhere. The book has been written with intent to grasp the basic understanding of theoretical as well as practical aspects of electromagnetic wave propagation and antenna engineering. The text has been aptly scripted considering the requirements of average students who can easily grasp and comprehend the basics of wave propagation and radiation mechanism of varieties of antennas coupled with their critical functionalities, utilities, advantages/disadvantages without any external assistance of teachers or other reference books. The book broaches very well on practical methods of parametric measurements of antenna with right measuring test equipment and associated tools. The last chapter of the book is dedicated to advance technology adopted in design and development of modern antenna. Key features

- A fairly large number of well labelled diagrams to provide practical understanding of the concepts.
- The placement of numericals at appropriate places develops confidence among readers and enthruses them further to read in depth to crack any regular or competitive examinations.
- Chapter summary highlights important points for quick recap and revision before examination.
- Well-crafted multiple choice questions with answers at the end of each chapter to stimulate thought process and prepare better for viva-voce and competitive examinations.
- Appropriate number of unsolved numerical problems with answers to improve problem solving skill of students.

Engineers do not have the time to wade through rigorously theoretical books when trying to solve a problem. Beginners lack the expertise required to understand highly specialized treatments of individual topics. This is especially problematic for a field as broad as electromagnetics, which propagates into many diverse engineering fields. The time h

Engineering Electromagnetics provides a solid foundation in electromagnetics fundamentals by emphasizing physical understanding and practical applications. Electromagnetics, with its requirements for abstract thinking, can prove challenging for students. The authors' physical and intuitive approach has produced a book that will inspire enthusiasm and interest for the material. Benefiting from a review of electromagnetic curricula at several schools and repeated use in classroom settings, this text presents material in a rigorous yet readable manner. FEATURES/BENEFITS Starts with coverage of transmission lines before addressing fundamental laws, providing a smooth transition from circuits to electromagnetics. Emphasizes physical understanding and the experimental bases of fundamental laws. Offers detailed examples and numerous practical end-of-chapter problems, with each problem's topical content clearly identified. Provides historical notes, abbreviated biographies, and hundreds of footnotes to motivate interest and enhance understanding. Back Cover Benefiting from a review of electromagnetics curricula at several schools and repeated use in classroom settings, this text presents material in a comprehensive and practical yet readable manner. Features: Starts with coverage of transmission lines before addressing fundamental laws, providing a smooth transition from circuits to electromagnetics. Emphasizes physical understanding and the experimental bases of fundamental laws. Offers detailed examples and numerous practical end-of-chapter problems, with each problem's topical content clearly identified. Provides historical notes, abbreviated biographies, and hundreds of footnotes to motivate interest and enhance understanding.

Teaching Electromagnetics: Innovative Approaches and Pedagogical Strategies is a guide for educators addressing course content and pedagogical methods primarily at the undergraduate level in electromagnetic theory and its applications. Topics include teaching methods, lab experiences and hands-on learning, and course

structures that help teachers respond effectively to trends in learning styles and evolving engineering curricula. The book grapples with issues related to the recent worldwide shift to remote teaching. Each chapter begins with a high-level consideration of the topic, reviews previous work and publications, and gives the reader a broad picture of the topic before delving into details. Chapters include specific guidance for those who want to implement the methods and assessment results and evaluation of the effectiveness of the methods. Respecting the limited time available to the average teacher to try new methods, the chapters focus on why an instructor should adopt the methods proposed in it. Topics include virtual laboratories, computer-assisted learning, and MATLAB® tools. The authors also review flipped classrooms and online teaching methods that support remote teaching and learning. The end result should be an impact on the reader represented by improvements to his or her practical teaching methods and curricular approach to electromagnetics education. The book is intended for electrical engineering professors, students, lab instructors, and practicing engineers with an interest in teaching and learning. In summary, this book: Surveys methods and tools for teaching the foundations of wireless communications and electromagnetic theory Presents practical experience and best practices for topical coverage, course sequencing, and content Covers virtual laboratories, computer-assisted learning, and MATLAB tools Reviews flipped classroom and online teaching methods that support remote teaching and learning Helps instructors in RF systems, field theory, and wireless communications bring their teaching practice up to date Dr. Krishnasamy T. Selvan is Professor in the Department of Electronics & Communication Engineering, SSN College of Engineering, since June 2012. Dr. Karl F. Warnick is Professor in the Department of Electrical and Computer Engineering at BYU.

KEY BENEFIT: Widely acclaimed both in the U.S. and abroad, this reader-friendly yet authoritative volume bridges the gap between circuits and new electromagnetics material. Ulaby begins coverage with transmission lines, leading readers from familiar concepts into more advanced topics and applications. **KEY TOPICS:** Introduction: Waves and Phasors; Transmission Lines; Vector Analysis; Electrostatics; Magnetostatics; Maxwell's Equations for Time-Varying Fields; Plane-Wave Propagation; Reflection, Transmission, and Waveguides; Radiation and Antennas; Satellite Communication Systems and Radar Sensors. **MARKET:** A useful reference for engineers.

Fundamental of Engineering Electromagnetics not only presents the fundamentals of electromagnetism in a concise and logical manner, but also includes a variety of interesting and important applications. While adapted from his popular and more extensive work, Field and Wave Electromagnetics, this text incorporates a number of innovative pedagogical features. Each chapter begins with an overview which serves to offer qualitative guidance to the subject matter and motivate the student. Review questions and worked examples throughout each chapter reinforce the student's understanding of the material. Remarks boxes following the review questions and margin notes throughout the book serve as additional pedagogical aids.

Balanis' second edition of Advanced Engineering Electromagnetics - a global best-seller for over 20 years - covers the advanced knowledge engineers involved in electromagnetic need to know, particularly as the topic relates to the fast-moving, continually evolving, and rapidly expanding field of wireless communications. The immense interest in wireless communications and the expected increase in wireless communications systems projects (antenna, microwave and wireless communication) points to an increase in the number of engineers needed to specialize in this field. In

addition, the Instructor Book Companion Site contains a rich collection of multimedia resources for use with this text. Resources include: Ready-made lecture notes in Power Point format for all the chapters. Forty-nine MATLAB® programs to compute, plot and animate some of the wave phenomena Nearly 600 end-of-chapter problems, that's an average of 40 problems per chapter (200 new problems; 50% more than in the first edition) A thoroughly updated Solutions Manual 2500 slides for Instructors are included.

Now in its Seventh Edition, Bill Hayt and John Buck's Engineering Electromagnetics is a classic book that has been updated for electromagnetics today. This widely respected book stresses fundamentals and problem solving, and discusses the material in an understandable, readable way. Numerous illustrations and analogies are provided to aid the reader in grasping difficult concepts. In addition, independent learning is facilitated by the presence of many examples and problems. Important updates and revisions have been included in this edition. One of the most significant changes is the repositioning and rewriting of the transmission lines chapter. This chapter is now ahead of the plane waves chapter, and can be used at any point in the course, including at the beginning. Book jacket.

An authoritative view of Maxwell's Equations that takes theory to practice Maxwell's Equations is a practical guide to one of the most remarkable sets of equations ever devised. Professor Paul Huray presents techniques that show the reader how to obtain analytic solutions for Maxwell's equations for ideal materials and boundary conditions. These solutions are then used as a benchmark for solving real-world problems. Coverage includes: An historical overview of electromagnetic concepts before Maxwell and how we define fundamental units and universal constants today A review of vector analysis and vector operations of scalar, vector, and tensor products Electrostatic fields and the interaction of those fields with dielectric materials and good conductors A method for solving electrostatic problems through the use of Poisson's and Laplace's equations and Green's function Electrical resistance and power dissipation; superconductivity from an experimental perspective; and the equation of continuity An introduction to magnetism from the experimental inverse square of the Biot-Savart law so that Maxwell's magnetic flux equations can be deduced Maxwell's Equations serves as an ideal textbook for undergraduate students in junior/senior electromagnetics courses and graduate students, as well as a resource for electrical engineers.

Publisher Description

Electromagnetics is too important in too many fields for knowledge to be gathered on the fly. Knowing how to apply theoretical principles to the solutions of real engineering problems and the development of new technologies and solutions is critical. Engineering Electromagnetics: Applications provides such an understanding, demonstrating how to apply the underlying physical concepts within the particular context of the problem at hand. Comprising chapters drawn from the critically acclaimed Handbook of Engineering Electromagnetics, this book supplies a focused treatment covering radar, wireless, satellite, and optical communication technologies. It also introduces various numerical techniques for computer-aided solutions to complex problems, emerging problems in biomedical applications, and techniques for measuring the biological properties of materials. Engineering Electromagnetics: Applications shares the broad experiences of leading experts regarding modern problems in electromagnetics.

The book is primarily designed to cater to the needs of undergraduate and postgraduate students of Electronics and Communication Engineering and allied branches. The book has been written

keeping average students in mind. This well-organised and lucidly written text gives a comprehensive view of microwave concepts covering its vast spectrum, transmission line, network analysis, microwave tubes, microwave solid-state devices, microwave measurement techniques, microwave antenna theories, radars and satellite communication. KEY FEATURES • A fairly large number of well-labelled diagrams provides practical understanding of the concepts. • Solved numerical problems aptly crafted and placed right after conceptual discussion provide better comprehension of the subject matter. • Chapter summary highlights important

points for quick recap and revision before examination. • About 200 MCQs with answers help students to prepare for competitive examinations. • Appropriate number of unsolved numerical problems with answers improves problem solving skill of students. • Simplified complex mathematical derivations by synthesising them in smaller parts for easy grasping. Audience Undergraduate and Postgraduate students of Electronics and Communication Engineering and allied branches
Electromagnetic Fields