

## Basic Electrical Engineering By Vn Mittle And Arvind Mittal Ebook

For close to 30 years, "Basic Electrical Engineering" has been the go-to text for students of Electrical Engineering. Emphasis on concepts and clear mathematical derivations, simple language coupled with systematic development of the subject aided by illustrations makes this text a fundamental read on the subject. Divided into 17 chapters, the book covers all the major topics such as DC Circuits, Units of Work, Power and Energy, Magnetic Circuits, fundamentals of AC Circuits and Electrical Instruments and Electrical Measurements in a straightforward manner for students to understand.

Electrical and instrumentation engineering is changing rapidly, and it is important for the veteran engineer in the field not only to have a valuable and reliable reference work which he or she can consult for basic concepts, but also to be up to date on any changes to basic equipment or processes that might have occurred in the field. Covering all of the basic concepts, from three-phase power supply and its various types of connection and conversion, to power equation and discussions of the protection of power system, to transformers, voltage regulation, and many other concepts, this volume is the one-stop, "go to" for all of the engineer's questions on basic electrical and instrumentation engineering. There are chapters covering the construction and working principle of the DC machine, all varieties of motors, fundamental concepts and operating principles of measuring, and instrumentation, both from a "high end" point of view and the point of view of developing countries, emphasizing low-cost methods. A valuable reference for engineers, scientists, chemists, and students, this volume is applicable to many different fields, across many different industries, at all levels. It is a must-have for any library.

Electrical Installations Technology covers the syllabus of the City and Guilds of London Institute course No. 51, the "Electricians B Certificate". This book is composed of 15 chapters that deal with basic electrical science and electrical installations. The introductory chapters discuss the fundamentals and basic electrical principles, including the concept of mechanics, heat, magnetic fields, electric currents, power, and energy. These chapters also explore the atomic theory of electric current and the electric circuit, conductors, and insulators. The subsequent chapter focuses on the chemistry of an electric cell, which is classified into two types, namely, the primary and secondary cells. This text also describes the principles, construction, types, and specifications of direct current machines. A chapter emphasizes the storage of energy for short periods in a capacitor, along with a brief discussion of its theory and construction. Other chapters are devoted to alternating-current systems. The remaining chapters cover the commonly used electrical measuring instruments in electrical installation work. This book is an invaluable source for electricians.

The Commonwealth and International Library: Electrical Engineering Division

THEORY AND PROBLEMS OF BASIC ELECTRICAL ENGINEERING

Basic Electrotechnology

A One-Semester Text

This book is prepared as per the syllabus of Dr A P J Abdul Kalam Technical University, Uttar Pradesh for first year B. Tech (Engineering) course using the reference books given in the course syllabus. Authors have tried to elucidate the topics such a way that even a mediocre student can assimilate them. Many solved problems, sample question papers and exercise given in every section will provide a thorough understanding of topics

The primary objective of vol. I of A Text Book of Electrical Technology is to provide a comprehensive treatment of topics in Basic Electrical Engineering both for electrical as well as nonelectrical students pursuing their studies in civil, mechanical, mining, textile, chemical, industrial, environmental, aerospace, electronic and computer engineering both at the Degree and diploma level. Based on the suggestions received from our esteemed readers, both from India and abroad, the scope of the book has been enlarged according to their requirements. Almost half the solved examples have been deleted and replaced by latest examination papers set upto 1994 in different engineering colleges and technical institutions in India and abroad.

This proceedings book features selected papers on 12 themes, including telecommunication, power systems, digital signal processing, robotics, control systems, renewable energy, power electronics, soft computing and more. Covering topics such as optoelectronic oscillator at S-band and C-band for 5G telecommunications, neural networks identification of eleven types of faults in high voltage transmission lines, cyber-attack mitigation on smart low voltage distribution grids, optimum load of a piezoelectric-based energy harvester, the papers present interesting ideas and state-of-the-art overviews.

Basics of Electrical Engineering

THEORY AND PROBLEMS OF BASIC ELECTRICAL ENGINEERING,, Second Edition

Comprehensive Basic Electrical Engineering

Practical Electrical Engineering

*This book has been revised thoroughly. A large number of practical problems have been added to make the book more useful to the students. Also included, multiple-choice questions at the end of each chapter.*

*This book presents comprehensive coverage of all the basic concepts in electrical engineering. It is designed for undergraduate students of almost all branches of engineering for an introductory course in essentials of electrical engineering. This book explains in detail the properties of different electric circuit elements, such as resistors, inductors and capacitors. The fundamental concepts of dc circuit laws, such as Kirchhoff's current and voltage laws, and various network theorems, such as Thevenin's theorem, Norton's theorem, superposition theorem, maximum power transfer theorem, reciprocity theorem and Millman's theorem are thoroughly discussed. The book also presents the analysis of ac circuits, and discusses transient analysis due to switch operations in ac and dc circuits as well as analysis of three-phase circuits. It describes series and parallel RLC circuits, magnetic circuits, and the working principle of different kinds of transformers. In addition, the book explains the principle of energy conversion, the operating characteristics of dc machines, three-phase induction machines and synchronous machines as well as single-phase motors. Finally, the book includes a discussion on technologies of electric power generation along with the different types of energy sources. Key Features : Includes numerous solved examples and illustrations for sound conceptual understanding. Provides well-graded chapter-end problems to develop the problem-solving capability of the students. Supplemented with three appendices addressing matrix algebra, trigonometric identities and Laplace transforms of commonly used functions to help students understand the mathematical concepts required for the study of electrical engineering.*

*BASIC Electrotechnology discusses the applications of Beginner's All-purpose Symbolic Instruction Code (BASIC) in engineering, particularly in solving electrotechnology-related problems. The book is comprised of six chapters that cover several topics relevant to BASIC and electrotechnology. Chapter 1 provides an introduction to BASIC, and Chapter 2 talks about the use of complex numbers in a.c. circuit analysis. Chapter 3 covers linear circuit analysis with d.c. and sinusoidal a.c. supplies. The book also discusses the elementary magnetic circuit theory. The theory and performance of two winding transformers from an equivalent circuit approach are also tackled. The last chapter covers the electromechanical energy conversion. The text will be of great use to undergraduate students of electrical engineering.*

Electrical Installations Technology

Basic Electric Circuit Theory

Basic Electrical and Instrumentation Engineering

A Textbook of Electrical Technology - Volume I (Basic Electrical Engineering)

The book is written for an undergraduate course on the Basic Electrical Engineering. It provides comprehensive explanation of theory and practice of electrical engineering. It elaborates various aspects of d.c. and a.c. circuit analysis, magnetic circuits, measuring instruments, single phase transformers and various electrical machines. The book starts with the concepts of electric charge, current and potential difference. It explains Kirchhoff's laws, star-delta transformation, mesh analysis and node analysis. It also covers the application of various network theorems in analyzing d.c. circuits. The book incorporates detailed discussion of steady state analysis of single-phase series and parallel a.c. circuits along with the resonance. The book also explains the three phase balanced circuits, three phase power measurement and power factor improvement. The simple techniques and stepwise methods used to explain the phasor diagrams is the feature of the book. The book teaches the theory of various electrical measuring instruments. The book also covers the concept of earthing and electrical safety, which is most important while dealing with the electrical equipment's. The book also includes the discussion of magnetic circuits, self and mutual inductances and magnetic hysteresis. The book further explains the details of single-phase transformers and various electrical machines such as d.c. machines, three phase and single-phase induction motors and synchronous machines. The brief introduction of power system is also incorporated in the book. The book uses plain, lucid language to explain each topic. The book provides the logical method of explaining the various complicated topics and stepwise methods to make the understanding easy. All the chapters are arranged in a proper sequence that permits each topic to build upon earlier studies. The variety of solved examples is the feature of this book which helps to inculcate the knowledge of the basic electrical engineering in the students. The book explains the philosophy of the subject which makes the understanding of the concepts very clear and makes the subject more interesting.

Basic Electrical and Electronics Engineering provides an overview of the basics of electrical and electronic engineering that are required at the undergraduate level. The book allows students outside electrical and electronics engineering to easily

There has been overwhelming response from the readers of this text. Based on their feedback and suggestions, this book has been enlarged and thoroughly revised in its Fifth Edition. Besides updating the sixteen chapters of the previous edition, it now incorporates ten new chapters dealing with synchronous machines, single/three phase motors, ac commutator motors and stepper motors. The present text, written in a lucid style, is the culmination of more than four decades of the author's long experience in teaching of electrical engineering subjects, especially electrical machines at undergraduate and postgraduate levels. Key features • Easy to follow, understand and implement. • Includes about 440 worked-out examples. • Contains 721 MCQs (with answers) to help students measure their understanding and analysing skills and evaluate their knowledge. • Offers about 515 chapter-end exercises with answers to build problem solving skills and gain hands-on experience and self-confidence. • Includes many real-life examples to enable students to analyse and implement theoretical concepts in real-life situations. • Difficult concepts like commutation explained in great detail so as to make students grasp concept with clear understanding. The book is primarily designed for undergraduate and postgraduate students of Electrical and Electronics Engineering. Besides, the students of all other branches of engineering will find this text useful for their course study.

Software Tools for the Simulation of Electrical Systems

Basic Electrical and Electronics Engineering:

Electrical Engineering: Know It All

Basics of Electrical Electronics and Communication Engineering

*This is the only book on the market that has been conceived and deliberately written as a one-semester text on basic electric circuit theory. As such, this book employs a novel approach to the exposition of the material in which phasors and ac steady-state analysis are introduced at the beginning. This allows one to use phasors in the discussion of transients excited by ac sources, which makes the presentation of transients more comprehensive and meaningful. Furthermore, the machinery of phasors paves the road to the introduction of transfer functions, which are then used in the analysis of transients and the discussion of Bode plots and filters. Another salient feature of the text is the consolidation into one chapter of the material concerned with dependent sources and operational amplifiers. Dependent sources are introduced as linear models for transistors on the basis of small signal analysis. In the text, PSpice simulations are prominently featured to reinforce the basic material and understanding of circuit analysis. Key Features \* Designed as a comprehensive one-semester text in basic circuit theory \* Features early introduction of phasors and ac steady-state analysis \* Covers the application of phasors and ac steady-state analysis \* Consolidates the material on dependent sources and operational amplifiers \* Places emphasis on connections between circuit theory and other areas in electrical engineering \* Includes PSpice tutorials and examples \* Introduces the design of active filters \* Includes problems at the end of every chapter \* Priced well below similar books designed for year-long courses*

*The book is written per the syllabus of first year engineering degree course for various universities. It covers basic topics of electrical, electronics and communication engineering. It also includes worked out examples, University examination questions and answers, exercise, etc in every chapter. This book is suitable for course in basic electrical and electronics engineering under various Universities. Authors have tried to elucidate the topics in such a way that even a mediocre student can assimilate them. Many solved problems, sample question papers and exercise given in every section will provide a thorough understanding of the topics. Other features include attractive writing style, well structured equations and numerical examples, pictures of high clarity, etc. This book is one among prescribed textbooks for the syllabus of BIT, Mesra, Ranchi.*

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Second Edition

AETA 2019 - Recent Advances in Electrical Engineering and Related Sciences: Theory and Application

Fields—Networks—Waves

Basic Engineering Circuit Analysis

For use in an introductory circuit analysis or circuit theory course, this text presents circuit analysis in a clear manner, with many practical applications. It demonstrates the principles, carefully explaining each step.

Foundations of Electrical Engineering covers the fundamental ideas and basic laws in electrical engineering. This book is organized into five parts encompassing 24 chapters. Part I provides an overview of the Maxwell's equation and its significance in electrical engineering. Part II deals first with the determination of static and steady electric fields. This part also discusses the solution of Laplace's equation, boundary value problems, the concept of capacity, and magnetic field. Parts III and IV explore the laws of network analysis and synthesis, as well as the basic principles and applications of electromagnetic waves. These parts also describe the main features of classical electrodynamics and its application to problems of electrical engineering. Part V highlights the combined contributions of Maxwell's equations and the laws of mechanics in the subject field. Electrical engineers, and electrical engineering teachers and students will find this book invaluable.

The Newnes Know It All Series takes the best of what our authors have written to create hard-working desk references that will be an engineer's first port of call for key information, design techniques and rules of thumb. Guaranteed not to gather dust on a shelf! Electrical engineers need to master a wide area of topics to excel. The Electrical Engineering Know It All covers every angle including Real-World Signals and Systems, Electromagnetics, and Power systems. A 360-degree view from our best-selling authors Topics include digital, analog, and power electronics, and electric circuits The ultimate hard-working desk reference; all the essential information, techniques and tricks of the trade in one volume

ELEMENTS OF ELECTRICAL ENGINEERING

Dr A P J Abdul Kalam Technical University- UP

BASIC ELECTRICAL ENGINEERING

Conceptual Approach

Real-world engineering problems are rarely, if ever, neatly divided into mechanical, electrical, chemical, civil, and other categories. Engineers from all disciplines eventually encounter computer and electronic controls and instrumentation, which require at least a basic knowledge of electrical and other engineering specialties, as well as associated economics, and environmental, political, and social issues. Co-authored by Charles Gross—one of the most well-known and respected professors in the field of electric machines and power engineering—and his world-renowned colleague Thad Roppel, Fundamentals of Electrical Engineering provides an overview of the profession for engineering professionals and students whose specialization lies in areas other than electrical. For instance, civil engineers must contend with commercial electrical service and lighting design issues. Mechanical engineers have to deal with motors in HVAC applications, and chemical engineers are forced to handle problems involving process control. Simple and easy-to-use, yet more than sufficient in rigor and coverage of fundamental concepts, this resource teaches EE fundamentals but omits the typical analytical methods that hold little relevance for the audience. The authors provide many examples to illustrate concepts, as well as homework problems to help readers understand and apply presented material. In many cases, courses for non-electrical engineers, or non-EEs, have presented watered-down classical EE material, resulting in unpopular courses that students hate and senior faculty members understandingly avoid teaching. To remedy this situation—and create more well-rounded practitioners—the authors focus on the true EE needs of non-EEs, as determined through their own teaching experience, as well as significant input from non-EE faculty. The book provides several important contemporary interdisciplinary examples to support this approach. The result is a full-color modern narrative that bridges the various EE and non-EE curricula and serves as a truly relevant course that students and faculty can both enjoy.

Electrical Engineering Principles for Technicians covers the syllabus of Electrical Engineering Principles III of the C.G.L.I. Course for Electrical Technicians. It provides a basic introduction to electrical principles and their practical application. Comprised of eight chapter, the book discusses a wide range of topics including magnetic circuits, rectifier and thermocouple instruments, direct-current machines, transformers, and electric circuits. It also explains the alternating current theory and the generation of a three-phase supply system. The book ends by discussing the rate of change of current in an inductor and a capacitor. Students taking electrical engineering and technician courses will find this book very useful.

This textbook provides comprehensive, in-depth coverage of the fundamental concepts of electrical engineering. It is written from an engineering perspective, with special emphasis on circuit functionality and applications. Reliance on higher-level mathematics and physics, or theoretical proofs has been intentionally limited in order to prioritize the practical aspects of electrical engineering. This text is therefore suitable for a number of introductory circuit courses for other majors such as mechanical, biomedical, aerospace, civil, architecture, petroleum, and industrial engineering. The authors' primary goal is to teach the aspiring engineering student all fundamental tools needed to understand, analyze and design a wide range of practical circuits and systems. Their secondary goal is to provide a comprehensive reference, for both major and non-major students as well as practicing engineers.

Offshore Electrical Engineering

Foundations of Electrical Engineering

Fundamentals of Electrical Engineering

BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

*The aim of this book is to provide a consolidated text for the first year B.E. Computer Science and Engineering students and B.Tech Information Technology students of Anna University. The syllabus has been thoroughly revised for the non-semester yearly pattern by the University. The book, made up of five chapters, systematically covers the five units of the syllabus. It begins with a detailed discussion on the fundamentals of electric circuits. DC circuits, AC circuits, 3-phase circuits, resonance and the network theorems. Lecture-type presentation of the rudiments of the fundamentals in conjunction with hundreds of solved examples is the strength of this book. Magnetic circuits and various magnetic elements and their properties, with number of illustrations are presented. DC machines and transformers are further dealt with. Equivalent circuits of machines supported with the respective photographs will ease the reader to understand the concepts of machines much better. Synchronous machines and asynchronous machines and fundamentals of control systems with various practical examples and relevant worked illustrations conclude this book. A large number of numerical illustrations and diagrammatic representations make this book valuable for students and teachers.*

*Unlike books currently on the market, this book attempts to satisfy two goals: combine circuits and electronics into a single, unified treatment, and establish a strong connection with the contemporary world of digital systems. It will introduce a new way of looking not only at the treatment of circuits, but also at the treatment of introductory coursework in engineering in general. Using the concept of "abstraction," the book attempts to form a bridge between the world of physics and the world of large computer systems. In particular, it attempts to unify electrical engineering and computer science as the art of creating and exploiting successive abstractions to manage the complexity of building useful electrical systems. Computer systems are simply one type of electrical systems. +Balances circuits theory with practical digital electronics applications. +Illustrates concepts with real devices. +Supports the popular circuits and electronics course on the MIT OpenCourse Ware from which professionals worldwide study this new approach. +Written by two educators well known for their innovative teaching and research and their collaboration with industry. +Focuses on contemporary MOS technology.*

*For the first time in India, we have a comprehensive introductory book on Basic Electrical Engineering that caters to undergraduate students of all branches of engineering and to all those who are appearing in competitive examinations such as AMIE, GATE and graduate IETE. The book provides a lucid yet exhaustive exposition of the fundamental concepts, techniques and devices in basic electrical engineering through a series of carefully crafted solved examples, multiple choice (objective type) questions and review questions. The book covers, in general, three major areas: electric circuit theory, electric machines, and measurement and instrumentation systems.*

*Fundamentals of Electric Circuits*

*Electrical Engineering Principles for Technicians*

*Foundations of Analog and Digital Electronic Circuits*

*Principle of Electrical Engineering and Electronics*

Simulation of Software Tools for Electrical Systems: Theory and Practice offers engineers and students what they need to update their understanding of software tools for electric systems, along with guidance on a variety of tools on which to model electrical systems—from device level to system level. The book uses MATLAB, PSIM, Pspice and PSCAD to discuss how to build simulation models of electrical systems that assist in the practice or implementation of simulation software tools in switches, circuits, controllers, instruments and automation system design. In addition, the book covers power electronic switches and FACTS controller device simulation model building with the use of Labview and PLC for industrial automation, process control, monitoring and measurement in electrical systems and hybrid optimization software HOMER is presented for researchers in renewable energy systems. Includes interactive content for numerical computation, visualization and programming for learning the software tools related to electrical sciences Identifies complex and difficult topics illustrated by useable examples Analyzes the simulation of electrical systems, hydraulic, and pneumatic systems using different software, including MATLAB, LABVIEW, MULTISIM, AUTOSIM and PSCAD

Offshore Electrical Engineering is written based on the author's 20 years electrical engineering experience of electrical North Sea oil endeavor. The book has 14 chapters and five important appendices. The book starts with designing for electrical power offshore application, especially with aspects that are different from land based structures, such as space and weight limitations, safety hazards at sea, and corrosive marine environment. The criteria for selecting prime movers and generators, for example, gas turbines and reciprocating engines, depending on the type of applications, are examined. The machinery drives are then discussed whereby the different offshore electric motor ratings are considered. As in any electrical system, the use of ergonomically designed controls is important. Distribution switchgear, transformers, and cables are described. The book also explains the environmental considerations, power system disturbances, and protection. In an offshore structure, lighting requirements and subsea power supplies, diving life support system, and equipment protection are emphasized. A reliability analysis is also included to ensure continuance of service from the equipment. A general checklist to be used when preparing commissioning worksopes is included, and due to space and weight limitations on offshore installation, the rationale of maintenance and logistics options are explained. The appendices can be used as guides to descriptions offshore installations, typical commissioning test sheets, computerized calculations program, and a comparison of world hazardous area equipment. The text is a suitable reading for offshore personnel, oil-rig administrators, and for readers from all walks of life interested in some technical aspects of offshore structures.

This book is designed based on revised syllabus of Gujarat Technological University, Gujarat (AICTE model curriculum) for under-graduate (B.Tech/BE) students of all branches, those who study Basic Electrical Engineering as one of the subject in their curriculum. The primary goal of this book is to establish a firm understanding of the basic laws of Electric Circuits, Network Theorems, Resonance, Three-phase circuits, Transformers, Electrical Machines and Electrical Installation.

Basic Electrical Engineering

Theory and Practice

This comprehensive book with a blend of theory and solved problems on Basic Electrical Engineering has been updated and upgraded in the Second Edition as per the current needs to cater undergraduate students of all branches of engineering and to all those who are appearing in competitive examinations such as AMIE, GATE and graduate IETE. The text provides a lucid yet exhaustive exposition of the fundamental concepts, techniques and devices in basic electrical engineering through a series of carefully crafted solved examples, multiple choice (objective type) questions and review questions. The book covers, in general, three major areas: electric circuit theory, electric machines, and measurement and instrumentation systems.

Rizzoni's Fundamentals of Electrical Engineering provides a solid overview of the electrical engineering discipline that is especially geared toward the many non-electrical engineering students who take this course. The book was developed to fit the growing trend of the Intro to EE course morphing into a briefer, less comprehensive course. The hallmark feature of this text is its liberal use of practical applications to illustrate important principles. The applications come from every field of engineering and feature exciting technologies. The appeal to non-engineering students are the special features such as Focus on Measurement sections, Focus on Methodology sections, and Make the Connections sidebars.

This textbook “Basic Electrical Engineering” is based on the latest syllabus of the Universities, AICTE and Educational Institutes. In this edition, some material of the book has been rewritten to make the presentation easily comprehensible. More illustrative examples mainly from IAS, IES and GATE and other competitive examinations have been added. Various problems with answers have been added to support the text. For quick revision, summary/highlights are given at the end of each chapter. Salient Features: · DC Circuits · AC Circuits · Transformers · Electrical Machines · Power converters · Electrical Installations