Pdf free Electric machinery fundamentals 4th edition solution manual [PDF]

Electric Machinery Fundamentals 1985 electric machinery fundamentals continues to be a classic machinery text due to its accessible student friendly coverage of the important topics in the field chapman's clear writing persists in being one of the top features of the book in the fourth edition the use of matlab has been enhanced matlab is incorporated in examples and problems where applicable in addition more than 70 of the problems are either new or modified book jacket Mechanics Of Machines 4Th/Ed 2005-01-01 electric machinery fundamentals continues to be a best selling machinery text due to its accessible student friendly coverage of the important topics in the field chapman's clear writing persists in being one of the top features of the book although not a book on matlab the use of matlab has been enhanced in the fourth edition chapman has also added some new applications as well as many new problems have been added electric machinery fundamentals is also accompanied by a website the provides solutions for instructors as well as source code matlab tools and links to important sites for students Electric Machinery Fundamentals 2004-01-07 this book aims to offer a thorough study and reference textbook on electrical machines and drives the basic idea is to start from the pure electromagnetic principles to derive the equivalent circuits and steady state equations of the most common electrical machines in the first parts although the book mainly concentrates on rotating field machines the first two chapters are devoted to transformers and dc commutator machines the chapter on transformers is included as an introduction to induction and synchronous machines their electromagnetics and equivalent circuits chapters three and four offer an in depth study of induction and synchronous machines respectively starting from their electromagnetics steady state equations and equivalent circuits are derived from which their basic properties can be deduced the second part discusses the main power electronic supplies for electrical drives for example rectifiers choppers cycloconverters and inverters much attention is paid to pwm techniques for inverters and the resulting harmonic content in the output waveform in the third part electrical drives are discussed combining the traditional rotating field and dc commutator electrical machines treated in the first part and the power electronics of part two field orientation of induction and synchronous machines are discussed in detail as well as direct torque control in addition also switched reluctance machines and stepping motors are discussed in the last chapters finally part 4 is devoted to the dynamics of traditional electrical machines also for the dynamics of induction and synchronous machine drives the electromagnetics are used as the starting point to derive the dynamic models throughout part 4 much attention is paid to the derivation of analytical models but of course the basic dynamic properties and probable causes of instability of induction and synchronous machine drives are discussed in detail as well with the derived models for stability in the small as starting point in addition to the study of the stability in the small a chapter is devoted to large scale dynamics as well e g sudden short circuit of synchronous machines the textbook is used as the course text for the bachelor s and master s programme in electrical and mechanical engineering at the faculty of engineering and architecture of ghent university parts 1 and 2 are taught in the basic course fundamentals of electric drives in the third bachelor part 3 is used for the course controlled electrical drives in the first master while part 4 is used in the specialised master on electrical energy

<u>Electrical Machines and Drives</u> 2018-01-20 intended for courses in electrical machinery in which engineering practice is emphasized this text provides coverage of ac and dc machines and stresses industry requirements and the nema standards of professional engineers traditional theories and concepts of mechanical force are also discussed

Electric Machines 1991 this book attempts to eliminate the existing imbalance between the theory of electric machines and the theory of electromagnetic fields in order to develop viable methods for engineering calculations the author applies field equations the resulting new methods consist of traditional calculation elements represented in a refined form circuit loops parameters equivalent circuits and voltage equations these calculation methods should be effective both for researchers and engineering practitioners especially in relation to the modern electric machines such as powerful turbine generators large high speed synchronous motors etc <u>Asynchronous Machines</u> 2022-07-05 a single comprehensive resource for the design application testing and maintenance of rotating machines filling a long standing

gap in the field electrical insulation for rotating machines covers in one useful volume all aspects of the design deterioration testing and repair of the electrical insulation used in motors and generators lucidly written by leading experts this authoritative reference provides both historical background important to understanding machine insulation design and the most up to date information on new machines and how to select insulation systems for them coverage includes such key topics as types of rotating machines windings and rotor and stator winding construction evaluating insulation materials and systems stator winding and rotor winding insulation systems in current use failure mechanisms and repair testing and monitoring maintenance strategies detailing over 30 different rotor and stator winding failure processes and reviewing almost 25 different tests and monitors used to assess winding insulation condition electrical insulation for rotating machines will help machine users avoid unnecessary machine failures reduce maintenance costs and inspire greater confidence in the design of future machines

Electrical Machines 2005-09 this is a core course for junior year ee students that focuses on the basics of ac and dc machinery chapman is the market leader with 25 share new to this edition includes a professor from cal poly slo who will help proof all problems and overhaul at least 30 of the problems in the text to give the book a fresh face

Electrical Insulation for Rotating Machines 2004-09-21 the importance of various electrical machines is well known in the various engineering fields the book provides comprehensive coverage of the magnetic circuits magnetic materials single and three phase transformers and d c machines the book is structured to cover the key aspects of the course electrical machines i the book starts with the explanation of basics of magnetic circuits concepts of self and mutual inductances and important magnetic materials then it explains the fundamentals of single phase transformers including the construction phasor diagram equivalent circuit losses efficiency methods of cooling parallel operation and autotransformer the chapter on three phase transformer provides the detailed discussion of construction connections phasor groups parallel operation tap changing transformer and three winding transformer the various testing methods of transformers are also incorporated in the book the book further explains the concept of electromechanical energy conversion including the discussion of singly and multiple excited systems then the book covers all the details of d c generators including construction armature reaction commutation characteristics parallel operation and applications the book also includes the details of d c motors such as characteristics types of starters speed control methods electric braking and permanent magnet d c motors finally the book covers the various testing methods of d c machines including swinburnes test brake test retardation test and hopkinson s test 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 each chapter is well supported with necessary illustrations self explanatory diagrams and variety of solved problems all the chapters are arranged in a proper sequence that permits each topic to build upon earlier studies the book explains the philosophy of the subject w

Electric Machinery Fundamentals 2012-02-28 this book comprehends basic and advanced theoretical tools for the analysis of structure and operation of power electrical machines the principal machine typologies are discussed single and three phase transformer induction machine and synchronous machine the first chapter resumes important notions of electromagnetism oriented to the study of electrical machines starting from the properties of maxwell s equations in matter in particular in magnetic materials electric and magnetic integral laws and their application to practical electric and magnetic circuits are explained in the subsequent chapters the electrical machines are analyzed in first from a physical point of view and then suitable models equations and equivalent circuits are derived from the fundamental principles the ac operation is deepened by using both time domain and frequency domain equations and equivalent circuits since this is the main operating modality the text is mainly targeted to students enrolled in a master degree in electrical engineering and is designed to be used for a one or two semester course in electrical machines the prerequisites for effective use of the text are the courses of mathematical analysis physics and circuit theory

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Electrical Machines - I 2020-11-01 induction machines handbook steady state modeling and performance offers a thorough treatment of steady state induction machines im the most used electric motor generator in rather constant or variable speed drives forever lower energy consumption and higher productivity in basically all industries from home appliances through robotics to e transport and wind energy conversion chapter 1 offers a detailed introduction from fundamental principles to topological classifications and most important applications and power ranges from tens of w to tens of mw then individual chapters 2 and 4 deal in detail with specific issues such as magnetic electric and insulation materials electric windings and their mmf magnetization curve and inductance leakage inductances and resistances steady state equivalent circuit and performance starting and speed control methods skin and on load saturation effects field harmonics parasitic torques radial forces noise losses thermal modeling single phase induction machine basics single phase induction motors steady state modeling and performance fully revised and updated to reflect the last decade s progress in the field this third edition adds new sections such as multiphase and multilayer tooth wound coil windings the brushless doubly fed induction machine bdfim equivalent circuits for bdfim control principles for doubly fed im magnetic saturation effects on current and torque versus slip curves rotor leakage reactance saturation closed slot im saturation the origin of electromagnetic vibration by practical experience pm assisted split phase cage rotor im s steady state the promise of renewable hydro and wind energy via cage rotor and doubly fed variable speed generators e transport propulsion and i home appliances makes this third edition a state of the art tool conceived with numerous case studies and timely for both academia and industry

Theory of Electrical Machines 2022-01-01 intended for students taking the first year of an engineering degree or diploma course pref

Electric Machines and Electric Drives 2013-09 laboratory manual for electrical machines 2nd edition includes four new experiments in electrical machines so that it can cater to the complete syllabus of undergraduate laboratory courses of electrical machines this book gives the basic information to the students with the machine phenomenon working principles and testing methods etc it also imparts real physical understanding of various types of electrical machines the main attraction of this laboratory manual is its power point presentation for all experiments this manual is meant for electrical engineering students of b e and b tech and polytechnics Appletons Dictionary of Machines, Mechanics, Engine-work, and Engineering Illustrated with Four Thousand Engravings on Wood 1852 this volume includes select papers presented during the 4th international and 19th national conference on machines and mechanism inacomm 2019 held in indian institute of technology mandi it presents research on various aspects of design and analysis of machines and mechanisms by academic and industry researchers

Induction Machines Handbook 2020-05-26 for over 15 years principles of electrical machines is an ideal text for students who look to gain a current and clear understanding of the subject as all theories and concepts are explained with lucidity and clarity succinctly divided in 14 chapters the book delves into important concepts of the subject which include armature reaction and commutation single phase motors three phase induction motors synchronous motors transformers and alternators with the help of numerous figures and supporting chapter end questions for retention

Mechanics of Machines 1984 converter driven applications are applied in more and more processes almost any installed wind farm ship drives steel mills several boiler feed water pumps extruder and many other applications operate much more efficient and economic in case of variable speed solutions the boundary conditions for a motor or generator will change if it is supplied by a converter an electrical machine which is operated by a converter can no longer be regarded as an independent component but is embedded in a system consisting of converter and machine this book gives an overview of existing converter designs for large electrical machines methods for the appropriate calculation of machine phenomena which are implied by converters are derived in the power range above 500kva it is shown how due to the converter inherent higher voltage harmonics and pulse frequencies special phenomena are caused inside the machine which can be the reason for malfunction it is demonstrated that additional losses create additional temperature increases or voltage peaks the book describes how torque ripple can occur which endanger the mechanical shaft system and last but not least shaft voltages are induced which are sometimes sufficient in amplitude to damage bearings or to disturb sensors of the

protection arrangements

Laboratory Manual for Electrical Machines, 2/e 2017-11-19 [[[[]]] [[[]]] [[]] [[]]

Machines, Mechanism and Robotics 2021-07-21 electrical machines with matlab encapsulates the invaluable insight and experience that eminent instructor turan gonen has acquired in almost 40 years of teaching with simple versatile content that separates it from other texts on electrical machines this book is an ideal self study tool for advanced students in electrical and other areas of eng

Principles of Electrical Machines 2008 the two major broad applications of electrical energy are information processing and energy processing hence it is no wonder that electric machines have occupied a large and revered space in the field of electrical engineering such an important topic requires a careful approach and charles a gross electric machines offers the most balanced application oriented and modern perspective on electromagnetic machines available written in a style that is both accessible and authoritative this book explores all aspects of electromagnetic mechanical em machines rather than viewing the em machine in isolation the author treats the machine as part of an integrated system of source controller motor and load the discussion progresses systematically through basic machine physics and principles of operation to real world applications and relevant control issues for each type of machine presented coverage ranges from dc induction and synchronous machines to specialized machines such as transformers translational machines and microelectromechanical systems mems stimulating example applications include electric vehicles wind energy and vertical transportation numerous example problems illustrate and reinforce the concepts discussed along with appendices filled with unit conversions and background material electric machines is a succinct in depth and complete guide to understanding electric machines for novel applications **Converter Applications and their Influence on Large Electrical Machines** 2013-01-26 motivation it is our dream to understand the principles of animals remarkable ability for adaptive motion and to transfer such abilities to a robot up to now mechanisms for generation and control of stereotyped motions and adaptive motions in well known simple environments have been formulated to some extentand successfully applied to robots however principles of adaptation to various environments have not yet been clarified and autonomous adaptation remains unsolved as a seriously discult problem in robotics apparently the ability of animals and robots to adapt in a real world cannot be explained or realized by one single function in a control system and mechanism that is adaptation in motion is induced at every level from thecentral nervous system to the musculoskeletal system thus we organized the international symposium on adaptive motion in animals and machines amam forscientists and engineers concerned with adaptation on various levels to be brought together to discuss principles at each level and to investigate principles governing total systems history amam started in montreal canada in august 2000 it was organized by h kimura japan h witte germany g taga japan and k osuka japan who had agreed that having a small symposium on motion control with people from several elds coming together to discuss speci c issues was worthwhile those four organizing committee members determined the scope of amam as follows

chapters and contains a unique data base of 50 industrial case histories on the application of mcsa to diagnose broken rotor bars or unacceptable levels of airgap eccentricity in cage induction motors with ratings from 127 kw 170 h p up to 10 160 kw 13 620 h p there are also unsuccessful case histories which is another unique feature of the book the case studies also illustrate the effects of mechanical load dynamics downstream of the motor on the interpretation of current signatures a number of cases are presented where abnormal operation of the driven load was diagnosed chapter 13 presents a critical appraisal of mcsa including successes failures and lessons learned via industrial case histories the case histories are presented in a step by step format with predictions and outcomes supported by current spectra and photographic evidence to confirm a correct or incorrect diagnosis the case histories are presented in detail so readers fully understand the diagnosis the authors have 108 years of combined experience in the installation maintenance repair design manufacture operation and condition monitoring of scims there are 10

questions at the end of chapters 1 to 12 and answers can be obtained via the publisher current signature analysis for condition monitoring of cage induction motors serves as a reference for professional engineers head electricians and technicians working with induction motors to obtain the solutions manual for this book please send an email to pressbooks ieee org william t thomson is director and consultant with em diagnostics ltd in scotland prof thomson received a bsc hons in electrical engineering in 1973 and an msc in 1977 from the university of strathclyde he has published 72 papers on condition monitoring of induction motors in a variety of engineering journals such as ieee transactions usa iee proceedings uk and also at numerous international ieee and iee conferences he is a senior member of the ieee a fellow of the iee iet in the uk and a chartered professional engineer registered in the uk ian culbert was a rotating machines specialist at iris power qualitrol since april 2002 until his very untimely death on 8th september 2015 at this company he provided consulting services to customers assisted in product development trained sales and field service staff and reviewed stator winding partial discharge reports he has co authored two books on electrical machine insulation design evaluation aging testing and repair and was principal author of a number of electric power research institute reports on motor repair ian was a registered professional engineer in the province of ontario canada and a senior member of ieee

Electrical Machines with MATLAB 2011-11-16 power quality in power systems electrical machines and power electronic drives uses current research and engineering practices guidelines standards and regulations for engineering professionals and students interested in solving power quality problems in a cost effective reliable and safe manner within the context of renewable energy systems the book contains chapters that address power quality across diverse facets of electric energy engineering including ac and dc transmission and distribution lines end user applications such as electric machines transformers inductors capacitors wind power and photovoltaic power plants and variable speed variable torque power electronic drives the book covers nonsinusoidal waveshapes voltage disturbances harmonic losses aging and lifetime reductions single time events such as voltage dips and the effects of variable speed drives controlled by pwm converters the book also reviews a corpus of techniques to mitigate power quality problems such as the optimal design of renewable energy storage devices including lithium ion batteries and fuel cells for automobiles serving as energy storage and the optimal design of nonlinear loads for simultaneous efficiency and power quality provides theoretical and practical insights into power quality problems related to future smart grid renewable hybrid electric power systems electric machines and variable speed variable torque power electronic drives contains a highly varied corpus of practical applications drawn from current international practice designed as a self study tool with end of chapter problems and solutions designed to build understanding includes very highly referenced chapters that enable readers to save time and money in the research discovery process for critical research articles regulatory standards and guidelines

Electric Machines 2006-10-20 in recent years the integration of electric motors into various applications has surged driven by the ever growing demand for efficient and sustainable energy solutions among the myriad of electric motor types direct current dc motors stand out for their versatility reliability and controllability making them a cornerstone in a wide array of industries from manufacturing and transportation to renewable energy systems and home appliances the significance of dc motors lies not only in their mechanical prowess but also in the sophisticated control schemes that govern their operation

Adaptive Motion of Animals and Machines 2006-07-28 table of content 1 entrepreneurship meaning concept characteristics need functions 2 theories of entrepreneurship 3 entrepreneur meaning characteristics qualities functions and types 4 entrepreneurship development programmes 5 women entrepreneur 6 promotion of a venture business 7 project concept classification and identification 8 project formulation and report 9 project appraisal resource assessment financial and non financial 10 raising of funds 11 venture capital and documentation requirements 12 plant layout 13 selection of product 14 location of an enterprise 15 choice of organisation 16 facilities and technologies for starting enterprise 17 small scale industries in india 18 institutional finance to entrepreneurs 19 legal requirements for establishment of a new unit 20 institutions for entrepreneurial development more information the author of this book is dr o p gupta dr o p gupta is the ex reader of

deptt of commerce in pgdav college university of delhi delhi

Current Signature Analysis for Condition Monitoring of Cage Induction Motors 2017-01-24 the autonomous behavior of an array of identical elements is investigated and found to be related closely to the structure of the array each element consists of a symmetric boolean function of the inputs and one unit of delay the interconnection of the elements is described in a matrix a function in the element is universal and minimal if there exists an nxn interconnection matrix that will generate each of the autonomous state diagrams of 2 superscript n states it is shown no such function can exist

Power Quality in Power Systems, Electrical Machines, and Power-Electronic Drives 2023-02-13 electric power systems are at the heart of modern society powering homes businesses and industries around the globe as such a firm grasp of their fundamental principles is essential for anyone involved in the design operation or management of electrical infrastructure throughout this book emphasis is placed not only on theoretical foundations but also on practical insights gleaned from real world engineering practices case studies examples and illustrations are utilized to illustrate key concepts and demonstrate their relevance in solving real world problems

Control Schemes for DC Motors in Electric Drives 2024-05-18 the book presents a discussion on education of sciences through a technological view shown in the works of a variety of authors from different countries it s a differentiated conception of scientific education bringing renowned authors who discuss from teacher formation to the inclusion of new technologies into education we are proud to say that the themes discussed in the book are up to date and also of scientific interest in many countries as seen by the collaborating authors who come from many parts of the world the scientific discussion becomes evident through the effort of the authors in participating in this book that will serve as a reference for future research for those who want to develop modern educational approaches

Fundamentals of Entrepreneurship For B.Com. Sem.-4 (According to NEP-2020) 2023-04-29 an electric machine is a device that converts mechanical energy into electrical energy or vice versa it can take the form of an electric generator electric motor or transformer electric generators produce virtually all electric power we use all over the world electric machine blends the three major areas of electrical engineering power control and power electronics this book presents the relation of power quantities for the machine as the current voltage power flow power losses and efficiency this book will provide a good understanding of the behavior and its drive beginning with the study of salient features of electrical dc and ac machines

Analysis of Iterative NOR Autonomous Sequential Machines 1966 rapid increases in energy consumption and emphasis on environmental protection have posed challenges for the motor industry as has the design and manufacture of highly efficient reliable cost effective energy saving quiet precisely controlled and long lasting electric motors suitable for motor designers engineers and manufacturers as well

Fundamentals of Electric Power System 2017-10-11 this book aims to promote a sample of current theoretical and application oriented intelligent systems research specifically in the field of neural networks computing it presents examples of experimental and real world investigations that demonstrate contemporary achievements and advances in the area of intelligent systems this book will prove as a valuable source of up to date theoretical and application oriented research in intelligent systems for researchers and postgraduate students

Science Education 2019-06-12 advances during the past two decades in use of high powered and fast acting solid state devices has advanced the state of the art of motor control and excitation systems for alternators these require the explanation of harmonic torques in motors as well as the stability of machines this book covers the necessary material at the undergraduate level and could serve as a terminal course in electrical machinery syllabus the book commences with magnetic circuit calculations for devices and machines field plotting methods and principles of electro mechanical energy conversion for which the magnetic fields serve as reservoirs of energy the conversion processes are based on the application of amperes law of force and faradays law of e m induction using d alemberts principle of virtual work a

great emphasis is placed on the application of lagranges equation including motional e m f and the rayleigh dissipation function the author has experienced that a firm grasp of lagranges method is most beneficial for handling complex e m c problems chapters 3 through 10 cover the basic principles of operation and performance of transformers dc machines induction motors synchronous machines leading to discussion of dynamics of machines in the steady state and transient state the chapter on synchronous machines is strengthened by showing the very basic and important aspect of calculation of synchronous machine constants which is considered novel in such a book the student is given the idea that the flux distribution in the machine is basic to its operation in all its states of operation the final chapter is an introduction to computer aided design of machines which is gaining in importance in practice every chapter has many worked examples to guide the student not only in problem solving but to illustrate engineering aspects of this very important topic review questions problems for self testing and objective type questions with all answers are provided

Fundamentals of Electric Machines: A Primer with MATLAB 2014-04-28 this second edition of mechanical design and manufacturing of electric motors provides in depth knowledge of design methods and developments of electric motors in the context of rapid increases in energy consumption and emphasis on environmental protection alongside new technology in 3d printing robots nanotechnology and digital techniques and the challenges these pose to the motor industry from motor classification and design of motor components to model setup and material and bearing selections this comprehensive text covers the fundamentals of practical design and design related issues modeling and simulation engineering analysis manufacturing processes testing procedures and performance characteristics of electric motors today this second edition adds three brand new chapters on motor breaks motor sensors and power transmission and gearing systems using a practical approach with a focus on innovative design and applications the book contains a thorough discussion of major components and subsystems such as rotors shafts stators and frames alongside various cooling techniques including natural and forced air direct and indirect liquid phase change and other newly emerged innovative cooling methods it also analyzes the calculation of motor power losses motor vibration and acoustic noise issues and presents engineering analysis methods and case study results while suitable for motor engineers designers manufacturers and end users the book will also be of interest to maintenance personnel undergraduate and graduate students and academic researchers

Mechanical Design of Electric Motors 2012-09-05 in this monograph the authors solve the modern scientific problems connected with a c motors and generators based first on the detailed consideration of their physical phenomena the authors describe the theory and investigative methods they developed and applied in practice which are considered to be of essential interest for specialists in the field of the electrical engineering industry in european countries the usa argentina and brazil as well as in such countries as india china and iran this book will be of interest to engineers specialized in the field of the manufacture operation and repair of a c machines motors and generators as well as electric drives to professors lecturers and post graduate students of technical universities who are specializing in the field of electric machine engineering and electric drives and to students who are engaged in the field of high current techniques electric drives and electric machine engineering

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<u>Innovations in Intelligent Machines -3</u> 2007

Electromechanical Energy Conversion With Dynamics Of Machines 2022-05-20

Mechanical Design and Manufacturing of Electric Motors 1852

Appleton's Dictionary of Machines, Mechanics, Engine-work, and Engineering 1864

Encyclopædia of farm implements and machines 2016-11-30

Large A.C. Machines 1985

Computer Program to Relate Dust Generation to Drum-type Coal Mining Machines 1893

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