

WILEY



Wiley Academic Catalog

**Aeronautics / Aerospace,
Civil, Industrial, Chemical &
Mechanical Engineering**

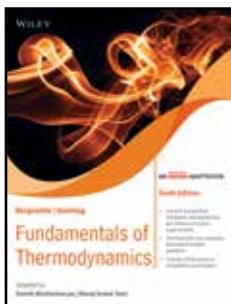
2025

www.wileyindia.com

CONTENTS

AERONAUTICS / AEROSPACE ENGINEERING	3
CHEMICAL ENGINEERING	9
CIVIL ENGINEERING	19
ENVIRONMENTAL / EARTH SCIENCE & ENGINEERING SCIENCES	29
ENGINEERING SPECIAL TOPICS	31
INDUSTRIAL ENGINEERING	33
MATERIAL SCIENCE	40
MECHANICAL ENGINEERING	43
AUTHOR WISE LISTING	63

AERONAUTICS / AEROSPACE ENGINEERING



Fundamentals of Thermodynamics, 10ed, An Indian Adaptation | IM | e | k

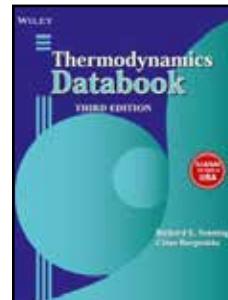
Borgnakke, Bhattacharyya, Soni

Table of Contents

- Symbols • 1 Introduction and Preliminaries • 1.1 A Thermodynamic System and the Control Volume • 1.2 Macroscopic Versus Microscopic Points of View • 1.3 Properties and State of a Substance • 1.4 Processes and Cycles • 1.5 Units for Mass, Length, Time, and Force • 1.6 Specific Volume and Density • 1.7 Pressure • 1.8 Energy • 1.9 Equality of Temperature • 1.10 The Zeroth Law of Thermodynamics
- 1.11 Temperature Scales • 1.12 Engineering Applications • • 2 Properties of a Pure Substance • 2.1 The Pure Substance • 2.2 The Phase Boundaries • 2.3 The P-v-T Surface • 2.4 Tables of Thermodynamic Properties • 2.5 The Two-Phase States • 2.6 The Liquid and Solid States • 2.7 The Superheated Vapor States • 2.8 The Ideal Gas States • 2.9 The Compressibility Factor • 2.10 Equations of State • 2.11 Engineering Applications • • 3 Energy Equation and First Law of Thermodynamics • 3.1 Definition of Work • 3.2 Work Done at the Moving Boundary of a Simple Compressible System • 3.3 Other Systems that Involve Work • 3.4 Concluding Remarks Regarding Work • 3.5 Definition of Heat • 3.6 Heat Transfer Modes • 3.7 Comparison of Heat and Work • 3.8 The First Law of Thermodynamics for a Control Mass • 3.9 Internal Energy—a Thermodynamic Property • 3.10 Problem Analysis and Solution Technique • 3.11 The Thermodynamic Property Enthalpy • 3.12 The Constant-Volume and Constant-Pressure Specific Heats • 3.13 The Internal Energy, Enthalpy, and Specific Heat of Ideal Gases • 3.14 Nonuniform Distribution of States and Mass • 3.15 The Transient Heat Transfer Process • 3.16 The First Law as a Rate equation • 3.17 Engineering Applications • • 4 Energy Analysis for a Control Volume • 4.1 Conservation of Mass and the Control Volume • 4.2 The Energy Equation for a Control Volume • 4.3 The Steady-State Process • 4.4 Examples of Steady-State Processes • 4.5 Multiple-Flow Devices • 4.6 The Transient Flow Process • 4.7 Engineering Applications • • 5 The Second Law of Thermodynamics • 5.1 Heat Engines, Refrigerators, and Heat Pump • 5.2 The Second Law of Thermodynamics • 5.3 The Reversible Process • 5.4 Factors that Render Processes Irreversible • 5.5 The Carnot Cycle • 5.6 Two Propositions Regarding the Efficiency of a Carnot Cycle • 5.7 The Thermodynamic Temperature Scale • 5.8 The Ideal Gas Temperature Scale • 5.9 Ideal Versus Real Machines • 5.10 The Inequality of Clausius • 5.11 Engineering Applications • • 6 Entropy • 6.1 Entropy—a Property of a System • 6.2 The Entropy of a Pure Substance • 6.3 Entropy Change in Reversible Processes • 6.4 The Thermodynamic Property Relation • 6.5 Entropy Change of a Solid or Liquid • 6.6 Entropy Change of an Ideal Gas • 6.7 The Reversible Polytropic Process for an Ideal Gas • 6.8 Entropy Change of a Control Mass During an Irreversible Process • 6.9 Entropy Balance Equation for a Closed System • 6.10 Principle of the Increase of Entropy • 6.11 Entropy Balance Equation in a Rate Form • 6.12 Some General Comments about Entropy and Chaos • • 7 Entropy Analysis for a Control Volume • 7.1 The Entropy Balance Equation for a Control Volume • 7.2 The Steady-State Process and the Transient Process • 7.3 The Steady-State Single-Flow Process • 7.4 Principle of the Increase of Entropy • 7.5 Engineering Applications; Energy Conservation and Device Efficiency • • 8 Exergy • 8.1 Reversible Work, and Irreversibility • 8.2 Exergy • 8.3 Exergy Balance Equation • 8.4 The Second-Law Efficiency • 8.5 Engineering Applications • • 9 Gas Power and Refrigeration Systems • 9.1 Introduction to Power Systems • 9.2 Air-Standard Power Cycles • 9.3 The Stirling Cycle and the Ericsson Cycle • 9.4 Reciprocating Engine Power Cycles • 9.5 The Otto Cycle • 9.6 The Diesel Cycle • 9.7 The Dual Cycle • 9.8 The Atkinson and Miller Cycles • 9.9 The Brayton Cycle • 9.10 The Simple Gas-Turbine Cycle with a Regenerator • 9.11 Gas-Turbine Power Cycle Configurations • 9.12 The Air-Standard Cycle for Jet Propulsion • 9.13 Introduction to Refrigeration Systems • 9.14 The Air-Standard Refrigeration Cycle • • 10 Vapor Power and Refrigeration Systems • 10.1 The Simple Rankine Cycle • 10.2 Effect of Pressure and Temperature on the Rankine Cycle • 10.3 The Reheat Cycle • 10.4 The Regenerative Cycle and Feedwater Heaters • 10.5 Deviation of Actual Cycles from Ideal Cycles • 10.6 Combined Heat and Power: Other Configurations • 10.7 The Vapor-Compression Refrigeration Cycle • 10.8 Working Fluids for Vapor-Compression Refrigeration Systems • 10.9 Deviation of the Actual Vapor-Compression Refrigeration

Cycle from the Ideal Cycle • 10.10 Refrigeration Cycle Configurations • 10.11 The Absorption Refrigeration Cycle • 10.12 Exergy Analysis of Cycles • 10.13 Combined-Cycle Power and Refrigeration Systems • • 11 Gas Mixtures • 11.1 General Considerations and Mixtures of Ideal Gases • 11.2 A Simplified Model of a Mixture Involving Gases and a Vapor • 11.3 The Energy Equation Applied to Gas-Vapor Mixtures • 11.4 The Adiabatic Saturation Process • 11.5 Engineering Applications—Wet-Bulb and Dry-Bulb Temperatures and the Psychrometric Chart • • 12 Thermodynamic Relations • 12.1 The Clapeyron Equation • 12.2 Mathematical Relations for a Homogeneous Phase • 12.3 The Maxwell Relations • 12.4 Thermodynamic Relations Involving Enthalpy, Internal Energy, and Entropy • 12.5 Volume Expansivity and Isothermal and Adiabatic Compressibility • 12.6 Real-Gas Behavior and Equations of State • 12.7 The Generalized Chart for Changes of Enthalpy at Constant Temperature • 12.8 The Generalized Chart for Changes of Entropy at Constant Temperature • 12.9 The Property Relation for Mixtures • 12.10 Pseudopure Substance Models for Real Gas Mixtures • 12.11 Engineering Applications • • 13 Chemical Reactions • 13.1 Fuels • 13.2 The Combustion Process • 13.3 Enthalpy of Formation • 13.4 Energy Analysis of Reacting Systems • 13.5 Enthalpy and Internal Energy of Combustion; Heating Value • 13.6 Adiabatic Flame Temperature • 13.7 The Third Law of Thermodynamics and Absolute Entropy • 13.8 Second-Law Analysis of Reacting Systems • 13.9 Fuel Cells • 13.10 Engineering Applications • • 14 Introduction to Phase and Chemical Equilibrium • 14.1 Requirements for Equilibrium • 14.2 Equilibrium Between Two Phases of a Pure Substance • 14.3 Metastable Equilibrium • 14.4 Chemical Equilibrium • 14.5 Simultaneous Reactions • 14.6 Coal Gasification • 14.7 Ionization • 14.8 Engineering Applications • • 15 Compressible Flow • 15.1 Stagnation Properties • 15.2 The Momentum Equation for a Control Volume • 15.3 Adiabatic, One-Dimensional, Steady-State Flow of an Incompressible Fluid through a Nozzle • 15.4 Velocity of Sound in an Ideal Gas • 15.5 Reversible, Adiabatic, One-Dimensional Flow of an Ideal Gas through a Nozzle • 15.6 Mass-Flow Rate of an Ideal Gas through an Isentropic Nozzle • 15.7 Normal Shock in an Ideal Gas Flowing through a Nozzle • 15.8 Nozzle and Diffuser Coefficients • • Summary • Problems • Appendix A SI Units: Single-State Properties • Appendix B SI Units: Thermodynamic Tables • Appendix C Ideal Gas Specific Heat • C.1 Monatomic Gases (Inert Gases Ar, He, Ne, Xe, Kr; Also N, O, H, Cl, F, ...) • C.2 Diatomic and Linear Polyatomic Gases (N₂, O₂, CO, OH, ..., CO₂, N₂O, ...) • C.3 Nonlinear Polyatomic Molecules (H₂O, NH₃, CH₄, C₂H₆, ...) • Appendix D Equations of State • Appendix E Figures • Appendix F Multiple-Choice Questions • Index

9789354642210 | ₹ 1139



Thermodynamics Databook, 3ed

Borgnakke, Sonntag

About the Author

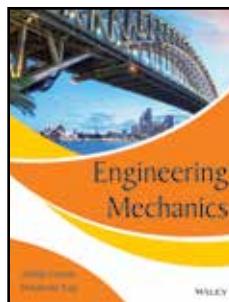
Richard E. Sonntag is a Professor of mechanical engineering at the University of Michigan and served as the department chair for eleven years. Claus Borgnakke is an Associate Professor at the University of Michigan where he received the Excellence in Teaching Award as well as other awards and recognitions including the Ralph E. Teeter.

Table of Contents

- A Single-State Properties • Table A.1 Conversion Factors • Table A.2 Critical Constants • Table A.3 Properties of Selected Solids at 25°C • Table A.4 Properties of Some Liquids at 25°C • Table A.5 Properties of Various Ideal Gases at 25°C, 100 kPa (SI Units) • Table A.6 Constant-Pressure Specific Heats of Various Ideal Gases • Table A.7.1 Ideal-Gas Properties of Air, Standard Entropy at 0.1-MPa (1-Bar) Pressure • Table A.7.2 The Isentropic Relative Pressure and Relative Volume Functions • Table A.8 Ideal-Gas Properties of Various Substances, Entropies at 0.1-MPa (1-Bar) Pressure, Mass Basis • Table A.9 Ideal-Gas Properties of Various Substances (SI Units), Entropies at 0.1-MPa (1-Bar) Pressure, Mole Basis • Table A.10 Enthalpy of Formation and Absolute Entropy of Various Substances at 25°C, 100 kPa Pressure • Table A.11 Logarithms to the Base e of the Equilibrium Constant K • • B Thermodynamic Tables • Table B.1 Thermodynamic Properties of Water • Table B.2 Thermodynamic Properties of Ammonia • Table B.3 Thermodynamic Properties of Carbon Dioxide • Table B.4 Thermodynamic Properties of R-410A • Table B.5 Thermodynamic Properties of R-134a • Table B.6 Thermodynamic Properties of Nitrogen • Table B.7 Thermodynamic Properties of Methane • • C Ideal-Gas Specific Heat • C.1 MONATOMIC GASES (INERT GASES AR, HE, NE, XE, KR; ALSO N, O, H, CL, F,

...) • C.2 DIATOMIC AND LINEAR POLYATOMIC GASES(N₂, O₂, CO, OH, ..., CO₂, N₂O, ...) • C.3 NONLINEAR POLYATOMIC MOLECULES (H₂O, NH₃, CH₄, C₂H₆, ...) • • D Equations Of State • Table D.1 Equations of State • Table D.2 The Lee–Kesler Equation of State • Table D.3 Saturated Liquid–Vapor Compressibilities, Lee–Kesler Simple Fluid • Table D.4 Acentric Factor for Some Substances • • • E Figures • Figure E.1 Temperature–Entropy Diagram for Water • Figure E.2 Pressure–Enthalpy Diagram for Ammonia • Figure E.3 Pressure–Enthalpy Diagram for Oxygen • Figure E.4 Psychrometric Chart • • • F Additional Thermodynamic Tables • Table F.1 Thermodynamic Properties of R-12 • Table F.2 Thermodynamic Properties of R-22

9788126589203 | ₹ 349



Engineering Mechanics | e | k

Chanda

About the Author

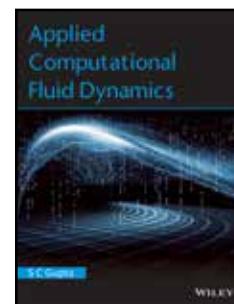
Dr. Abhijit Chanda is currently a Professor of Mechanical Engineering department, Jadavpur University, Kolkata. Dr. Chanda has over 15 years of teaching experience. He co-authored a book on Strength of Materials published by Wiley India. His research interests are in the fields of Material Science, Bio-Materials, Bio Engineering and related topics.

Table of Contents

- Preface • Statics • Chapter 1 a Quick Glimpse to Vector algebra • 1.1 Introduction • 1.2 Unit Vector • 1.3 Direction Cosines • 1.4 Vector as a Line Segment • 1.5 Position Vector • 1.6 Vector Addition and Subtraction • 1.7 Product of Two Vectors • 1.8 Vector Equation • 1.8.1 Linearly Independent Vectors • 1.9 A Look to Different Coordinate Systems • Chapter 2 introduction to Mechanics • 2.1 Mechanics – Basic Definitions • 2.2 Idealisations and Basic Assumptions • 2.3 Dimensions, Law of Dimensional Homogeneity and Units • Chapter 3 Vector Mechanics • 3.1 Introduction • 3.2 An Introduction to Vector Algebra • 3.3 Miscellaneous Vectors • 3.4 Vector Resolution and Cartesian Vector • 3.5 Position Vector • 3.6 Product of Vectors • 3.7 Couple-Moment • Chapter 4 Equivalent Force and Moment • 4.1 Introduction • 4.2 Basic Concept • 4.3 Varigon's Theorem of Moment • Chapter 5 Equilibrium • 5.1 Introduction • 5.2 Analysis Methodology • 5.3 Free Body Diagrams • 5.4 Two-Force Member • 5.5 Three-Force Member • 5.6 Frames and Machines • Chapter 6 Truss • 6.1 Introduction • 6.2 Types of Truss • 6.3 Analysis of Truss • Chapter 7 Friction • 7.1 Introduction • 7.2 Governing Equation of Friction • 7.3 Steps of Analysis • 7.4 Friction in Simple Machines • Chapter 8 Central Points and Properties of Surfaces • 8.1 Introduction • 8.2 Centre of Mass and Centre of Gravity • 8.3 Area Moment of Inertia • 8.4 Product Area-Moment of Inertia • 8.5 Parallel Axis Theorem • 8.6 Perpendicular Axis Theorem • 8.7 Area Moment of Inertia for Composite Area • 8.8 Centroid of Shell Element • Chapter 9 Distributed Force Systems • 9.1 Introduction • 9.2 Types of Distributed Load • 9.3 Analysis of Plane Distributed Load • Chapter 10 Virtual Work • 10.1 Introduction • 10.2 Virtual Work Theorems and Equation of Equilibrium Formulations • Dynamics • Chapter 1 Particle Kinematics • Objectives • 1.1 Introduction • 1.2 Study of Kinematics • 1.3 Rectilinear Motion • 1.4 Plane Curvilinear Motion in X-Y Coordinates • 1.5 n-t Coordinates for Curvilinear Motion • 1.6 Curvilinear Motion in Polar Coordinates • 1.7 Kinematics of Connected Bodies • Chapter 2 Kinetics • 2.1 Introduction • 2.2 Kinetics of a Particle • 2.3 Two-Dimensional Kinetics of a Slab-Like Rigid Body • 2.4 D'Alembert's Principle • 2.5 Types of Kinetics Problems • Chapter 3 Work, Energy and Power • 3.1 Introduction • 3.2 Work Done by Various Types of Forces • 3.3 Energy • 3.4 Conservative Forces • 3.5 Work-Energy Principle • 3.6 Power • Chapter 4 Momentum and Impulse • 4.1 Impulse and Linear Momentum of a Particle • 4.2 Angular Momentum • 4.3 Conservation of Linear Momentum • 4.4 Conservation of Angular Momentum • 4.5 Linear Momentum for a System of Mass Particles • 4.6 Impulsive Forces and Moments • 4.7 Collision of Bodies • Chapter 5 Dynamics of System of Particles • 5.1 Introduction • 5.2 Kinematics of System • 5.3 Kinetics of the System • Chapter 6 Plane Kinematics of Rigid Body • 6.1 Rigid Body • 6.2 Motion of Rigid Body in Two Dimensions • 6.3 Instantaneous Centre of Velocity • 6.4 Piston Displacement and Velocity of a Reciprocating Mechanism • 6.5 Special Discussion on the Locus of a Point on the Connecting Rod • 6.6 Rolling Motion of Cylinder-Like Body • Chapter 7 Rotational Kinetics of Rigid Bodies • 7.1 Introduction • 7.2 Equations of Motion of Body Undergoing Plane Fixed-Axis Rotation • 7.3 D'Alembert's Principle • 7.4 Mass-Moment of Inertia • Chapter 8 Introduction to Dynamics of Vibration • 8.1

Introduction • 8.2 Free Vibration of an SDOF System • 8.3 Consideration of Mass of the Spring Element • 8.4 Damped Free Vibration of Single Degree of Freedom System • 8.5 Viscous Damping • 8.6 Forced Vibration of Single Degree of Freedom System • 8.7 Forced Vibration • Solved Examples • Practice Problems • Index

9788126570935 | ₹ 719



Applied Computational Fluid Dynamics | e | k

Gupta

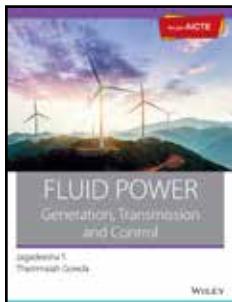
About the Author

Prof. S C Gupta is presently teaching at MVJ College of Engineering, Bangalore. He Graduated in Aeronautical Engineering from Punjab Engineering College, Chandigarh in the year 1969 with Distinction of Hons and a Gold Medal and subsequently obtained M.Tech from Indian Institute of Technology, Kanpur in the Year 1971. He has over 47 years of experience in the field of Aeronautics, mainly at R&D sector and teaching at postgraduate level. He worked for several years with Defence Research and Development Organisation (DRDO) from where he retired as Air Commodore.

Table of Contents

- Chapter 1 Introduction • 1.1 Insight into Power of Computational Fluid Dynamics • 1.2 Advantages of CFD • 1.3 Typical Major Goals of Computational Numeric in Aerospace • 1.4 Error Sources in CFD Codes and in Wind Tunnel Data • 1.5 Requirement of Computing Power for CFD • 1.6 CFD Applications • 1.7 CFD Ideas to Understand • 1.8 Models of Flow • 1.9 Substantial Derivative (Time Rate of Change Following a Moving Fluid Element) • 1.10 Divergence of Velocity ($\nabla \cdot V$) • 1.11 Compressibility • 1.12 Viscosity • 1.13 Governing Equations of Flow • 1.14 All Equations Are One: Some Manipulations • 1.15 Integral Versus Differential Form of Equations • 1.16 Comments on the Governing Equations • 1.17 Physical Boundary Conditions • 1.18 Forms of Governing Equations Particularly Suited for CFD Work • 1.19 Shock Fitting and Shock Capturing • • Chapter 2 Mathematical Behavior of Partial Differential Equations and Its Impact on Computational Fluid Dynamics • 2.1 Introduction • 2.2 Method to Determine Classification of Partial Differential Equations • 2.3 Classification of PDEs: Impact on Physical and Computational Fluid Dynamics • 2.4 Essence of Discretization • 2.5 Difference Equation • 2.6 Explicit and Implicit Approach • 2.7 Errors and Stability Analysis • 2.8 Stability Regions of Standard Time-Stepping Techniques • 2.9 System of Second-Order PDEs • 2.10 Canonicalization of PDEs • • Chapter 3 Solution Methods of Finite-Difference Equations • 3.1 Introduction • 3.2 Time Marching • 3.3 Space Marching • 3.4 Relaxation Technique • 3.5 Alternating Direction Implicit (ADI) Method • 3.6 Successive Over-Relaxation/Under-Relaxation • 3.7 Lax–Wendroff Method • 3.8 Upwind Schemes • 3.9 Midpoint Leapfrog • 3.10 Shock Capturing • 3.11 Numerical Viscosity • 3.12 Artificial Viscosity • 3.13 Conservative Smoothing • 3.14 Unsteady Problem-Explicit versus Implicit Scheme • • Chapter 4 Grid Generation • 4.1 Introduction • 4.2 Structured Grid Generation • 4.3 Surface Grid Generation • 4.4 Multiblock Grid Generation • 4.5 Unstructured Grid Generation • 4.6 Multigrid Methods: Cycling Strategies • • Chapter 5 Adaptive Grid Methods and Appropriate Transformation • 5.1 Introduction • 5.2 Adaptive Grids • 5.3 Structured Grid Adaptive Methods • 5.4 Unstructured Adaptive Grid Methods • 5.5 General Transformation of the Equations • 5.6 Matrices and Jacobians • 5.7 Generic form of the Governing Flow Equations in Strong • 5.8 Parallel Processing • • Chapter 6 Finite Volume Methods • 6.1 General Conservation Laws • 6.2 Spatial Discretization – Structured Finite Volume Scheme • 6.3 Temporal Discretization – Structured Finite Volume Scheme • 6.4 Boundary Conditions • 6.5 Case Studies • 6.6 High-Resolution Schemes • • Chapter 7 Computational Fluid Dynamics: Some Applications • 7.1 Numerical Dissipation and Dispersion • 7.2 Approximate Factorization • 7.3 Flux Vector Splitting • 7.4 Computational Solution for the Laminar Boundary Layer • 7.5 Application to Turbulence • 7.6 Computational Solution for Turbulent Boundary Layer • 7.7 Thermal • 7.8 Multi-Objective Shape Optimization • 7.9 Inverse Design • 7.10 Similarity Laws • 7.11 Method of Characteristics • 7.12 Fluid Structure Interaction • • Appendix 7.1 • Appendix 7.2 Design Exercise: To Design Three-Dimensional Aerofoil Shapes for Maximum Endurance for Jet-Powered Plane • References • Index

9788126577538 | ₹ 779



Fluid Power: Generation, Transmission and Control: As per AICTE | e

Jagadeesha T.

About the Author

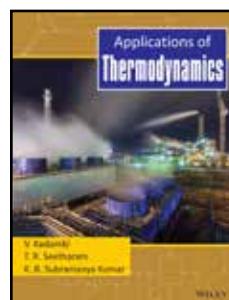
Jagadeesha T. is currently working as an Assistant Professor in the Department of Mechanical and Production Engineering at National Institute of Technology (NIT), Calicut (Kerala). He is the recipient of the prestigious JRD Tata Scholarship and SMA (Government of Singapore) Scholarship. He has 20 years of experience in the industry, teaching, academic research, consultation, and has excellently completed many projects with reputed organizations. He has worked with TATA Engineering Locomotive Company (India), TVS Suzuki (India), IBM Pvt. Ltd (Singapore), ASM (Singapore), and Applied Materials (Singapore and United States), APP Systems and Services (Singapore), ST Microelectronics (Singapore), Chartered Semiconductor Manufacturing (Singapore), and Sitronics (Singapore).

Table of Contents

- Preface • Acknowledgements • About the Authors • Nomenclature • 1 Introduction to Fluid Power • 1.1 Introduction • 1.2 Fluid Power and Its Scope • 1.3 Classification of Fluid Power Systems • 1.4 Hydrostatic and Hydrodynamic Systems • 1.5 History of Fluid Power • 1.6 Advantages of a Fluid Power System • 1.7 Disadvantages of a Fluid Power System • 1.8 Basic Components of a Hydraulic System • 1.9 Basic Components of a Pneumatic System • 1.10 Comparison between Hydraulic and Pneumatic Systems • 1.11 Comparison of Different Power Systems • 1.12 Future of Fluid Power Industry in India • 2 Properties of Fluid • 2.1 Introduction • 2.2 Solids and Fluids • 2.3 Density, Specific Weight, Specific Volume and Specific Gravity • 2.4 Pressure • 2.5 Compressible and Incompressible Fluids • 2.6 Bulk Modulus (Volume Modulus of Elasticity) • 2.7 Reynolds Number • 2.8 Types of Fluid Flow • 2.9 Ideal Fluid • 2.10 Viscosity • 2.11 Viscosity Index • 3 Fluids for Hydraulic Systems • 3.1 Introduction • 3.2 Functions of Hydraulic Fluids • 3.3 Additives in Hydraulic Fluids • 3.4 Types of Hydraulic Fluids • 3.5 Factors Influencing the Selection of a Fluid • 4 Governing Principles and Laws • 4.1 Introduction • 4.2 Brief Review of Mechanics • 4.3 Pascal's Law • 4.4 Conservation of Energy • 4.5 The Continuity Equation • 4.6 Bernoulli's Equation from Newton's Law • 4.7 Bernoulli's Equation from Energy Consideration • 4.8 The Energy Equation • 4.9 Elements of Hydraulic Systems and the Corresponding Bernoulli's Equation • 4.10 Torricelli's Theorem • 4.11 Siphon • 5 Distribution of Fluid Power • 5.1 Introduction • 5.2 Choice of Distribution • 5.3 Conductor Sizing • 5.4 Burst Pressure and Working Pressure • 5.5 Steel Pipes • 5.6 Screwed Connections • 5.7 Steel Tubing • 5.8 Compression Joints • 5.9 Plastic Conductors • 5.10 Flexible Hoses • 5.11 Rotary Couplings • 5.12 Quick Disconnect Couplings • 6 Energy Losses in Hydraulic Systems • 6.1 Introduction • 6.2 Laminar and Turbulent Flows • 6.3 Reynolds Number • 6.4 Darcy-Weisbach Equation • 6.5 Frictional Losses in Laminar Flow • 6.6 Frictional Losses in Turbulent Flow • 6.7 Frictional Losses in Valves and Fittings • 6.8 Equivalent Length Technique • 7 Hydraulic Pumps • 7.1 Introduction • 7.2 Classification of Pumps • 7.3 Pumping Theory • 7.4 Gear Pumps • 7.5 Lobe Pumps • 7.6 Screw Pumps • 7.7 Vane Pumps • 7.8 Piston Pumps • 7.9 Comparison of Hydraulic Pumps • 7.10 Pump Performance • 7.11 Pump Performance Curve • 7.12 Pump Noise • 7.13 Pump Cavitation • 7.14 Pump Selection • 8 Hydraulic Actuators • 8.1 Introduction • 8.2 Types of Hydraulic Cylinders • 8.3 Standard Metric Cylinders • 8.4 Cylinder Force, Velocity and Power • 8.5 Acceleration and Deceleration of Cylinder Loads • 8.6 Various Methods of Applying Linear Motion Using Hydraulic Cylinders • 8.7 First-, Second- and Third-Class Lever Systems • 8.8 Cylinder Cushions • 8.9 Cylinder Mountings and Strength Calculations • 8.10 Design of Cylinder Barrel • 9 Hydraulic Motors • 9.1 Introduction • 9.2 Applications • 9.3 Comparison between a Hydraulic Motor and an Electric Motor • 9.4 Classification of Hydraulic Motors • 9.5 Gear Motors • 9.6 Vane Motors • 9.7 Piston Motors • 9.8 Semi-Rotary Actuators • 9.9 Chain and Sprocket Semi-Rotary Actuator • 9.10 Rack and Pinion Rotary Actuator • 9.11 Hydraulic Motor: Theoretical Torque, Power and Flow Rate • 9.12 Performance of Hydraulic Motors • 9.13 Performance Curves for a Variable Displacement Motor • 10 Hydrostatic Transmission • 10.1 Introduction • 10.2 Advantages of a Hydrostatic Transmission • 10.3 Components of a Hydrostatic Transmission System • 10.4 Analysis of a Hydrostatic System • 10.4.1 Pump Characteristics • 10.4.2 Motor Characteristics • 10.4.3 Variable-Capacity Pump/Fixed-Capacity Motor Unit • 10.4.4 Fixed-Capacity Pump/Variable-Capacity Motor Unit • 10.4.5 Variable-Capacity Pump/Variable-Capacity Motor Unit • 11 Directional Control

- Valves • 11.1 Introduction • 11.2 Directional Control Valves • 11.2.1 Classification of DCVs Based on Fluid Path • 11.2.2 Classification of DCVs Based on Design Characteristics • 11.2.3 Classification of DCVs Based on the Control Method • 11.2.4 Classification of DCVs Based on the Construction of Internal Moving Parts • 11.3 Actuating Devices • 11.4 Check Valve • 11.5 Pilot-Operated Check Valve • 11.6 Shuttle Valve • 11.7 Two-Way Direction Control Valves • 11.8 Three-Way Direction Control Valves • 11.9 Four-Way Direction Control Valves • 11.10 Solenoid-Actuated Valve • 11.11 Pilot-Operated Direction Control Valves • 11.12 Piston Overlap • 11.13 Miscellaneous Industrial Circuits • 11.14 Direction Control Valve Mounting • 11.15 DCV Specifications • 11.16 Material for DCVs • 12 Pressure-Control Valves • 12.1 Introduction • 12.2 Pressure-Relief Valves • 12.3 Pressure-Reducing Valve • 12.4 Unloading Valves • 12.5 Counterbalance Valve • 12.6 Source of Pilot Pressure in Counterbalance Valves • 12.7 Pressure Sequence Valve • 12.8 Cartridge Valves • 13 Flow-Control Valves • 13.1 Introduction • 13.2 Speed-Controlling Circuits • 14 Hydraulic Circuit Design and Analysis • 14.1 Introduction • 14.2 Control of a Single-Acting Hydraulic Cylinder • 14.3 Control of a Double-Acting Hydraulic Cylinder • 14.4 Regenerative Cylinder Circuit • 14.5 Pump-Unloading Circuit • 14.6 Double-Pump Hydraulic System • 14.7 Counterbalance Valve Application • 14.8 Hydraulic Cylinder Sequencing Circuits • 14.9 Automatic Cylinder Reciprocating System • 14.10 Locked Cylinder Using Pilot Check Valves • 14.11 Cylinder Synchronizing Circuits • 14.12 Speed Control of a Hydraulic Cylinder • 14.13 Fail-Safe Circuits • 14.14 Circuit for Fast Approach and Slow Die Closing • 14.15 Rapid Traverse and Feed, Alternate Circuit • 15 Flow and Force Analysis of Valves • 15.1 Introduction • 15.2 Four-Way Spool Valves • 15.3 Three-Way Spool Valves • 15.4 Flapper Nozzle Valve • 15.5 Special-Purpose Valves • 15.6 Pressure-Compensated Flow-Control Valve • 16 Dynamic Analysis of Fluid Systems • 16.1 Introduction • 16.2 First-Order Systems • 16.3 First-Order Fluid System • 16.4 First-Order Electrical System • 16.5 First-Order Fluid Hydraulic Servomechanism • 16.6 Graphical Representations • 16.7 Harmonic Response Locus • 16.8 Logarithmic Plots • 17 Proportional Control Valves • 17.1 Introduction • 17.2 History of Proportional Control Valves • 17.3 Proportional Solenoids • 17.4 Design Considerations of Proportional Control Valves • 17.5 Response Speed and Dynamic Characteristics • 17.6 Some Applications of Proportional Control Valves • 17.7 Analysis of Proportional Valves • 18 Servo Valves • 18.1 Introduction • 18.2 History of Electro Hydraulic Servomechanisms • 18.3 Electrohydraulic Servomechanism Concepts • 18.4 Servo Valves • 19 Accumulators • 19.1 Introduction • 19.2 Accumulator Selection • 19.3 Applications of Accumulators • 20 Accessories Used in Fluid Power Systems • 20.1 Introduction • 20.2 Functions of Seals • 20.3 Durometer Hardness Tester • 20.4 Reservoirs • 20.5 Fluid Conditioners • 20.6 Filters and Strainers • 20.7 Heat Exchangers • 21 Maintenance of Fluid Power Systems • 21.1 Introduction • 21.2 The Importance of Cleanliness • 21.3 Importance of Oil and Filter Changes • 21.4 Problems Caused by Gases in Hydraulic Fluids • 21.5 Troubleshooting Guides • 21.6 General Safety Rules for Electricity and Electronics • 21.7 Maintaining and Disposing of Fluids • Summary • Objective-Type Questions • Fill in the Blanks • State True or False • Review Questions • Answers • Appendix A • Appendix B • Appendix C • Appendix D • Appendix E • Glossary • Frequently Asked Questions • Index

9788126509478 | ₹ 939



Applications of Thermodynamics | IM | e | k

About the Author

V. Kadambi, Former Professor of Mechanical Engineering, IIT Kanpur, Uttar Pradesh, Former Visiting Professor of Mechanical Engineering, IIT Gandhinagar, Gujarat

Table of Contents

- Preface • Acknowledgments • Symbols • • Chapter 1 Review of Basic Thermodynamics • 1.1 Introductory Concepts and Definitions • 1.2 Work and Heat • 1.3

First Law of Thermodynamics (Law of Conservation of Energy) • 1.4 Second Law of Thermodynamics • 1.5 Entropy • 1.6 Pure Substances • 1.7 Ideal Gases • • Chapter 2 Reciprocating Gas Compressors • 2.1 Introduction • 2.2 Classification of Compressors • 2.3 Working Principle of a Reciprocating Compressor • 2.4 Classification of Reciprocating Compressors • 2.5 Expression for Work Done in a Single-Stage Compressor without Clearance • 2.6 Work Done in a Single-Stage Compressor • 2.7 Volumetric Efficiency of a Reciprocating Compressor • 2.8 Actual -Diagram for a Single-Stage Compressor •

2.9 Performance Parameters for Reciprocating Compressors • 2.10 Disadvantages of Single-Stage Compressors (Need for Multistage Compressors) • 2.11 Work Done in a Second-Stage Compressor with Intercooling in between the Stages • 2.12 Intermediate Pressure for Minimum Work of Compression • 2.13 Optimum Intermediate Pressure for a Two-Stage Actual Compressor • • Chapter 3 Vapor Power Cycle • 3.1 Introduction • 3.2 Carnot Vapor Power Cycle and Its Limitations • 3.3 The Rankine Cycle (Ideal Simple Vapor Power Cycle) • 3.4 Effects of Pressure and Temperature on the Performance of the Rankine Cycle • 3.5 Reheat Cycle • 3.6 Regenerative Vapor Power Cycle • 3.7 Reheat-Regenerative Cycle • 3.8 Deviations of Practical Cycles from Ideal Cycle • 3.9 Characteristics of an Ideal Working Fluid for Vapor Power Cycles • 3.10 Alternative Working Fluids for Rankine Cycle • 3.11 Binary Vapor Cycle • 3.12 Cogeneration Plant • 3.13 Efficiencies of a Steam Power Plant • 3.14 Organic Rankine Cycle • 3.15 Supercritical Rankine Power Cycle • • Chapter 4 Gas Power Cycles • 4.1 Introduction • 4.2 Analysis of Power Cycles • 4.3 Carnot Gas Power Cycle • 4.4 Air Standard Cycles • 4.5 Air Standard Otto Cycle • 4.6 Air Standard Diesel Cycle • 4.7 Dual-Combustion Cycle or Semi-Diesel Cycle or Limited Pressure Cycle • 4.8 Comparison between Otto, Diesel and Dual Combustion Cycles • 4.9 Stirling Cycle • 4.10 Atkinson Cycle • 4.11 The Brayton Cycle • 4.12 Brayton Cycle with Regenerator (Exhaust Heat Exchanger) • 4.13 Gas Turbine Cycle with Multi-Stage Expansion (Reheat Cycle) • 4.14 Gas Turbine Cycle with Multi-Stage Compression and Intercooling • 4.15 Practical Gas Turbine Cycles • 4.16 Gas Turbine Cycle for Jet Propulsion • 4.17 Combined Brayton-Rankine Cycle • 4.18 Brayton Cycle with Supercritical Carbon Dioxide • • Chapter 5 Refrigeration Cycles • 5.1 Introduction • 5.2 Capacity and Coefficient of Performance of a Refrigerator • 5.3 Refrigeration Cycles • 5.4 Gas Refrigeration Cycles • 5.5 Mechanical Vapor Compression Refrigeration Cycle • 5.6 Common Refrigerants • 5.7 Absorption Refrigeration Systems • 5.8 Steam-Jet Refrigeration System • • Chapter 6 Air-Conditioning • 6.1 Introduction • 6.2 Thermodynamics of Air-Water Vapor Mixture • 6.3 Psychrometric Chart • 6.4 Air-Conditioning Processes (Psychrometric Processes) • 6.5 The Condition Line • 6.6 Apparatus Dew Point • 6.7 Bypass Factor • 6.8 Cooling Towers • • Chapter 7 Internal Combustion Engines • 7.1 Introduction • 7.2 Working of a Reciprocating IC Engine • 7.3 Classification of Reciprocating IC Engines • 7.4 Measurements and Testing of IC Engines • • Chapter 8 Thermodynamics of Compressible Flow • 8.1 Introduction • 8.2 Sonic Velocity and Mach Number • 8.3 Sonic Velocity for a Gaseous Medium • 8.4 Static and Stagnation States of a Fluid • 8.5 Effect of Area Variation on Pressure and Velocity for One-Dimensional Isentropic Flow through a Passage • 8.6 Choking in Isentropic Flow and Critical Properties • 8.7 Pressure Distribution and Choking in a Nozzle • 8.8 Supersaturated Flow of Steam • • Chapter 9 Thermodynamics of Reacting Mixtures • 9.1 Introduction • 9.2 Basic Chemistry • 9.3 Fuels • 9.4 Combustion Equations • 9.5 Combustion with Air • 9.6 Analysis of the Products of Combustion (Orsat Analysis) • 9.7 Enthalpy of Formation • 9.8 First Law Analysis of Combustion and Enthalpy of Combustion • 9.9 Adiabatic Flame Temperature • 9.10 Entropy Change for a Combustion Process • 9.11 Second Law Analysis of a Combustion Process • • Chapter 10 Availability Analysis of Thermodynamic Systems • 10.1 Introduction • 10.2 Reversible Work • 10.3 Reversible Work in a Non-Flow Process (Closed System) • 10.4 Useful Work • 10.5 Reversible Work in a Flow Process • 10.6 Reversible Work for a Steady Flow Process • 10.7 Availability • 10.8 Availability for a Flow Stream (Open System) • 10.9 Irreversibility or Availability Destruction • 10.10 Second Law Efficiency • 10.11 Diffusion Availability • 10.12 Availability Analysis for Combustion Processes • • Multiple-Choice Questions • Theory Questions • Exercises • • Appendix • • Index

9788126571246 | ₹ 749



Quality Control | e | k

Kulkarni

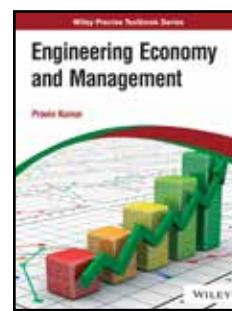
About the Author

Vinay A. Kulkarni is a lecturer, and teaches at the Department of Production Engineering, D.Y. Patil College of Engineering, Pune. He was awarded a gold medal for completing his M.Tech. in Production Engineering (with specialization in Production Management). Besides publishing several technical research papers in national and international journals, he has presented at several national and international conferences. He is a member of various professional bodies and has worked as a resource person at Indian Institute of Production Engineers, Pune.

Table of Contents

• Quality Concepts • Quality Milestones • Juran's Trilogy • Cost of Quality and Value of Quality • Total Quality Management • Statistical Quality Control and Acceptance Sampling • Taguchi's Quality Engineering • Six Sigma • Reliability, Availability and Maintainability • Quality Culture: A Global Paradigm Shift

9788126519071 | ₹ 859



Engineering Economy and Management | e | k

Kumar

About the Author

Pravin Kumar is working as an Associate Professor in the Department of Mechanical Engineering, Delhi Technological University, Delhi. He obtained his PhD in Supply Chain Management from IIT Delhi and M. Tech. in Industrial Management from IIT (BHU) Varanasi. He has more than 19 years of teaching and research experience. His research area is supply chain and operations management. He has published more than 50 research papers in international journals.

Table of Contents

• Preface • About the Author • Chapter 1 Introduction to Engineering Economics • 1.1 Introduction • 1.2 Concept of Efficiency • 1.3 Theory of Demand • 1.4 Elasticity of Demand • 1.5 Supply and Law of Supply • 1.6 Indifference Curves • 1.7 Budget Line • 1.8 Welfare Analysis • • Chapter 2 Managerial Economics • 2.1 Introduction • 2.2 Scope of Managerial Economics • 2.3 Techniques of Managerial Economics • 2.4 Applications of Managerial Economics • • Chapter 3 Money, National Income, and Goods and Services Tax • 3.1 Money • 3.2 National Income • 3.3 Goods and Services Tax • • Chapter 4 Poverty, Unemployment, and Inflation • 4.1 Scarcity • 4.2 Poverty • 4.3 Unemployment • 4.4 Inflation • • Chapter 5 Banking Systems • 5.1 Introduction to Banking Systems • 5.2 Types of Banks • 5.3 Quantitative Instruments for Credit Control • 5.4 Types of Banking • • Chapter 6 Market Structures • 6.1 Introduction • 6.2 Perfect Competition • 6.3 Monopoly • 6.4 Monopolistic Competition • 6.5 Oligopoly • 6.6 Duopoly • 6.7 Monopsony • 6.8 Monopoly and Monopsony: A Comparison • • Chapter 7 Marketing Management • 7.1 Introduction • 7.2 Marketing Mix • 7.3 Market Segmentation • 7.4 Exchange and Transactions • 7.5 Marketing Research • 7.6 Scope of Marketing • 7.7 Product Life Cycle • 7.8 Demand Forecasting • • Chapter 8 Concepts in Management • 8.1 Introduction • 8.2 Characteristics of Management • 8.3 Scope of Management • 8.4 Classical School of Management • 8.5 Functions of Management • 8.6 Levels of Management • 8.7 Skills of Management • 8.8 Managerial Roles • 8.9 Administration and Management • • Chapter 9 Human Resource Management • 9.1 Human Resource Management • 9.2 Human Resource Planning • 9.3 Recruitment and Selection • 9.4 Job Design • 9.5 Merit Rating • • Chapter 10 Corporate Social Responsibility and Business Ethics • 10.1 Corporate Social Responsibility • 10.2 Types of Corporate Social Responsibilities • 10.3 Ethics • • Chapter 11 Production and Operations Management • 11.1 Production and Operations Management • 11.2 Objectives of Production Management • 11.3 Production Systems • 11.4 Facility Location • 11.5 Plant Layout • • Chapter 12 Demand Forecasting and Cost Estimation • 12.1 Introduction • 12.2 Forecasting Horizons • 12.3 Steps to Forecasting • 12.4 Forecasting Methods • 12.5 Seasonal Adjustments • 12.6 Forecasting Performance Measures • 12.7 Cost Estimation • 12.8 Elements of Cost • 12.9 Computation of Material Variances • 12.10 Break-Even Analysis • • Chapter 13 Time Value of Money • 13.1 Introduction • 13.2 Simple Interest • 13.3 Compound Interest • 13.4 Present Worth Analysis • 13.5 Future Worth Analysis • 13.6 Annual Cash Flow Analysis • 13.7 Rate of Return Analysis • 13.8 Arithmetic Gradient • 13.9 Geometric Gradient • 13.10 Continuous Compounding • 13.11 Normal and Effective Interest Rate • 13.12 Perpetual Payment • • Chapter 14 Project Evaluation • 14.1 Introduction • 14.2 Determining Minimum Attractive Rate of Return • 14.3 Payback (Payout) Period Method • 14.4 Benefit-Cost Ratio • • Chapter 15 Comparison Among Alternatives • 15.1 Introduction • 15.2 Basis for Comparison of Alternatives • 15.3 Study Period • 15.4 Useful Lives of Alternatives Are Equal to the Study Period • 15.5 Useful Lives of Alternatives Are Unequal • 15.6 B-C Ratio Method for Comparison of Alternatives • • Chapter 16 Depreciation and Taxes • 16.1 Introduction • 16.2 Some Important Terms Used in Depreciation • 16.3 Classical Depreciation Methods • 16.4 Modified Accelerated Cost Recovery System • 16.5 Taxes • • Chapter



17 Replacement Analysis • 17.1 Introduction • 17.2 Reasons for Replacement Analysis
 • 17.3 Lives of Assets • 17.4 Determining the Economic Life of a Challenger • 17.5 Determining the Economic Life of a Defender • 17.6 After-Tax Replacement Studies
 • • Chapter 18 Concept of Financial Statement • 18.1 Introduction • 18.2 Sources of Company Information • 18.3 Sources of International Economic Data • 18.4 Financial Analysis • 18.5 Financial Statement • 18.6 Trading Account • 18.7 Profit and Loss Account • 18.8 Balance Sheet Requirements • 18.9 Distinction between Profit and Loss Account and Balance Sheet • • Chapter 19 Financial Ratios • 19.1 Introduction • 19.2 Types of Financial Ratios • 19.3 Advantages and Limitations of Ratio Analysis • • Chapter 20 Capital Budgeting • 20.1 Introduction • 20.2 Capital Financing and Allocation Functions • 20.3 Sources of Capital Funds • 20.4 Capital Asset Pricing Model • 20.5 Weighted Average Cost of Capital • 20.6 Leasing Decisions • 20.7 Capital Allocation • • Chapter 21 Decision Making • 21.1 Introduction • 21.2 Types of Decision-Making Environments • 21.3 Decision Tree Analysis • 21.4 Multiple Criteria Decision Making • • Summary • Points to Remember • Multiple-Choice Questions • State whether True/False • Fill in the Blanks • Review Questions • Exercises • Appendix A • Statistical Tables and Procedures • Appendix B End-of-Period Compound Interest Tables • Appendix C Answers to Objective Type Questions • Bibliography • Index

9788126579921 | ₹ 859



Engineering Mechanics Statics and Dynamics, 9ed, An Indian Adaptation | IM | e | k

Meriam

About the Author

Dr. James L. Meriam has contributed to the field of engineering mechanics as one of the premier engineering educators during the second half of the twentieth century. He had early industrial experience with Pratt and Whitney Aircraft and the General Electric Company. During the Second World War, he served in the U.S.

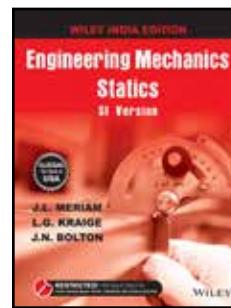
Coast Guard. He was a member of the faculty of the University of California-Berkeley, Dean of Engineering at Duke University, a faculty member at the California Polytechnic State University, and visiting professor at the University of California-Santa Barbara.

Table of Contents

- Foreword • Preface to the Adapted Edition • Preface • Acknowledgments • Part I Statics • 1 Introduction to Statics • 2 Force Systems • 2.1 Introduction • 2.2 Force • 2.3 Rectangular Components • 2.4 Moment • 2.5 Couple • 2.6 Resultants • 2.7 Rectangular Components • 2.8 Moment and Couple • 2.9 Resultants • 2.10 Chapter Review • 3 Equilibrium • 3.1 Introduction • 3.2 System Isolation and the Free-Body Diagram • 3.3 Equilibrium Conditions • 3.4 Equilibrium Conditions • 3.5 Chapter Review • 4 Structures • 4.1 Introduction • 4.2 Plane Trusses • 4.3 Method of Joints • 4.4 Graphical Method • 4.5 Method of Sections • 4.6 Space Trusses • 4.7 Frames and Machines • 4.8 Chapter Review • 5 Distributed Forces: Center of Mass, Centroid, and Moment of Inertia • 5.1 Introduction • 5.2 Center of Mass • 5.3 Centroids of Lines, Areas, and Volumes • 5.4 Composite Bodies and Figures; Approximations • 5.5 Theorems of Pappus • 5.6 Area Moments of Inertia • 5.7 Mass Moments of Inertia • 5.8 Beams—External Effects • 5.9 Beams—Internal Effects • 5.10 Chapter Review • 6 Friction • 6.1 Introduction • 6.2 Types of Friction • 6.3 Dry Friction • 6.4 Wedges • 6.5 Screws • 6.6 Journal Bearings • 6.7 Thrust Bearings; Disk Friction • 6.8 Flexible Belts • 6.9 Rolling Resistance • 6.10 Chapter Review • 7 Virtual Work • 7.1 Introduction • 7.2 Work • 7.3 Equilibrium • 7.4 Potential Energy and Stability • 7.5 Chapter Review • Part II Dynamics • Part IIA: Dynamics of Particles • 8 Introduction to Dynamics • 8.1 History and Modern Applications • 8.2 Solving Problems in Dynamics • 8.3 Chapter Review • 9 Kinematics of Particles • 9.1 Introduction • 9.2 Rectilinear Motion • 9.3 Plane Curvilinear Motion • 9.4 Rectangular Coordinates (x-y) • 9.5 Normal and Tangential Coordinates (n-t) • 9.6 Polar Coordinates (r-θ) • 9.7 Space Curvilinear Motion • 9.8 Relative Motion (Translating Axes) • 9.9 Constrained Motion of Connected Particles • 9.10 Chapter Review • 10 Kinetics of Particles • 10.1 Introduction • 10.2 Newton's Second Law • 10.3 Equation of Motion and Solution of Problems • 10.4 Rectilinear Motion • 10.5 Curvilinear Motion • 10.6 Work and Kinetic Energy • 10.7 Potential Energy • 10.8 Introduction • 10.9 Linear Impulse and Linear Momentum • 10.10 Angular Impulse and Angular Momentum • 10.11 Introduction • 10.12 Impact • 10.13 Central-Force Motion • 10.14 Relative Motion • 10.15 Chapter Review • 11 Kinetics of

Systems of Particles • 11.1 Introduction • 11.2 Generalized Newton's Second Law • 11.3 Work-Energy • 11.4 Impulse-Momentum • 11.5 Conservation of Energy and Momentum • 11.6 Steady Mass Flow • 11.7 Variable Mass • 11.8 Chapter Review • Part IIB: Dynamics of Rigid Bodies • 12 Plane Kinematics of Rigid Bodies • 12.1 Introduction • 12.2 Rotation • 12.3 Absolute Motion • 12.4 Relative Velocity • 12.5 Instantaneous Center of Zero Velocity • 12.6 Relative Acceleration • 12.7 Motion Relative to Rotating Axes • 12.8 Chapter Review • 13 Plane Kinetics of Rigid Bodies • 13.1 Introduction • 13.2 General Equations of Motion • 13.3 Translation • 13.4 Fixed-Axis Rotation • 13.5 General Plane Motion • 13.6 Work-Energy Relations • 13.7 Acceleration from Work-Energy; Virtual Work • 13.8 Impulse-Momentum Equations • 13.9 Chapter Review • 14 Introduction to Three-Dimensional Dynamics of Rigid Bodies • 14.1 Introduction • 14.2 Translation • 14.3 Fixed-Axis Rotation • 14.4 Parallel-Plane Motion • 14.5 Rotation about a Fixed Point • 14.6 General Motion • 14.7 Angular Momentum • 14.8 Kinetic Energy • 14.9 Momentum and Energy Equations of Motion • 14.10 Parallel-Plane Motion • 14.11 Gyroscopic Motion: Steady Precession • 14.12 Chapter Review • 15 Vibration and Time Response • 15.1 Introduction • 15.2 Free Vibration of Particles • 15.3 Forced Vibration of Particles • 15.4 Vibration of Rigid Bodies • 15.5 Energy Methods • 15.6 Chapter Review • Appendix A Introduction to Analytical Mechanics • Appendix B Selected Topics of Mathematics • Appendix C Useful Tables • Index • Problem Answers

9789354248566 | ₹ 1319



Engineering Mechanics: Statics, SI Version | IM | e

Meriam

About the Author

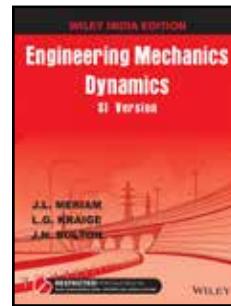
Dr. James L. Meriam has contributed to the field of engineering mechanics as one of the premier engineering educators during the second half of the twentieth century. He had early industrial experience with Pratt and Whitney Aircraft and the General Electric Company. During the Second World War, he served in the U.S.

Coast Guard. He was a member of the faculty of the University of California-Berkeley, Dean of Engineering at Duke University, a faculty member at the California Polytechnic State University, and visiting professor at the University of California-Santa Barbara.

Description

These exciting books use interesting, realistic illustrations to enhance reader comprehension. Also include a large number of worked examples that provide a good balance between initial, confidence building problems and more advanced level problems. Fundamental principles for solving problems are emphasized throughout.

9788126564033 | ₹ 1079



Engineering Mechanics: Dynamics, SI Version | e

Meriam, L.G. Kraige, J.N. Bolton

About the Author

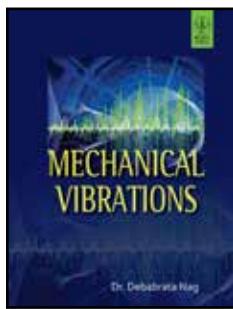
Glenn Kraige is Professor in the Department of Engineering Science and Mechanics at Virginia Tech. He is a fellow member of the American Society for Engineering Education,

Description

Known for its accuracy, clarity, and dependability, Meriam, Kraige, and Bolton's Engineering Mechanics: Dynamics, 8th Edition SI Version has provided a solid foundation of mechanics principles to students for more than 60 years. Now in its eighth edition, the text continues to help students develop their problem-solving skills with an extensive variety of engaging problems related to engineering design. In addition to new homework problems, the text also includes a number of helpful sample problems. Students benefit from realistic applications that motivate their desire to learn and develop their skills.

9788126565375 | ₹ 1069

Prices are subject to change without prior notice.



Mechanical Vibrations | IM | e | k

Nag

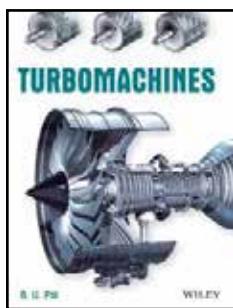
About the Author

Dr. Debabrata Nag is teaching at the Department of Mechanical Engineering, Jadavpur University, Kolkata. Earlier, he worked with the design consultancy industry for more than a decade, contributing to the field of stress analysis of piping systems for thermal/nuclear power plants, petrochemicals, etc. Dr. Nag teaches Mechanical Vibrations, Strength of Materials, and Engineering Mechanics to the graduate and postgraduate students of mechanical, electrical and civil engineering. His active research areas include Numerical Modeling of Non-Newtonian Fluids, Biological Fluids, Mathematical Theories of Mechanical Vibration, Theory of Elasticity and Dynamics of Engineering Systems. Dr. Nag has authored three more textbooks: Fundamentals of Strength of Materials (Wiley), Fundamentals of Engineering Mechanics, and An Introduction to Engineering Mechanics.

Table of Contents

- Introduction to Vibration • Introduction • Systems Undergoing Vibration • Types of Vibration • Importance of Vibration • Sources of Vibration • Mathematical Formulations of Periodic Response • Free Vibration of Undamped Single Degree of Freedom System • Introduction • Free Vibration of Single Degree of Freedom System • Dynamic of Rigid Bodies-A Quick Overview • Energy Considerations of Free Vibration • Damped Free Vibration of Single Degree of Freedom System • Introduction • Viscous Damping • Coulombic Damping • Solution of Differential Equation of Motion of a System with Coulombic Damping • Force Vibration of Single Degree of Freedom System • Introduction • Forced Vibration • Forced Vibration due to General Periodic Forces/Disturbances • Energy Dissipated due to Viscous Damping-Concept of Equivalent Viscous Damping Coefficient • Structural/ Material Damping • Eddy-Current Damping • Sharpness of Resonance • Some Useful Concluding Remark • Transient Vibration of Single Degree of Freedom Systems • Introduction • Response to Unit Impulse • Response to Arbitrary Excitation • Response to Ground Motion • Vibration of Two Degree of Freedom Systems • Introduction • Free Vibration, Normal Modes of Vibration • Coordinate Systems and Coordinate Coupling • Forced Vibration of Undamped System • Vibration Absorbers • Vibration of Multidegree of Freedom Systems • Introduction • Formulation of Equations of Motion (Force Method) • Stiffness Matrix Formulation • Energy Principle-Lagrange's Equation • Equation for Free Vibration (Undamped System) • Expansion Theorem • Modal Analysis • Damped Free Vibration • Free Vibration of Continuous Systems • Introduction • Tightly-Stretched String or Wire • Vibration of Continuous Elastic Media • Free Vibration of a Membrane • Free Vibration of a Plate • Forced Vibration of Continuous Systems • Introduction • Introduction to Virtual-Work Theorem for a Deformable Body • Forced Vibration of Continuous Systems • Approximate Methods • Introduction • Estimation of Fundamental Frequency • Estimation of Higher-Mode Frequency • Concluding Remarks • Appendix A: Finite Element Method • Appendix B: Vibration Measurements and Control • Appendix C: Vibration and Noise • Appendix D: Special Topics in Vibration • Bibliography • Test Your Comprehension • Answers • Model Test Papers • Index

9788126530908 | ₹ 919



Turbomachines | IM | e | k

Pai

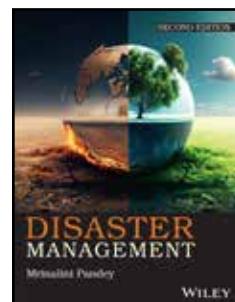
About the Author

Prof. B. U. Pai is well known as a popular teacher of the course Turbomachines. His 39 years of vast teaching and administrative experience is an amalgam of distinctions based on imparting quality education as a Professor & Head (Dept. of Mech. Engg.) and Principal of various engineering colleges. Over the years, he has taught subjects such as Thermodynamics, Heat Transfer, IC Engines, R&AC, etc. he has many reputed national and international publications to his credit.

Table of Contents

- Basics of Turbomachines • Thermodynamics of Fluid Flow • Energy Exchange in Turbomachines • General Analyses of Turbomachines • Steam Turbines • Hydraulic Turbines • Centrifugal Pumps • Fans, Blowers, and Compressors • Power-Transmitting Turbomachines

9788126539550 | ₹ 829



Disaster Management, 2ed | e | k

Pandey

About the Author

Dr. Mrinalini Pandey is presently working as a Professor in Department of Management Studies, Indian School of Mines, Dhanbad. She has more than a decade of academic experience in teaching various courses on management both at PG and UG levels. She is a member of leading professional bodies of management, she has contributed many articles in management journals and presented papers in international and national conferences in India and abroad. She is also on the review board of a number of International Journals.

Table of Contents

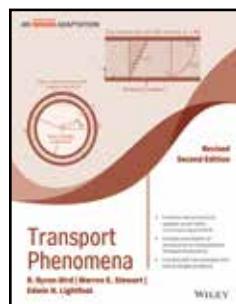
- Preface • Part I Disaster Management: A Prologue • Chapter 1 Introduction to Disaster Management • 1.1 Concept of Disaster • 1.2 Causes and Types of Disasters
- 1.3 Summary of Types of Disasters • 1.4 Dimensions of Natural and Anthropogenic Disasters • 1.5 Aims of Disaster Management • 1.6 National and International Trends in Disaster Management • 1.7 Climate Change and Urban Disasters • 1.8 Principles and Components of Disaster Management • 1.9 Summary • 1.10 Keywords and Phrases
- 1.11 Objective Type Questions • 1.12 Questions for Review • 1.13 References • 1.14 Answers • Chapter 2 Disaster Management and Planning • 2.1 Disaster Determinants
- 2.2 Nature, Scope and Management Process • 2.3 Policy of Disaster Management
- 2.4 Types of Plans: Management by Objectives • 2.5 SWOT Analysis • 2.6 Hazard and Vulnerability Analysis • 2.7 Identifying Crisis Situations: A Framework • 2.8 Organisational Structure and Design • 2.9 Authority, Delegation and Decentralisation • 2.10 Roles, Skills and Competencies • 2.11 Importance of Control Process in Disaster Management • 2.12 Group Dynamics: Nature, Approach, and Attitudes Required to Establish Effective Autonomous Work Groups • 2.13 Understanding the Importance of Team-Building in Disaster Management • 2.14 Capability Assessment • 2.15 National Disaster Management Authority • 2.16 Summary • 2.17 Keywords and Phrases • 2.18 Objective Type Questions • 2.19 Questions for Review • 2.20 References • 2.21 Answers • Part II Disaster Management Cycle: Practical Applications • Chapter 3 Disaster Mitigation • 3.1 Disaster Management Cycle: An Overview • 3.2 Disaster Mitigation: Meaning and Concept • 3.3 Structural Mitigation • 3.4 Non-Structural Mitigation • 3.5 Disaster Mitigation Strategies • 3.6 Importance of Information and Communication in Disaster Mitigation • 3.7 Emerging Trends in Disaster Mitigation • 3.8 Strengthening Capacity for Reducing Risk • 3.9 Role of Team and Coordination • 3.10 Sustainable Development for Disaster Mitigation • 3.11 National and International Assistance in Disaster Mitigation: An Overview • 3.12 Summary • 3.13 Keywords and Phrases • 3.14 Objective Type Questions • 3.15 Questions for Review • 3.16 References • 3.17 Answers
- Chapter 4 Disaster Preparedness • 4.1 Introduction to Disaster Preparedness • 4.2 The Three A's of Disaster Preparedness • 4.3 Principles of Disaster Preparedness • 4.4 Steps of Disaster Preparedness • 4.5 Organisational Structure for Disaster Preparedness • 4.6 Essential Services Preparedness and Logistical Readiness • 4.7 Contingency Planning
- 4.8 Importance of Building Team and Community Relations for Environmental and Emergency Managers • 4.9 Training Needs Analysis and Human Resource Development Plan • 4.10 Emergency Operational Plan: Contents • 4.11 Summary • 4.12 Keywords and Phrases • 4.13 Objective Type Questions • 4.14 Questions for Review • 4.15 References • 4.16 Answers • Chapter 5 Disaster Response • Learning Objectives • Opening Case • 5.1 Aims of Response • 5.2 Control Process and Measurement • 5.3 Security Issues • 5.4 Profile of an Effective Crisis Leader • 5.5 Leading at the Time of Crisis: Competencies and Challenges • 5.6 Evacuation and Migration • 5.7 Administering First-Aid • 5.8 Handling of Injured at Hospitals: Challenges and Issues • 5.9 Mobilisation and Restoration of Essential Services • 5.10 Search and Rescue Work • 5.11 Modern and Traditional Methods of Response • 5.12 A Model of an Ideal Command Centre • 5.13 International



Cooperation in Disaster Response • 5.14 Summary • 5.15 Key words and Phrases • 5.16 Objective Type Questions • 5.17 Questions for Review • 5.18 References • 5.19 Answers • Chapter 6 Disaster Recovery • 6.1 Introduction to Medium- and Long-Term Recovery Aspects • 6.2 Community Participation in Defining Objectives and Their Priorities • 6.3 Identifying and Ascertaining Impact of Disaster • 6.4 Participative Rehabilitation: Physical and Social Infrastructure • 6.5 Social and Economic Rehabilitation: Capacity Building for Reconstruction and Rehabilitation • 6.6 Recovery and Rebuilding Works • 6.7 Facilitating Compensations to be Paid through Insurances and Government • 6.8 Coping Strategies: Providing Counselling and Psychological Support • 6.9 Summary • 6.10 Keywords and Phrases • 6.11 Objective Type Questions • 6.12 Questions for Review • 6.13 References • 6.14 Answers • Part III Contemporary Issues and Challenges in Disaster Management • Chapter 7 Ascertaining Roles and Responsibilities • 7.1 Global Thrust for Disaster Management • 7.2 Roles and Responsibilities of Agencies • 7.3 International and National Agencies • 7.4 State and Local Bodies • 7.5 Philanthropic Organisations • 7.6 Role of Stakeholders • 7.7 Impact and Role of Media • 7.8 Planning Commission and Its Role • 7.9 Community-Based Approach to Disaster Management • 7.10 Summary • 7.11 Keywords and Phrases • 7.12 Objective Type Questions • 7.13 Questions for Review • 7.14 References • 7.15 Answers • Chapter 8 Insights on Challenges in Management of Disaster • 8.1 Disaster Profile of India • 8.2 Management of Disasters in India • 8.3 Disaster Management Policy • 8.4 Education on Disasters • 8.5 Public Awareness • 8.6 Public Health System: Its Role in Disaster Management Prevention • 8.7 Addressing Challenges Through Triage Process • 8.8 Charting a Hazard Map • 8.9 Effect of Culture and Disaster Management • 8.10 Environmental Degradation and Disasters: Addressing Challenges • 8.11 Enabling Role of Science and Technology in Management of Disasters • 8.12 Role of Innovations in Managing Disasters • 8.13 Media Relations and External Communications During a Disaster • 8.14 Summary • 8.15 Keywords and Phrases • 8.16 Objective Type Questions • 8.17 Questions for Review • 8.18 References • 8.19 Answers • Chapter 9 Behavioral Aspects of Disaster Management • 9.1 Identifying Socio-Psychological Needs in Mass Emergency • 9.2 Different Psychological Considerations • 9.3 Training in Humanitarian Professionalism • 9.4 Community and Individual Empowerment • 9.5 Community Building in Developing Local Resilience to Disasters • 9.6 Developing Leaders • 9.7 Importance of Communication and Commitment • 9.8 Negotiating the Conditions and Effects of Vulnerability and Disaster • 9.9 Ethical Issues in Disaster Management • 9.10 Summary • 9.11 Key Words and Phrases • 9.12 Objective Type Questions • 9.13 Questions for Review • 9.14 References • 9.15 Answers • Model Question Paper 1 • Model Question Paper 2 • Model Question Paper 3 • Model Question Paper 4 • Index

9789357461610 | ₹ 929

CHEMICAL ENGINEERING



**Transport Phenomena, Revised 2ed,
An Indian Adaptation | IM | e | k**

Bird

About the Author

R. Byron Bird ("Bob") was born in Bryan, Texas, on 5 February 1924. After finishing high school in Washington, DC, he started chemical engineering at the University of Maryland in 1941. In mid-1943 he was inducted into the army, went through basic training in Alabama, and to Officer Candidate School in Edgewood Arsenal, Maryland. He was then assigned to the 90th Chemical Mortar Battalion, which soon sailed for Europe.

Table of Contents

• Preface to the Adapted Edition • About the Adapting Authors • Preface • • Chapter 0 Introduction to Transport Phenomena • • What are the Transport Phenomena? • • Mechanisms of Transport Phenomena • • Three Levels at Which Transport Phenomena can be Studied • • The Concept of a Continuum • • Conservation Laws: Mass, Momentum, and Energy • • Part 1: Momentum Transport • Chapter 1 Viscosity and the Mechanisms of Momentum Transport • • Molecular Momentum Transport • • Convective Momentum Transport • • Pressure and Temperature Dependence of Viscosity • • Molecular Theory of the Viscosity of Gases at Low Density • • Molecular Theory of the Viscosity of Liquids • • Viscosity of Suspensions and Emulsions • • Chapter 2 Shell Momentum Balances and

Velocity Distributions in Laminar Flow • • Shell Momentum Balances and Boundary Conditions • • Flow of a Falling Film on an Inclined Flat Plate • • Flow Through a Vertical Circular Tube • • Flow Through an Annulus • • Flow of Two Adjacent Immiscible Fluids • • Laminar Slit Flow with Stationary and with a Moving Wall ("Plane Couette Flow") • • Flow Around a Sphere • • Chapter 3 The Equations of Change for Isothermal Systems • • The Equation of Continuity • • The Equation of Motion • • The Equation of Angular Momentum • • The Equations of Change in terms of the Substantial Derivative • • Simplified Forms of the Equation of Motion • • Use of the Equations of Change to Solve Flow Problems • • Dimensional Analysis of the Equations of Change • • Chapter 4 Velocity Distributions with More Than One Independent Variable • • Two Dimensional and Time-Dependent Flow of Newtonian Fluids • • Solving Flow Problems Using a Stream Function Vorticity Stream Function and Streamlines • • Flow of Inviscid Fluids by Use of the Velocity Potential • • Flow Near Solid Surfaces by Boundary-Layer Theory • • Chapter 5 Velocity Distributions in Turbulent Flow • • Comparisons of Laminar and Turbulent Flows • • Time-Smoothed Equations of Change for Incompressible Fluids • • The Time-Smoothed Velocity Profile Near a Wall • • Empirical Expressions for the Turbulent Momentum Flux • • Turbulent Flow in Ducts • • Turbulent Flow in Jets • • Chapter 6 Interphase Transport in Isothermal Systems • • Definition of Friction Factors • • Friction Factors for Flow in Tubes • • Friction Factors for Flow Around Spheres • • Friction Factors for Packed Columns • • Chapter 7 Non-Newtonian Liquids • • Examples of the Behavior of Polymeric Liquids • • Rheometry and Material Functions • • Non-Newtonian Viscosity and the Generalized Newtonian Models • • Elasticity and the Linear Viscoelastic Models • • Part 2: Energy Transport • Chapter 8 Thermal Conductivity and the Mechanisms of Energy Transport • • Molecular Energy Transport • • Temperature and Pressure Dependence of Thermal Conductivity • • Theory of Thermal Conductivity of Gases at Low Density • • Theory of Thermal Conductivity of Liquids • • Thermal Conductivity of Solids • • Effective Thermal Conductivity of Composite Solids • • Convective Transport of Energy • • Work Associated with Molecular Motions • • Radiative Transport of Energy • • Chapter 9 Shell Energy Balances and Temperature Distributions in Solids and Laminar Flow • • Shell Energy Balances; Boundary Conditions • • Heat Conduction through Composite Walls • • Heat Conduction in a Cooling Fin • • Heat Conduction from a Sphere to a Stagnant Fluid • • Heat Conduction with a Nuclear Heat Source • • Heat Conduction with an Electrical Heat Source • • Heat Conduction with a Viscous Heat Source • • Heat Conduction with a Chemical Reaction Heat Source • • Forced Convection • • Free Convection • • Chapter 10 The Equations of Change for Nonisothermal Systems • • The Energy Equation • • The Equation of Mechanical Energy • • Special Forms of the Energy Equation • • The Boussinesq Equation of Motion for Forced and Free Convection • • Use of the Equations of Change to Solve Steady-State Problems • • Dimensional Analysis of the Equations of Change for Nonisothermal Systems • • Chapter 11 Temperature Distributions with More Than One Independent Variable • • Unsteady Heat Conduction in Solids • • Steady Heat Conduction in Laminar, Incompressible Flow • • Steady Potential Flow of Heat in Solids • • Boundary Layer Theory for Nonisothermal Flow • • Chapter 12 Temperature Distributions in Turbulent Flow • • Time-Smoothed Equations of Change for Incompressible Nonisothermal Flow • • The Time-Smoothed Temperature Profile Near a Wall • • Empirical Expressions for the Turbulent Heat Flux Eddy Thermal Conductivity The Mixing-Length Expression of Prandtl and Taylor • • Temperature Distribution for Turbulent Flow in Tubes • • Temperature Distribution for Turbulent Flow in Jets • • Fourier Analysis of Energy Transport in Tube Flow at Large Prandtl Numbers • • Chapter 13 Interphase Transport in Nonisothermal Systems • • Definitions of Heat Transfer Coefficients • • Analytical Calculations of Heat Transfer Coefficients for Forced Convection Through Tubes and Slits • • Heat Transfer Coefficients for Forced Convection in Tubes • • Heat Transfer Coefficients for Forced Convection around Submerged Objects • • Heat Transfer Coefficients for Forced Convection through Packed Beds • • Heat Transfer Coefficients for Free and Mixed Convection • • Heat Transfer Coefficients for Condensation of Pure Vapors on Solid Surfaces • Chapter 14 Energy Transport by Radiation • • The Spectrum of Electromagnetic Radiation • • Absorption and Emission at Solid Surfaces • • Planck's Distribution Law, Wien's Displacement Law, and the Stefan-Boltzmann Law • • Direct Radiation Between Black Bodies in Vacuo at Different Temperatures • • Radiation Between Nonblack Bodies at Different Temperatures • • Radiant Energy Transport in Absorbing Media • Part 3: Mass Transport • Chapter 15 Diffusivity and the Mechanisms of Mass Transport • • Molecular Mass Transport • • Temperature and Pressure Dependence of Diffusivities • • Theory of Diffusion in Gases at Low Density • • Theory of Diffusion in Binary Liquids • • Theory of Diffusion in Colloidal Suspensions • • Theory of Diffusion of Polymers • • Mass and Molar Transport by Convection • • Summary of Mass and Molar Fluxes • • The Maxwell-Stefan Equations for Multicomponent Diffusion in Gases at Low Density • • Chapter 16 Concentration Distributions in Solids and in Laminar Flow • • Shell Mass Balances; Boundary Conditions • • Diffusion Through a Stagnant Gas Film •

• Diffusion with a Heterogeneous Chemical Reaction • Diffusion with a Homogeneous Chemical Reaction • Diffusion into a Falling Liquid Film (Gas Absorption) • Diffusion into a Falling Liquid Film (Solid Dissolution) • Diffusion and Chemical Reaction Inside a Porous Catalyst • Diffusion in a Three-Component Gas System • Chapter 17 Equations of Change for Multicomponent Systems • The Equations of Continuity for a Multicomponent Mixture • Summary of the Multicomponent Equations of Change • Summary of the Multicomponent Fluxes • Use of the Equations of Change for Mixtures • Dimensional Analysis of the Equations of Change • Chapter 18 Concentration Distributions with More Than One Independent Variable • Time-Dependent Diffusion • Steady-State Transport in Binary Boundary Layers • Steady-State Boundary Layer Theory for Flow Around Objects • Boundary Layer Mass Transport with Complex Interfacial Motion • "Taylor Dispersion" in Laminar Tube Flow • Chapter 19 Concentration Distributions in Turbulent Flow • Concentration Fluctuations and the Time-Smoothed Concentration • Time-Smoothing of the Equation of Continuity of A • Semi-Empirical Expressions for the Turbulent Mass Flux Eddy Diffusivity • Enhancement of Mass Transfer by a First-Order Reaction in Turbulent Flow • Turbulent Mixing and Turbulent Flow with Second-Order Reaction • Chapter 20 Interphase Transport in Nonisothermal Mixtures • Definition of Transfer Coefficients in One Phase • Analytical Expressions for Mass Transfer Coefficients • Correlation of Binary Transfer Coefficients in One Phase • Definition of Transfer Coefficients in Two Phases • Mass Transfer and Chemical Reactions • Combined Heat and Mass Transfer by Free Convection • Effects of Interfacial Forces on Heat and Mass Transfer • Transfer Coefficients at High Net Mass Transfer Rates • Matrix Approximations for Multicomponent Mass Transport • Chapter 21 Macroscopic Balances for Multicomponent Systems • The Macroscopic Mass Balances • The Macroscopic Momentum and Angular Momentum Balances • The Macroscopic Energy Balance • The Macroscopic Mechanical Energy Balance • Estimation of the Viscous Loss • Use of the Macroscopic Balances to Solve Steady-State Problems • Use of the Macroscopic Balances to Solve Unsteady-State Problems • Chapter 22 Other Mechanisms for Mass Transport • The Equation of Change for Entropy • The Flux Expressions for Heat and Mass • Concentration Diffusion and Driving Forces • Applications of the Generalized Maxwell-Stefan Equations • Mass Transfer Across Selectively Permeable Membranes • Mass Transport in Porous Media • Ion Fluxes and Nernst-Planck Equation • Part 4: Computational Transport Phenomena • Chapter 23 Introduction to Computational Transport Phenomena • Importance of the Computational Transport Phenomena • Strategy of the Computational Transport Phenomena • System Geometry and Discretization • Solution Methodology • Software Packages and Illustration Examples • Appendix A: Vector and Tensor Notation • Vector Operations from a Geometrical Viewpoint • Vector Operations in Terms of Components • Tensor Operations in Terms of Components • Vector and Tensor Differential Operations • Vector and Tensor Integral Theorems • Vector and Tensor Algebra in Curvilinear Coordinates • Differential Operations in Curvilinear Coordinates • Integral Operations in Curvilinear Coordinates • Further Comments on Vector-Tensor Notation • Appendix B: The Fluxes and the Equations of Change • Newton's Law of Viscosity • Fourier's Law of Heat Conduction • Fick's (First) Law of Binary Diffusion • The Equation of Continuity • The Equation of Motion in Terms of t • Equation of Motion for a Newtonian Fluid with Constant η and μ • The Dissipation Function F_v for Newtonian Fluids • The Equation of Energy in Terms of q • The Equation of Energy for Pure Newtonian Fluids with Constant η and k • The Equation of Continuity for Species a in Terms of j_a • The Equation of Continuity for Species A in Terms of $\dot{\rho}_A$ for Constant η_A • Appendix C: Mathematical Topics • Some Ordinary Differential Equations and their Solutions • Expansions of Functions in Taylor Series • Differentiation of Integrals (The Leibniz Formula) • The Gamma Function • The Hyperbolic Functions • The Error Function • Appendix D: The Kinetic Theory of Gases • The Boltzmann Equation • The Equations of Change • The Molecular Expressions for the Fluxes • The Solution to the Boltzmann Equation • The Fluxes in Terms of the Transport Properties • The Transport Properties in Terms of the Intermolecular Forces • Concluding Comments • Appendix E: Tables for Prediction of Transport Properties • Appendix F: Constants and Conversion Factors • Mathematical Constants • Physical Constants • Conversion Factors • Author Index • Subject Index

9789354244452 | ₹ 1039



Engineering Mechanics | e | k

Chanda

About the Author

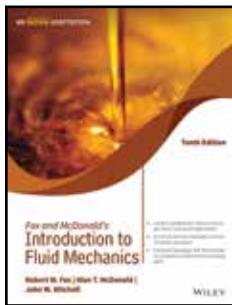
Dr. Abhijit Chanda is currently a Professor of Mechanical Engineering department, Jadavpur University, Kolkata.

Dr. Chanda has over 15 years of teaching experience. He co-authored a book on Strength of Materials published by Wiley India. His research interests are in the fields of Material Science, Bio-Materials, Bio Engineering and related topics.

Table of Contents

• Preface • Statics • Chapter 1 a Quick Glimpse to Vector algebra • 1.1 Introduction • 1.2 Unit Vector • 1.3 Direction Cosines • 1.4 Vector as a Line Segment • 1.5 Position Vector • 1.6 Vector Addition and Subtraction • 1.7 Product of Two Vectors • 1.8 Vector Equation • 1.8.1 Linearly Independent Vectors • 1.9 A Look to Different Coordinate Systems • Chapter 2 introduction to Mechanics • 2.1 Mechanics – Basic Definitions • 2.2 Idealisations and Basic Assumptions • 2.3 Dimensions, Law of Dimensional Homogeneity and Units • Chapter 3 Vector Mechanics • 3.1 Introduction • 3.2 An Introduction to Vector Algebra • 3.3 Miscellaneous Vectors • 3.4 Vector Resolution and Cartesian Vector • 3.5 Position Vector • 3.6 Product of Vectors • 3.7 Couple-Moment • Chapter 4 Equivalent Force and Moment • 4.1 Introduction • 4.2 Basic Concept • 4.3 Varigon's Theorem of Moment • Chapter 5 Equilibrium • 5.1 Introduction • 5.2 Analysis Methodology • 5.3 Free Body Diagrams • 5.4 Two-Force Member • 5.5 Three-Force Member • 5.6 Frames and Machines • Chapter 6 Truss • 6.1 Introduction • 6.2 Types of Truss • 6.3 Analysis of Truss • Chapter 7 Friction • 7.1 Introduction • 7.2 Governing Equation of Friction • 7.3 Steps of Analysis • 7.4 Friction in Simple Machines • Chapter 8 Central Points and Properties of Surfaces • 8.1 Introduction • 8.2 Centre of Mass and Centre of Gravity • 8.3 Area Moment of Inertia • 8.4 Product Area-Moment of Inertia • 8.5 Parallel Axis Theorem • 8.6 Perpendicular Axis Theorem • 8.7 Area Moment of Inertia for Composite Area • 8.8 Centroid of Shell Element • Chapter 9 Distributed Force Systems • 9.1 Introduction • 9.2 Types of Distributed Load • 9.3 Analysis of Plane Distributed Load • Chapter 10 Virtual Work • 10.1 Introduction • 10.2 Virtual Work Theorems and Equation of Equilibrium Formulations • Dynamics • Chapter 1 Particle Kinematics • Objectives • 1.1 Introduction • 1.2 Study of Kinematics • 1.3 Rectilinear Motion • 1.4 Plane Curvilinear Motion in X-Y Coordinates • 1.5 n-t Coordinates for Curvilinear Motion • 1.6 Curvilinear Motion in Polar Coordinates • 1.7 Kinematics of Connected Bodies • Chapter 2 Kinetics • 2.1 Introduction • 2.2 Kinetics of a Particle • 2.3 Two-Dimensional Kinetics of a Slab-Like Rigid Body • 2.4 D'Alembert's Principle • 2.5 Types of Kinetics Problems • Chapter 3 Work, Energy and Power • 3.1 Introduction • 3.2 Work Done by Various Types of Forces • 3.3 Energy • 3.4 Conservative Forces • 3.5 Work-Energy Principle • 3.6 Power • Chapter 4 Momentum and Impulse • 4.1 Impulse and Linear Momentum of a Particle • 4.2 Angular Momentum • 4.3 Conservation of Linear Momentum • 4.4 Conservation of Angular Momentum • 4.5 Linear Momentum for a System of Mass Particles • 4.6 Impulsive Forces and Moments • 4.7 Collision of Bodies • Chapter 5 Dynamics of System of Particles • 5.1 Introduction • 5.2 Kinematics of System • 5.3 Kinetics of the System • Chapter 6 Plane Kinematics of Rigid Body • 6.1 Rigid Body • 6.2 Motion of Rigid Body in Two Dimensions • 6.3 Instantaneous Centre of Velocity • 6.4 Piston Displacement and Velocity of a Reciprocating Mechanism • 6.5 Special Discussion on the Locus of a Point on the Connecting Rod • 6.6 Rolling Motion of Cylinder-Like Body • Chapter 7 Rotational Kinetics of Rigid Bodies • 7.1 Introduction • 7.2 Equations of Motion of Body Undergoing Plane Fixed-Axis Rotation • 7.3 D'Alembert's Principle • 7.4 Mass-Moment of Inertia • Chapter 8 Introduction to Dynamics of Vibration • 8.1 Introduction • 8.2 Free Vibration of an SDOF System • 8.3 Consideration of Mass of the Spring Element • 8.4 Damped Free Vibration of Single Degree of Freedom System • 8.5 Viscous Damping • 8.6 Forced Vibration of Single Degree of Freedom System • 8.7 Forced Vibration • Solved Examples • Practice Problems • Index

9788126570935 | ₹ 719



Fox and McDonald's Introduction to Fluid Mechanics, 10ed, An Indian Adaptation | IM | e | k

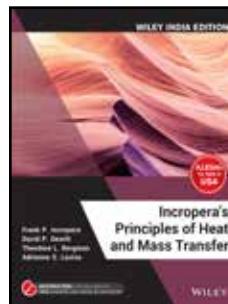
Fox

Table of Contents

- Preface to the Adapted Edition • Preface • Chapter 1 Introduction • 1.1 Introduction to Fluid Mechanics
- 1.2 Basic Equations • 1.3 Methods of Analysis • 1.4 Dimensions and Units • 1.5 Analysis of Experimental Error • 1.6 Summary • Chapter 2 Fundamental Concepts
- 2.1 Fluid as a Continuum • 2.2 Velocity Field • 2.3 Stress Field
- 2.4 Viscosity • 2.5 Surface Tension • 2.6 Description and Classification of Fluid Motions
- 2.7 Summary and Useful Equations • Chapter 3 Fluid Statics • 3.1 The Basic Equation of Fluid Statics
- 3.2 The Standard Atmosphere • 3.3 Pressure Variation in a Static Fluid
- 3.4 Hydrostatic Force on Submerged Surfaces • 3.5 Buoyancy and Stability
- 3.6 Fluids in Rigid-Body Motion • 3.7 Summary and Useful Equations
- Chapter 4 Basic Equations in Integral Form for a Control Volume
- 4.1 Basic Laws for a System
- 4.2 Relation of System Derivatives to the Control Volume Formulation
- 4.3 Conservation of Mass
- 4.4 Momentum Equation for Inertial Control Volume
- 4.5 Momentum Equation for Control Volume with Rectilinear Acceleration
- 4.6 Momentum Equation for Control Volume with Arbitrary Acceleration
- 4.7 The Angular-Momentum Principle
- 4.8 The First and Second Laws of Thermodynamics
- 4.9 Summary and Useful Equations
- Chapter 5 Introduction to Differential Analysis of Fluid Motion
- 5.1 Conservation of Mass
- 5.2 Stream Function for Two-Dimensional Incompressible Flow
- 5.3 Motion of a Fluid Particle (Kinematics)
- 5.4 Momentum Equation
- 5.5 Summary and Useful Equations
- Chapter 6 Incompressible Inviscid Flow
- 6.1 Momentum Equation for Frictionless Flow: Euler's Equation
- 6.2 Bernoulli Equation: Integration of Euler's Equation Along a Streamline
- 6.3 The Bernoulli Equation Interpreted as an Energy Equation
- 6.4 Energy Grade Line and Hydraulic Grade Line
- 6.5 Unsteady Bernoulli Equation: Integration of Euler's Equation Along a Streamline
- 6.6 Irrotational Flow
- 6.7 Summary and Useful Equations
- Chapter 7 Dimensional Analysis and Similitude
- 7.1 Nondimensionalizing the Basic Differential Equations
- 7.2 Buckingham Pi Theorem
- 7.3 Significant Dimensionless Groups in Fluid Mechanics
- 7.4 Flow Similarity and Model Studies
- 7.5 Summary and Useful Equations
- Chapter 8 Internal Incompressible Viscous Flow
- 8.1 Internal Flow Characteristics
- PART A Fully Developed Laminar Flow
- 8.2 Fully Developed Laminar Flow between Infinite Parallel Plates
- 8.3 Fully Developed Laminar Flow in a Pipe
- PART B Flow in Pipes and Ducts
- 8.4 Shear Stress Distribution in Fully Developed Pipe Flow
- 8.5 Turbulent Velocity Profiles in Fully Developed Pipe Flow
- 8.6 Energy Considerations in Pipe Flow
- 8.7 Calculation of Head Loss
- 8.8 Solution of Pipe Flow Problems
- PART C Flow Measurement
- 8.9 Flow Measurement and Flow Restriction
- 8.10 Restriction Flow Meters for Internal Flows
- 8.11 Summary and Useful Equations
- Chapter 9 External Incompressible Viscous Flow
- PART A Boundary Layers
- 9.1 The Boundary Layer Concept
- 9.2 Laminar Flat Plate Boundary Layer: Exact Solution
- 9.3 Momentum Integral Equation
- 9.4 Use of the Momentum Integral Equation for Flow with Zero Pressure Gradient
- 9.5 Pressure Gradients in Boundary Layer Flow
- PART B Fluid Flow About Immersed Bodies
- 9.6 Drag
- 9.7 Lift
- 9.8 Summary and Useful Equations
- Chapter 10 Fluid Machinery
- 10.1 Introduction and Classification of Fluid Machines
- 10.2 Turbomachinery Analysis
- 10.3 Pumps, Fans, and Blowers
- 10.4 Positive Displacement Pumps
- 10.5 Hydraulic Turbines
- 10.6 Propellers and Wind Turbines
- 10.7 Compressible Flow Turbomachines
- 10.8 Summary and Useful Equations
- Chapter 11 Flow in Open Channels
- 11.1 Basic Concepts and Definitions
- 11.2 Energy Equation for Open-Channel Flows
- 11.3 Localized Effect of Area Change (Frictionless Flow)
- 11.4 The Hydraulic Jump
- 11.5 Steady Uniform Flow
- 11.6 Flow with Gradually Varying Depth
- 11.7 Discharge Measurement Using Weirs
- 11.8 Summary and Useful Equations
- Chapter 12 Introduction to Compressible Flow
- 12.1 Review of Thermodynamics
- 12.2 Propagation of Sound Waves
- 12.3 Reference State: Local Isentropic Stagnation Properties
- 12.4 Critical Conditions
- 12.5 Basic Equations for One-Dimensional Compressible Flow
- 12.6 Isentropic Flow of an Ideal Gas: Area Variation
- 12.7 Normal Shocks
- 12.8 Supersonic Channel Flow with Shocks
- 12.9 Summary and Useful Equations
- Appendix A Fluid Property Data A-1
- A.1 Specific Gravity
- A.2 Surface Tension
- A.3 The Physical Nature of Viscosity
- A.4 Lubricating Oils
- A.5 Properties of Common Gases, Air, and Water
- Appendix B Selected Performance Curves for Pumps and Fans
- B.1 Introduction
- B.2 Pump Selection
- B.3 Fan Selection
- Appendix C Flow Functions for Computation of

Compressible Flow • C.1 Isentropic Flow • C.2 Normal Shock • Appendix D Analysis of Experimental Uncertainty • D.1 Introduction • D.2 Types of Error • D.3 Estimation of Uncertainty • D.4 Applications to Data • D.5 Summary • References • Appendix E Introduction to Computational Fluid Dynamics • E.1 Introduction to Computational Fluid Dynamics • E.2 Finite Difference Approach to CFD • Index

9789354641077 | ₹ 1179



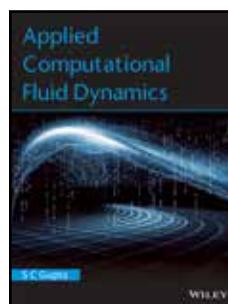
Incropera's Principles of Heat and Mass Transfer, Wiley India Edition | IM | e

Incropera

Table of Contents

- 1 Introduction
- 2 Introduction to Conduction
- 3 One-Dimensional, Steady-State Conduction
- 4 Two-Dimensional, Steady-State Conduction
- 5 Transient Conduction
- 6 Introduction to Convection
- 7 External Flow
- 8 Internal Flow
- 9 Free Convection
- 10 Boiling and Condensation
- 11 Heat Exchangers
- 12 Radiation: Processes and Properties
- 13 Radiation Exchange Between Surfaces
- 14 Diffusion Mass Transfer
- Appendix A Thermophysical Properties of Matter
- Appendix B Mathematical Relations and Functions
- Appendix C Thermal Conditions Associated with Uniform Energy Generation in One-Dimensional, Steady-State Systems
- Appendix D The Gauss-Seidel Method
- Appendix E The Convection Transfer Equations
- Appendix F Boundary Layer Equations for Turbulent Flow
- Appendix G An Integral Laminar Boundary Layer Solution for Parallel Flow over a Flat Plate
- Index

9788126578245 | ₹ 1179



Applied Computational Fluid Dynamics | e | k

Gupta

About the Author

Prof. S C Gupta is presently teaching at MVJ College of Engineering, Bangalore. He Graduated in Aeronautical Engineering from Punjab Engineering College, Chandigarh in the year 1969 with Distinction of Hons and a Gold Medal and subsequently obtained M.Tech from Indian Institute of Technology, Kanpur in the Year 1971. He has over 47 years of experience in the field of Aeronautics, mainly at R&D sector and teaching at postgraduate level. He worked for several years with Defence Research and Development Organisation (DRDO) from where he retired as Air Commodore.

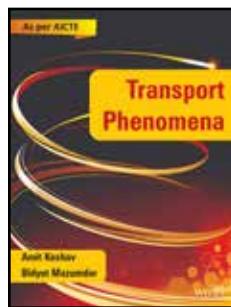
Table of Contents

- Chapter 1 Introduction
- 1.1 Insight into Power of Computational Fluid Dynamics
- 1.2 Advantages of CFD
- 1.3 Typical Major Goals of Computational Numeric in Aerospace
- 1.4 Error Sources in CFD Codes and in Wind Tunnel Data
- 1.5 Requirement of Computing Power for CFD
- 1.6 CFD Applications
- 1.7 CFD Ideas to Understand
- 1.8 Models of Flow
- 1.9 Substantial Derivative (Time Rate of Change Following a Moving Fluid Element)
- 1.10 Divergence of Velocity ($\nabla \cdot V$)
- 1.11 Compressibility
- 1.12 Viscosity
- 1.13 Governing Equations of Flow
- 1.14 All Equations Are One: Some Manipulations
- 1.15 Integral Versus Differential Form of Equations
- 1.16 Comments on the Governing Equations
- 1.17 Physical Boundary Conditions
- 1.18 Forms of Governing Equations Particularly Suited for CFD Work
- 1.19 Shock Fitting and Shock Capturing
- Chapter 2 Mathematical Behavior of Partial Differential Equations and Its Impact on Computational Fluid Dynamics
- 2.1 Introduction
- 2.2 Method to Determine Classification of Partial Differential Equations
- 2.3 Classification of PDEs: Impact on Physical and Computational Fluid Dynamics
- 2.4 Essence of Discretization
- 2.5 Difference Equation
- 2.6 Explicit and Implicit Approach
- 2.7 Errors and Stability Analysis
- 2.8 Stability Regions of Standard Time-Stepping Techniques
- 2.9 System of Second-Order PDEs
- 2.10 Canonicalization of PDEs
- Chapter 3 Solution Methods of Finite-Difference Equations
- 3.1 Introduction
- 3.2 Time Marching
- 3.3 Space Marching
- 3.4 Relaxation Technique

Prices are subject to change without prior notice.

• 3.5 Alternating Direction Implicit (ADI) Method • 3.6 Successive Over-Relaxation/Under-Relaxation • 3.7 Lax-Wendroff Method • 3.8 Upwind Schemes • 3.9 Midpoint Leapfrog • 3.10 Shock Capturing • 3.11 Numerical Viscosity • 3.12 Artificial Viscosity • 3.13 Conservative Smoothing • 3.14 Unsteady Problem-Explicit versus Implicit Scheme • • Chapter 4 Grid Generation • 4.1 Introduction • 4.2 Structured Grid Generation • 4.3 Surface Grid Generation • 4.4 Multiblock Grid Generation • 4.5 Unstructured Grid Generation • 4.6 Multigrid Methods: Cycling Strategies • • Chapter 5 Adaptive Grid Methods and Appropriate Transformation • 5.1 Introduction • 5.2 Adaptive Grids • 5.3 Structured Grid Adaptive Methods • 5.4 Unstructured Adaptive Grid Methods • 5.5 General Transformation of the Equations • 5.6 Matrices and Jacobians • 5.7 Generic form of the Governing Flow Equations in Strong • 5.8 Parallel Processing • • Chapter 6 Finite Volume Methods • 6.1 General Conservation Laws • 6.2 Spatial Discretization – Structured Finite Volume Scheme • 6.3 Temporal Discretization – Structured Finite Volume Scheme • 6.4 Boundary Conditions • 6.5 Case Studies • 6.6 High-Resolution Schemes • • Chapter 7 Computational Fluid Dynamics: Some Applications • 7.1 Numerical Dissipation and Dispersion • 7.2 Approximate Factorization • 7.3 Flux Vector Splitting • 7.4 Computational Solution for the Laminar Boundary Layer • 7.5 Application to Turbulence • 7.6 Computational Solution for Turbulent Boundary Layer • 7.7 Thermal • 7.8 Multi-Objective Shape Optimization • 7.9 Inverse Design • 7.10 Similarity Laws • 7.11 Method of Characteristics • 7.12 Fluid Structure Interaction • • Appendix 7.1 • Appendix 7.2 Design Exercise: To Design Three-Dimensional Aerofoil Shapes for Maximum Endurance for Jet-Powered Plane • References • Index

9788126577538 | ₹ 779



Transport Phenomena : As per AICTE | IM | e | k

Keshav

About the Author

Amit Keshav is working as an Associate Professor in the Department of Chemical Engineering, National Institute of Technology, Raipur, Chhattisgarh, India, since last 11 years. He worked as a lecturer in Seth Jai Parkash Mukand Lal Institute of Engineering and Technology (JMIT), Radaur, for more than 3 years. He had also worked as the Head of Department, Chemical

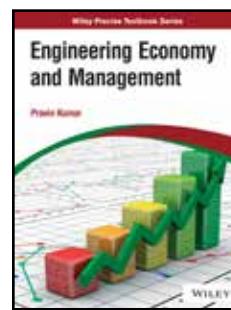
Engineering, at JMIT Radaur for more than a year. He had set up various labs at both JMIT Radaur and NIT Raipur.

Table of Contents

• Chapter 1 Introduction to Transport Phenomena • 1.1 Introduction • 1.2 Transport Phenomena • 1.3 Visualizing Moving Fluid • 1.4 General Differential Balance • • Chapter 2 Approach of Transport Phenomena for Solution of Flow Equations: Shell Balance Approach • 2.1 Introduction • 2.2 Shell Balance • 2.3 Transport Fluxes • 2.4 Constant of Proportionality and Their Determination • 2.5 Description of Fluid Type • 2.6 Boundary Conditions • 2.7 Dimensionless Numbers • • Chapter 3 Approach of Transport Phenomena for Solution of Flow Equations: Equations of Change • 3.1 Introduction • 3.2 Equations of Change • • Chapter 4 Fluid Flow: Introduction and Basics • 4.1 Introduction • 4.2 Fluid Flow • • Chapter 5 Solution to Laminar External Flows • 5.1 Introduction • 5.2 Flow of Fluid over a Flat Plate • 5.3 Flow in Slit • • Chapter 6 Solution of Internal Flows: Pipes and Annulus • 6.1 Introduction • 6.2 Flow in a Pipeline • 6.3 Flow through an Annulus • 6.4 Turbulent Flow in a Pipeline • • Chapter 7 Solution of Fluid Flow Problems: Radial Flows and Moving Bodies • 7.1 Introduction • 7.2 Radial Fluid Flow between Two Porous Concentric Cylinders • 7.3 Radial Fluid Flow between Two Porous Concentric Spherical Shells • 7.4 Radial Fluid Flow between Two Parallel Fixed Circular Disks • 7.5 Incompressible Isothermal Fluid in Laminar Flow between Two Coaxial Cylinders • 7.6 Coating of Wires • 7.7 Fluid Flow Around Rotation Surfaces and Determination of Shape of Free Surface • 7.8 Coating of Plastis Resin in Vertical Cylinder • 7.9 Incompressible Laminar Flow between Two Concentric Spheres • 7.10 Parallel-Disk Viscometer • • Chapter 8 Transport Phenomena for Heat Transfer Problems • 8.1 Introduction • 8.2 Conduction Heat Transfer Transport Phenomena • 8.3 Heat Conduction through Composite Walls • 8.4 Heat Conduction through Composite Walls with Variable Thermal Conductivity • 8.5 Heat Conduction through Cylindrical Composite Walls • 8.6 Heat Conduction from a Sphere to a Stagnant Fluid • 8.7 Heat Conduction through Rectangular Wall with Heat Source • 8.8 Heat Conduction through Cylindrical

Pipe with Heat Source • 8.9 Convection Heat Transfer Transport Phenomena • 8.10 Forced Convection in Circular Pipe • 8.11 Forced Convection in Flow over Flat Plate: Concept of Hydrodynamic Boundary Layer Thickness • 8.12 Free Convection Transport Phenomena • 8.13 Heat Conduction in a Cooling Fin • 8.14 Heat Transfer from a Radial Circular Fin • 8.15 Condensation and Boiling • 8.16 Transport Equation for Flow of Electric Current in Wire • 8.17 Transport Equation of Heat Conduction with a Viscous Heat Source • 8.18 Transport Equation for Heat Conduction with a Chemical Heat Source • 8.19 Radial Temperature Distribution in Annular Chemical Reactor • • Chapter 9 Transport Equation in Mass Transfer • 9.1 Introduction • 9.2 Diffusion through a Stagnant Gas Film • 9.3 Diffusion through a Spherical Shell • 9.4 Diffusion with a Heterogeneous Fast Chemical Reaction • 9.5 Diffusion with Heterogeneous Slow Chemical Reaction • 9.6 Diffusion with a Homogeneous Chemical Reaction • 9.7 Diffusion of Helium through Pyrex • 9.8 Leaching of a Substance from Solid Particles by a Solvent • 9.9 Forced-Convection Mass Transfer • • Appendices

9789388991001 | ₹ 599



Engineering Economy and Management | e | k

Kumar

About the Author

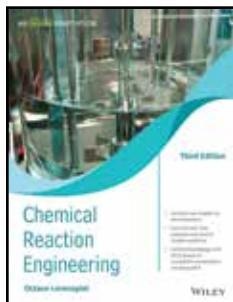
Pravin Kumar is working as an Associate Professor in the Department of Mechanical Engineering, Delhi Technological University, Delhi. He obtained his PhD in Supply Chain Management from IIT Delhi and M. Tech. in Industrial Management from IIT (BHU) Varanasi. He has more than 19 years of teaching and research experience. His research area is supply chain and operations management. He has published more than 50 research papers in international journals.

Table of Contents

• Preface • About the Author • Chapter 1 Introduction to Engineering Economic • 1.1 Introduction • 1.2 Concept of Efficiency • 1.3 Theory of Demand • 1.4 Elasticity of Demand • 1.5 Supply and Law of Supply • 1.6 Indifference Curve • 1.7 Budget Line • 1.8 Welfare Analysis • Chapter 2 Managerial Economic • 2.1 Introduction • 2.2 Scope of Managerial Economics • 2.3 Techniques of Managerial Economics • 2.4 Applications of Managerial Economics • • Chapter 3 Money, National Income, and Goods and Services Tax • 3.1 Money • 3.2 National Income • 3.3 Goods and Services Tax • Chapter 4 Poverty, Unemployment, and Inflation • 4.1 Scarcity • 4.2 Poverty • 4.3 Unemployment • 4.4 Inflation • Chapter 5 Banking System • 5.1 Introduction to Banking Systems • 5.2 Types of Banks • 5.3 Quantitative Instruments for Credit Control • 5.4 Types of Banking • Chapter 6 Market Structure • 6.1 Introduction • 6.2 Perfect Competition • 6.3 Monopoly • 6.4 Monopolistic Competition • 6.5 Oligopoly • 6.6 Duopoly • 6.7 Monopsony • 6.8 Monopoly and Monopsony: A Comparison • • Chapter 7 Marketing Management • 7.1 Introduction • 7.2 Marketing Mix • 7.3 Market Segmentation • 7.4 Exchange and Transactions • 7.5 Marketing Research • 7.6 Scope of Marketing • 7.7 Product Life Cycle • 7.8 Demand Forecasting • Chapter 8 Concepts in Management • 8.1 Introduction • 8.2 Characteristics of Management • 8.3 Scope of Management • 8.4 Classical School of Management • 8.5 Functions of Management • 8.6 Levels of Management • 8.7 Skills of Management • 8.8 Managerial Roles • 8.9 Administration and Management • Chapter 9 Human Resource Management • 9.1 Human Resource Management • 9.2 Human Resource Planning • 9.3 Recruitment and Selection • 9.4 Job Design • 9.5 Merit Rating • Chapter 10 Corporate Social Responsibility and Business Ethics • 10.1 Corporate Social Responsibility • 10.2 Types of Corporate Social Responsibilities • 10.3 Ethics • Chapter 11 Production and Operations Management • 11.1 Production and Operations Management • 11.2 Objectives of Production Management • 11.3 Production Systems • 11.4 Facility Location • 11.5 Plant Layout • Chapter 12 Demand Forecasting and Cost Estimation • 12.1 Introduction • 12.2 Forecasting Horizons • 12.3 Steps to Forecasting • 12.4 Forecasting Methods • 12.5 Seasonal Adjustments • 12.6 Forecasting Performance Measures • 12.7 Cost Estimation • 12.8 Elements of Cost • 12.9 Computation of Material Variances • 12.10 Break-Even Analysis • Chapter 13 Time Value of Money • 13.1 Introduction • 13.2 Simple Interest • 13.3 Compound Interest • 13.4 Present Worth Analysis • 13.5 Future Worth Analysis • 13.6 Annual Cash Flow Analysis • 13.7 Rate of Return Analysis • 13.8 Arithmetic Gradient • 13.9 Geometric Gradient • 13.10 Continuous Compounding • 13.11 Normal and Effective Interest Rate • 13.12 Perpetual Payment

- Chapter 14 Project Evaluation • 14.1 Introduction • 14.2 Determining Minimum Attractive Rate of Return • 14.3 Payback (Payout) Period Method • 14.4 Benefit-Cost Ratio • Chapter 15 Comparison Among Alternative • 15.1 Introduction • 15.2 Basis for Comparison of Alternatives • 15.3 Study Period • 15.4 Useful Lives of Alternatives Are Equal to the Study Period • 15.5 Useful Lives of Alternatives Are Unequal • 15.6 B-C Ratio Method for Comparison of Alternatives • Chapter 16 Depreciation and Taxes • 16.1 Introduction • 16.2 Some Important Terms Used in Depreciation • 16.3 Classical Depreciation Methods • 16.4 Modified Accelerated Cost Recovery System • 16.5 Taxes
- Chapter 17 Replacement Analysis • 17.1 Introduction • 17.2 Reasons for Replacement Analysis • 17.3 Lives of Assets • 17.4 Determining the Economic Life of a Challenger • 17.5 Determining the Economic Life of a Defender • 17.6 After-Tax Replacement Studies
- Chapter 18 Concept of Financial Statement • 18.1 Introduction • 18.2 Sources of Company Information • 18.3 Sources of International Economic Data • 18.4 Financial Analysis • 18.5 Financial Statement • 18.6 Trading Account • 18.7 Profit and Loss Account • 18.8 Balance Sheet Requirements • 18.9 Distinction between Profit and Loss Account and Balance Sheet • Chapter 19 Financial Ratio • 19.1 Introduction • 19.2 Types of Financial Ratios • 19.3 Advantages and Limitations of Ratio Analysis • Chapter 20 Capital Budgeting • 20.1 Introduction • 20.2 Capital Financing and Allocation Function • 20.3 Sources of Capital Fund • 20.4 Capital Asset Pricing Model • 20.5 Weighted Average Cost of Capital • 20.6 Leasing Decision • 20.7 Capital Allocation • • Chapter 21 Decision Making • 21.1 Introduction • 21.2 Types of Decision-Making Environment • 21.3 Decision Tree Analysis • 21.4 Multiple Criteria Decision Making • • Summary • Points to Remember
- Multiple-Choice Question • State whether True/False • Fill in the Blank • Review Question • Exercise • Appendix A—Statistical Tables and Procedure • Appendix B End-of-Period Compound Interest Table • Appendix C Answers to Objective Type Question • Bibliography • Index

9788126579921 | ₹ 859



Chemical Reaction Engineering, 3ed, An Indian Adaptation | IM | e | k

Levenspiel

About the Author

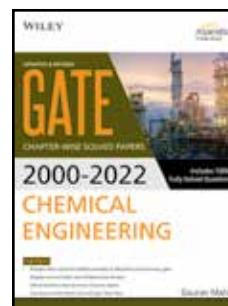
Octave Levenspiel was a professor of chemical engineering at Oregon State University. His principal interest was chemical reaction engineering, and he was the author of a major textbook Chemical Reaction Engineering as well as numerous research publications.

Table of Contents

- Notation • Chapter 1 • Introduction to Chemical Reaction Engineering • • Part I Homogeneous Reactions in Ideal Reactors • Chapter 2 Kinetics of Homogeneous Reactions • 2.1 Concentration-Dependent Term of a Rate Equation • 2.2 Temperature-Dependent Term of a Rate Equation • 2.3 Searching for a Mechanism • 2.4 Predictability of Reaction Rate from Theory • • Chapter 3 Interpretation of Batch Reactor Data • 3.1 Constant-Volume Batch Reactor • 3.2 Varying-Volume Batch Reactor • 3.3 Temperature and Reaction Rate • 3.4 The Search for a Rate Equation • • Chapter 4 Introduction to Reactor Design • 4.1 General Discussion • • Chapter 5 Ideal Reactors for a Single Reaction • 5.1 Ideal Batch Reactor • 5.2 Steady-State Mixed Flow Reactor • 5.3 Steady-State Plug Flow Reactor • 5.4 Semibatch Reactor • • Chapter 6 Design for Single Reactions • 6.1 Size Comparison of Single Reactors • 6.2 Multiple-Reactor Systems • 6.3 Recycle Reactor • 6.4 Autocatalytic Reactions • • Chapter 7 Design for Multiple Reactions • 7.1 Design for Parallel Reactions • 7.2 Design for Series Reactions • 7.3 Successive Irreversible Reactions of Different Orders • 7.4 Reversible Reactions • 7.5 Irreversible Series-Parallel Reactions • 7.6 The Denbigh Reactions and Their Special Cases • • Chapter 8 Design for Nonisothermal Reactors • 8.1 Temperature and Pressure Effects in Single Reactions • 8.2 Nonisothermal Reactors • 8.3 General Graphical Design Procedure for Single Reactions • 8.4 Adiabatic Reactors • 8.5 Exothermic Reactions in Mixed Flow Reactors—A Special Problem • 8.6 Multiple Reactions • 8.7 Summary of Balance Equations • • Chapter 9 Selection of Reactor • • Part II Flow Pattern, Contacting, and Non-Ideal Flow • Chapter 10 Basics of Non-Ideal Flow • 10.1 E, The Age Distribution of Fluid, the RTD • 10.2 Conversion in Non-Ideal Flow Reactors • • Chapter 11 Compartment Models • • Chapter 12 The Dispersion Model • 12.1 Axial Dispersion • 12.2 Correlations for Axial Dispersion • 12.3 Chemical Reaction and Dispersion • • Chapter 13 The Tanks-in-Series Model 411 • 13.1 Pulse Response

- Experiments and the RTD • 13.2 Chemical Conversion • • Chapter 14 The Convection Model for Laminar Flow • 14.1 The Convection Model and its RTD • 14.2 Chemical Conversion in Laminar Flow Reactors • • Chapter 15 Earliness of Mixing, Segregation, and RTD • 15.1 Self-Mixing of a Single Fluid • 15.2 Mixing of Two Miscible Fluids • • Part III Reactions Catalyzed by Solids • Chapter 16 Heterogeneous Reactions—Introduction • • Chapter 17 Solid Catalyzed Reactions • 17.1 The Rate Equation for Surface Kinetics • 17.2 Pore Diffusion Resistance Combined with Surface Kinetics • 17.3 Porous Catalyst Particles • 17.4 Heat Effects During Reaction • 17.5 Performance Equations for Reactors Containing Porous Catalyst Particles • 17.6 Experimental Methods for Finding Rates • 17.7 Product Distribution in Multiple Reactions • • Chapter 18 The Packed Bed Catalytic Reactor • • Chapter 19 Reactors with Suspended Solid Catalyst, Fluidized Reactors of Various Types • 19.1 Background Information About Suspended Solids Reactors • 19.2 The Bubbling Fluidized BED-BFB • 19.3 The K-L Model For BFB • 19.4 The Circulating Fluidized BED-CFB • 19.5 The JET Impact Reactor • • Chapter 20 Deactivating Catalysts • 20.1 Mechanisms of Catalyst Deactivation • 20.2 The Rate and Performance Equations • 20.3 Design • • Chapter 21 G/L Reactions on Solid Catalysts: Trickle Beds, Slurry Reactors, and Three-Phase Fluidized Beds • 21.1 The General Rate Equation • 21.2 Performance Equations for an Excess of B • 21.3 Performance Equations for an Excess of A • 21.4 Which Kind of Contactor to Use • 21.5 Applications • • Part IV Non-Catalytic Systems • Chapter 22 Fluid–Fluid Reactions: Kinetics • 22.1 The Rate Equation • • Chapter 23 Fluid–Fluid Reactors: Design • 23.1 Straight Mass Transfer • 23.2 Mass Transfer Plus Not Very Slow Reaction • • Chapter 24 Fluid–Particle Reactions: Kinetics • 24.1 Selection of a Model • 24.2 Shrinking-Core Model for Spherical Particles of Unchanging Size • 24.3 Rate of Reaction for Shrinking Spherical Particles • 24.4 Extensions • 24.5 Determination of the Rate-Controlling Step • • Chapter 25 Fluid–Particle Reactors: Design • • Part V Biochemical Reaction Systems • Chapter 26 Enzyme Fermentation • 26.1 Michaelis–Menten Kinetics (M–M Kinetics) • 26.2 Inhibition by a Foreign Substance—Competitive and Noncompetitive Inhibition • • Chapter 27 Microbial Fermentation—Introduction and Overall Picture • • Chapter 28 Substrate-Limiting Microbial Fermentation • 28.1 Batch (or Plug Flow) Fermentors • 28.2 Mixed Flow Fermentors • 28.3 Optimum Operation of Fermentors • • Chapter 29 Product-Limiting Microbial Fermentation • 29.1 Batch (or Plug Flow) Fermentors for $n = 1$ • 29.2 Mixed Flow Fermentors for $n = 1$ • • Part VI Novel Reactors • Chapter 30 Introduction to Novel Reactors • 30.1 Microreactors • 30.2 Membrane Reactor • 30.3 Reactive Distillation Column • 30.4 Falling Film Reactor • • Appendix A—Miscellany • Appendix B—Answers to Multiple-Choice Questions • Name Index • Subject Index

9789354244605 | ₹ 1139



Wiley's GATE Chemical Engineering Chapter-Wise Solved Papers (2000-2022)

Malik

About the Author

Gaurav Malik did his postgraduation from IIT Kharagpur. He has over 10 years of teaching experience. He instructed more than 10000 students for GATE Chemical Engineering across the country. Under his guidance, many students got selected in various institutes for higher studies and PSUs.

Table of Contents

- Note to the Aspirants • Chapter 1: Engineering Mathematics • Chapter analysis • Important Formulas • Questions • Answer with Explanation • Chapter 2: Thermodynamics • Chapter analysis • Important Formulas • Questions • Answer with Explanation • Chapter 3: Mass Transfer • Chapter analysis • Important Formulas • Questions • Answer with Explanation • Chapter 4: Fluid Mechanics • Chapter analysis • Important Formulas • Questions • Answer with Explanation • Chapter 5: Chemical Reaction Engineering • Chapter analysis • Important Formulas • Questions • Answer with Explanation • Chapter 6: Heat Transfer • Chapter analysis • Important Formulas • Questions • Answer with Explanation • Chapter 7: Process Dynamic and Control • Chapter analysis • Important Formulas • Questions • Answer with Explanation • Chapter 8: Mechanical Operations • Chapter analysis • Important Formulas • Questions • Answer with Explanation • Chapter 9: Plant Design and Economics • Chapter analysis • Important Formulas • Questions • Answer

with Explanation • Chapter 10: Process Calculation • Chapter analysis • Important Formulas • Questions • Answer with Explanation • Chapter 11: Chemical Technology • Chapter analysis • Important Formulas • Questions • Answer with Explanation • Dimensionless Numbers • Solved GATE (CE) 2022

9789354640407 | ₹ 699



Engineering Mechanics Statics and Dynamics, 9ed, An Indian Adaptation | IM | e | k

Meriam

About the Author

Dr. James L. Meriam has contributed to the field of engineering mechanics as one of the premier engineering educators during the second half of the twentieth century. He had early industrial experience with Pratt and Whitney Aircraft and the General Electric Company. During the Second World War, he served in the U.S.

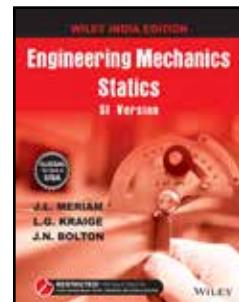
Coast Guard. He was a member of the faculty of the University of California-Berkeley, Dean of Engineering at Duke University, a faculty member at the California Polytechnic State University, and visiting professor at the University of California-Santa Barbara.

Table of Contents

• Foreword • Preface to the Adapted Edition • Preface • Acknowledgments • Part I Statics • 1 Introduction to Statics • 2 Force Systems • 2.1 Introduction • 2.2 Force • 2.3 Rectangular Components • 2.4 Moment • 2.5 Couple • 2.6 Resultants • 2.7 Rectangular Components • 2.8 Moment and Couple • 2.9 Resultants • 2.10 Chapter Review • 3 Equilibrium • 3.1 Introduction • 3.2 System Isolation and the Free-Body Diagram • 3.3 Equilibrium Conditions • 3.4 Equilibrium Conditions • 3.5 Chapter Review • 4 Structures • 4.1 Introduction • 4.2 Plane Trusses • 4.3 Method of Joints • 4.4 Graphical Method • 4.5 Method of Sections • 4.6 Space Trusses • 4.7 Frames and Machines • 4.8 Chapter Review • 5 Distributed Forces: Center of Mass, Centroid, and Moment of Inertia • 5.1 Introduction • 5.2 Center of Mass • 5.3 Centroids of Lines, Areas, and Volumes • 5.4 Composite Bodies and Figures; Approximations • 5.5 Theorems of Pappus • 5.6 Area Moments of Inertia • 5.7 Mass Moments of Inertia • 5.8 Beams—External Effects • 5.9 Beams—Internal Effects • 5.10 Chapter Review • 6 Friction • 6.1 Introduction • 6.2 Types of Friction • 6.3 Dry Friction • 6.4 Wedges • 6.5 Screws • 6.6 Journal Bearings • 6.7 Thrust Bearings; Disk Friction • 6.8 Flexible Belts • 6.9 Rolling Resistance • 6.10 Chapter Review • 7 Virtual Work • 7.1 Introduction • 7.2 Work • 7.3 Equilibrium • 7.4 Potential Energy and Stability • 7.5 Chapter Review • Part II Dynamics • Part IIA: Dynamics of Particles • 8 Introduction to Dynamics • 8.1 History and Modern Applications • 8.2 Solving Problems in Dynamics • 8.3 Chapter Review • 9 Kinematics of Particles • 9.1 Introduction • 9.2 Rectilinear Motion • 9.3 Plane Curvilinear Motion • 9.4 Rectangular Coordinates (x-y) • 9.5 Normal and Tangential Coordinates (n-t) • 9.6 Polar Coordinates (r-θ) • 9.7 Space Curvilinear Motion • 9.8 Relative Motion (Translating Axes) • 9.9 Constrained Motion of Connected Particles • 9.10 Chapter Review • 10 Kinetics of Particles • 10.1 Introduction • 10.2 Newton's Second Law • 10.3 Equation of Motion and Solution of Problems • 10.4 Rectilinear Motion • 10.5 Curvilinear Motion • 10.6 Work and Kinetic Energy • 10.7 Potential Energy • 10.8 Introduction • 10.9 Linear Impulse and Linear Momentum • 10.10 Angular Impulse and Angular Momentum • 10.11 Introduction • 10.12 Impact • 10.13 Central-Force Motion • 10.14 Relative Motion • 10.15 Chapter Review • 11 Kinetics of Systems of Particles • 11.1 Introduction • 11.2 Generalized Newton's Second Law • 11.3 Work-Energy • 11.4 Impulse-Momentum • 11.5 Conservation of Energy and Momentum • 11.6 Steady Mass Flow • 11.7 Variable Mass • 11.8 Chapter Review • Part IIB: Dynamics of Rigid Bodies • 12 Plane Kinematics of Rigid Bodies • 12.1 Introduction • 12.2 Rotation • 12.3 Absolute Motion • 12.4 Relative Velocity • 12.5 Instantaneous Center of Zero Velocity • 12.6 Relative Acceleration • 12.7 Motion Relative to Rotating Axes • 12.8 Chapter Review • 13 Plane Kinetics of Rigid Bodies • 13.1 Introduction • 13.2 General Equations of Motion • 13.3 Translation • 13.4 Fixed-Axis Rotation • 13.5 General Plane Motion • 13.6 Work-Energy Relations • 13.7 Acceleration from Work-Energy; Virtual Work • 13.8 Impulse-Momentum Equations • 13.9 Chapter Review • 14 Introduction to Three-Dimensional Dynamics of Rigid Bodies • 14.1 Introduction • 14.2 Translation • 14.3 Fixed-Axis Rotation • 14.4 Parallel-Plane Motion • 14.5 Rotation about a Fixed Point • 14.6 General Motion • 14.7 Angular Momentum • 14.8 Kinetic Energy • 14.9 Momentum and Energy Equations of Motion • 14.10 Parallel-Plane Motion • 14.11 Gyroscopic

Motion: Steady Precession • 14.12 Chapter Review • 15 Vibration and Time Response • 15.1 Introduction • 15.2 Free Vibration of Particles • 15.3 Forced Vibration of Particles • 15.4 Vibration of Rigid Bodies • 15.5 Energy Methods • 15.6 Chapter Review • Appendix A Introduction to Analytical Mechanics • Appendix B Selected Topics of Mathematics • Appendix C Useful Tables • Index • Problem Answers

9789354248566 | ₹ 1319



Engineering Mechanics: Statics, SI Version | IM | e

Meriam

About the Author

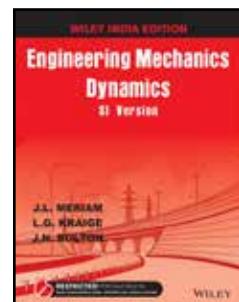
Dr. James L. Meriam has contributed to the field of engineering mechanics as one of the premier engineering educators during the second half of the twentieth century. He had early industrial experience with Pratt and Whitney Aircraft and the General Electric Company. During the Second World War, he served in the U.S.

Coast Guard. He was a member of the faculty of the University of California-Berkeley, Dean of Engineering at Duke University, a faculty member at the California Polytechnic State University, and visiting professor at the University of California-Santa Barbara.

Description

These exciting books use interesting, realistic illustrations to enhance reader comprehension. Also include a large number of worked examples that provide a good balance between initial, confidence building problems and more advanced level problems. Fundamental principles for solving problems are emphasized throughout.

9788126564033 | ₹ 1079



Engineering Mechanics: Dynamics, SI Version | e

Meriam

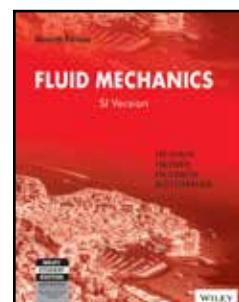
About the Author

Glenn Kraige is Professor in the Department of Engineering Science and Mechanics at Virginia Tech. He is a fellow member of the American Society for Engineering Education,

Description

Known for its accuracy, clarity, and dependability, Meriam, Kraige, and Bolton's Engineering Mechanics: Dynamics, 8th Edition SI Version has provided a solid foundation of mechanics principles to students for more than 60 years. Now in its eighth edition, the text continues to help students develop their problem-solving skills with an extensive variety of engaging problems related to engineering design. In addition to new homework problems, the text also includes a number of helpful sample problems. Students benefit from realistic applications that motivate their desire to learn and develop their skills.

9788126565375 | ₹ 1069



Fluid Mechanics , SI Version, 7ed | IM | e

Munson

About the Author

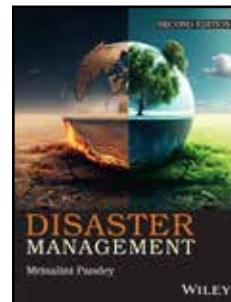
Bruce R. Munson, Professor Emeritus of Engineering Mechanics, has been faculty member at Iowa State university since 1974. Dr. Munson's main professional activity has been in the area of fluid mechanics education and research. He has been responsible for the development of many fluid mechanics courses for studies in civil

engineering, mechanical engineering, engineering science, and agricultural engineering and is the recipient of an Iowa State University Superior engineering Teacher Award and the Iowa State University Alumni Association Faculty Citation.

Table of Contents

- Introduction • 1.1 Some Characteristics of Fluids • 1.2 Dimensions, Dimensional Homogeneity and Units • 1.3 Analysis of Fluid Behavior • 1.4 Measures of Fluid Mass and Weight • 1.5 Ideal Gas Law • 1.6 Viscosity • 1.7 Compressibility of Fluids • 1.8 Vapor Pressure • 1.9 Surface Tension • 1.10 A Brief Look Back in History • 1.11 Chapter Summary and Study Guide • 2 Fluid Statics • 2.1 Pressure at a Point • 2.2 Basic Equation for Pressure Field • 2.3 Pressure Variation in a Fluid at Rest • 2.4 Standard Atmosphere • 2.5 Measurement of Pressure • 2.6 Manometry • 2.7 Mechanical and Electronic Pressure-Measuring Devices • 2.8 Hydrostatic Force on a Plane Surface • 2.9 Pressure Prism • 2.10 Hydrostatic Force on a Curved Surface • 2.11 Buoyancy, Flotation and Stability • 2.12 Pressure Variation in a Fluid with Rigid-Body Motion • 2.13 Chapter Summary and Study Guide • 3 Elementary Fluid Dynamics—The Bernoulli Equation • 3.1 Newton's Second Law • 3.2 $F = ma$ along a Streamline • 3.3 $F = ma$ Normal to a Streamline • 3.4 Physical Interpretation • 3.5 Static, Stagnation, Dynamic and Total Pressure • 3.6 Examples of Use of the Bernoulli Equation • 3.7 The Energy Line and the Hydraulic Grade Line • 3.8 Restrictions on Use of the Bernoulli Equation • 3.9 Chapter Summary and Study Guide • 4 Fluid Kinematics • 4.1 The Velocity Field • 4.2 The Acceleration Field • 4.3 Control Volume and System Representations • 4.4 The Reynolds Transport Theorem • 4.5 Chapter Summary and Study Guide • 5 Finite Control Volume Analysis • 5.1 Conservation of Mass—The • 5.2 Newton's Second Law—The Linear Momentum and Moment-of-Momentum Equations • 5.3 First Law of Thermodynamics—The Energy Equation • 5.4 Second Law of Thermodynamics—Irreversible Flow • 5.5 Chapter Summary and Study Guide • 6 Differential Analysis of Fluid Flow • 6.1 Fluid Element Kinematics • 6.2 Conservation of Mass • 6.3 Conservation of Linear Momentum • 6.4 Inviscid Flow • 6.5 Some Basic, Plane Potential Flows • 6.6 Superposition of Basic, Plane Potential Flows • 6.7 Other Aspects of Potential Flow Analysis • 6.8 Viscous Flow • 6.9 Some Simple Solutions for Viscous, Incompressible Fluids • 6.10 Other Aspects of Differential Analysis • 6.11 Chapter Summary and Study Guide • 7 Dimensional Analyses, Similitude and Modeling • 7.1 Dimensional Analysis • 7.2 Buckingham Pi Theorem • 7.3 Determination of Pi Terms • 7.4 Some Additional Comments about Dimensional Analysis • 7.5 Determination of Pi Terms by Inspection • 7.6 Common Dimensionless Groups in Fluid Mechanics • 7.7 Correlation of Experimental Data • 7.8 Modeling and Similitude • 7.9 Some Typical Model Studies • 7.10 Similitude Based on Governing Differential Equations • 7.11 Chapter Summary and Study Guide • 8 Viscous Flow in Pipes • 8.1 General Characteristics of Pipe Flow • 8.2 Fully Developed Laminar Flow • 8.3 Fully Developed Turbulent Flow • 8.4 Dimensional Analysis of Pipe Flow • 8.5 Pipe Flow Examples • 8.6 Pipe Flow rate Measurement • 8.7 Chapter Summary and Study Guide • 9 Flow Over Immersed Bodies • 9.1 General External Flow Characteristics • 9.2 Boundary Layer Characteristics • 9.3 Drag • 9.3.1 Friction Drag • 9.4 Lift • 9.5 Chapter Summary and Study Guide • 10 Open-Channel Flow • 10.1 General Characteristics of Open-Channel Flow • 10.2 Surface Waves • 10.3 Energy Considerations • 10.4 Uniform Depth Channel Flow • 10.5 Gradually Varied Flow • 10.6 Rapidly Varied Flow • 10.7 Chapter Summary and Study Guide • 11 Compressible Flow • 11.1 Ideal Gas Relationships • 11.2 Mach Number and Speed of Sound • 11.3 Categories of Compressible Flow • 11.4 Isentropic Flow of an Ideal Gas • 11.5 Nonisentropic Flow of an Ideal Gas • 11.6 Analogy between Compressible and Open-Channel Flows • 11.7 Two-Dimensional Compressible Flow • 11.8 Chapter Summary and Study Guide • 12 Turbomachines • 12.1 Introduction • 12.2 Basic Energy Considerations • 12.3 Basic Angular Momentum Considerations • 12.4 The Centrifugal Pump • 12.5 Dimensionless Parameters and Similarity Laws • 12.6 Axial-Flow and Mixed-Flow Pumps • 12.7 Fans • 12.8 Turbines • 12.9 Compressible Flow Turbomachines • 12.10 Chapter Summary and Study Guide • References • Review Problems • Conceptual Questions • Problems • A Computational fluid dynamics • B Physical Properties of Fluids • C Properties of the U.S. • Standard Atmosphere • D Compressible Flow graphs • For an Ideal Gas ($k = 1.4$) • Answers ANS • Index I • Video Index

9788126553433 | ₹ 1229



Disaster Management, 2ed | e | k

Pandey

About the Author

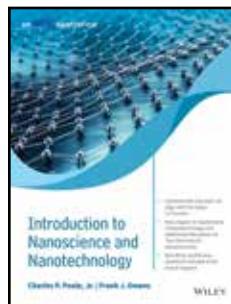
Dr. Mrinalini Pandey is presently working as a Professor in Department of Management Studies, Indian School of Mines, Dhanbad. She has more than a decade of academic experience in teaching various courses on management both at PG and UG levels. She is a member of leading professional bodies of management, she has contributed many articles in management journals and presented papers in international and national conferences in India and abroad. She is also on the review board of a number of International Journals.

Table of Contents

- Preface • Part I Disaster Management: A Prologue • Chapter 1 Introduction to Disaster Management • 1.1 Concept of Disaster • 1.2 Causes and Types of Disasters • 1.3 Summary of Types of Disasters • 1.4 Dimensions of Natural and Anthropogenic Disasters • 1.5 Aims of Disaster Management • 1.6 National and International Trends in Disaster Management • 1.7 Climate Change and Urban Disasters • 1.8 Principles and Components of Disaster Management • 1.9 Summary • 1.10 Keywords and Phrases
- 1.11 Objective Type Questions • 1.12 Questions for Review • 1.13 References • 1.14 Answers • Chapter 2 Disaster Management and Planning • 2.1 Disaster Determinants • 2.2 Nature, Scope and Management Process • 2.3 Policy of Disaster Management
- 2.4 Types of Plans: Management by Objectives • 2.5 SWOT Analysis • 2.6 Hazard and Vulnerability Analysis • 2.7 Identifying Crisis Situations: A Framework • 2.8 Organisational Structure and Design • 2.9 Authority, Delegation and Decentralisation • 2.10 Roles, Skills and Competencies • 2.11 Importance of Control Process in Disaster Management • 2.12 Group Dynamics: Nature, Approach, and Attitudes Required to Establish Effective Autonomous Work Groups • 2.13 Understanding the Importance of Team-Building in Disaster Management • 2.14 Capability Assessment • 2.15 National Disaster Management Authority • 2.16 Summary • 2.17 Keywords and Phrases • 2.18 Objective Type Questions • 2.19 Questions for Review • 2.20 References • 2.21 Answers • Part II Disaster Management Cycle: Practical Applications • Chapter 3 Disaster Mitigation • 3.1 Disaster Management Cycle: An Overview • 3.2 Disaster Mitigation: Meaning and Concept • 3.3 Structural Mitigation • 3.4 Non-Structural Mitigation • 3.5 Disaster Mitigation Strategies • 3.6 Importance of Information and Communication in Disaster Mitigation • 3.7 Emerging Trends in Disaster Mitigation • 3.8 Strengthening Capacity for Reducing Risk • 3.9 Role of Team and Coordination • 3.10 Sustainable Development for Disaster Mitigation • 3.11 National and International Assistance in Disaster Mitigation: An Overview • 3.12 Summary • 3.13 Keywords and Phrases • 3.14 Objective Type Questions • 3.15 Questions for Review • 3.16 References • 3.17 Answers
- Chapter 4 Disaster Preparedness • 4.1 Introduction to Disaster Preparedness • 4.2 The Three A's of Disaster Preparedness • 4.3 Principles of Disaster Preparedness • 4.4 Steps of Disaster Preparedness • 4.5 Organisational Structure for Disaster Preparedness • 4.6 Essential Services Preparedness and Logistical Readiness • 4.7 Contingency Planning • 4.8 Importance of Building Team and Community Relations for Environmental and Emergency Managers • 4.9 Training Needs Analysis and Human Resource Development Plan • 4.10 Emergency Operational Plan: Contents • 4.11 Summary • 4.12 Keywords and Phrases • 4.13 Objective Type Questions • 4.14 Questions for Review • 4.15 References • 4.16 Answers • Chapter 5 Disaster Response • Learning Objectives • Opening Case • 5.1 Aims of Response • 5.2 Control Process and Measurement • 5.3 Security Issues • 5.4 Profile of an Effective Crisis Leader • 5.5 Leading at the Time of Crisis: Competencies and Challenges • 5.6 Evacuation and Migration • 5.7 Administering First-Aid • 5.8 Handling of Injured at Hospitals: Challenges and Issues • 5.9 Mobilisation and Restoration of Essential Services • 5.10 Search and Rescue Work • 5.11 Modern and Traditional Methods of Response • 5.12 A Model of an Ideal Command Centre • 5.13 International Cooperation in Disaster Response • 5.14 Summary • 5.15 Key words and Phrases • 5.16 Objective Type Questions • 5.17 Questions for Review • 5.18 References • 5.19 Answers
- Chapter 6 Disaster Recovery • 6.1 Introduction to Medium- and Long-Term Recovery Aspects • 6.2 Community Participation in Defining Objectives and Their Priorities • 6.3 Identifying and Ascertaining Impact of Disaster • 6.4 Participative Rehabilitation: Physical and Social Infrastructure • 6.5 Social and Economic Rehabilitation: Capacity Building for Reconstruction and Rehabilitation • 6.6 Recovery and Rebuilding Works • 6.7 Facilitating Compensations to be Paid through Insurances and Government • 6.8 Coping Strategies: Providing Counselling and Psychological Support • 6.9 Summary • 6.10 Keywords and

Phrases • 6.11 Objective Type Questions • 6.12 Questions for Review • 6.13 References • 6.14 Answers • Part III Contemporary Issues and Challenges in Disaster Management • Chapter 7 Ascertaining Roles and Responsibilities • 7.1 Global Thrust for Disaster Management • 7.2 Roles and Responsibilities of Agencies • 7.3 International and National Agencies • 7.4 State and Local Bodies • 7.5 Philanthropic Organisations • 7.6 Role of Stakeholders • 7.7 Impact and Role of Media • 7.8 Planning Commission and Its Role • 7.9 Community-Based Approach to Disaster Management • 7.10 Summary • 7.11 Keywords and Phrases • 7.12 Objective Type Questions • 7.13 Questions for Review • 7.14 References • 7.15 Answers • Chapter 8 Insights on Challenges in Management of Disaster • 8.1 Disaster Profile of India • 8.2 Management of Disasters in India • 8.3 Disaster Management Policy • 8.4 Education on Disasters • 8.5 Public Awareness • 8.6 Public Health System: Its Role in Disaster Management Prevention • 8.7 Addressing Challenges Through Triage Process • 8.8 Charting a Hazard Map • 8.9 Effect of Culture and Disaster Management • 8.10 Environmental Degradation and Disasters: Addressing Challenges • 8.11 Enabling Role of Science and Technology in Management of Disasters • 8.12 Role of Innovations in Managing Disasters • 8.13 Media Relations and External Communications During a Disaster • 8.14 Summary • 8.15 Keywords and Phrases • 8.16 Objective Type Questions • 8.17 Questions for Review • 8.18 References • 8.19 Answers • Chapter 9 Behavioral Aspects of Disaster Management • 9.1 Identifying Socio-Psychological Needs in Mass Emergency • 9.2 Different Psychological Considerations • 9.3 Training in Humanitarian Professionalism • 9.4 Community and Individual Empowerment • 9.5 Community Building in Developing Local Resilience to Disasters • 9.6 Developing Leaders • 9.7 Importance of Communication and Commitment • 9.8 Negotiating the Conditions and Effects of Vulnerability and Disaster • 9.9 Ethical Issues in Disaster Management • 9.10 Summary • 9.11 Key Words and Phrases • 9.12 Objective Type Questions • 9.13 Questions for Review • 9.14 References • 9.15 Answers • Model Question Paper 1 • Model Question Paper 2 • Model Question Paper 3 • Model Question Paper 4 • Index

9789357461610 | ₹ 929



Introduction to Nanoscience and Nanotechnology, An Indian Adaptation | e | k

Poole

About the Author

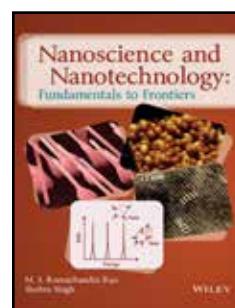
Charles P. Poole Jr., PhD, is a professor emeritus in the Department of Physics and Astronomy at the University of South Carolina is a member of the USC nanotechnology center.

Table of Contents

- 1 Introduction • 1.1 History of Nanoscience and Nanotechnology • 1.2 Definition and Classification of Nanomaterials • 1.3 Present and Future Perspectives of Nanomaterials and Nanotechnology • • 2 Introduction to Solid State Physics • 2.1 Structure • 2.2 Energy Bands • 2.3 Localized Particles • • 3 Methods of Measuring Properties • 3.1 Introduction • 3.2 Structure Analysis • 3.3 Microscopic Techniques • 3.4 Spectroscopic Techniques • • 4 Properties and Synthesis of Nanoparticles • 4.1 Introduction • 4.2 Metal Nanoclusters and Nanoparticles • 4.3 Semiconducting Nanoparticles • 4.4 Rare Gas and Molecular Clusters • 4.5 Methods of Synthesis • 4.6 Conclusion • • 5 Carbon-Based Nanostructures • 5.1 Introduction • 5.2 Carbon Molecules • 5.3 Carbon Clusters • 5.4 Carbon Nanotubes • 5.5 Applications of Carbon Nanotubes • • 6 Nanostructured Materials • 6.1 Solid Disordered Nanostructures • 6.2 Nanostructured Crystals • • 7 Nanostructured Ferromagnetism • 7.1 Basics of Ferromagnetism • 7.2 Effect of Bulk Nanostructuring of Magnetic Properties • 7.3 Dynamics of Nanomagnets • 7.4 Nanopore Containment of Magnetic Particles • 7.5 Nanocarbon Ferromagnets • 7.6 Giant and Colossal Magnetoresistance • 7.7 Ferrofluids • • 8 Optical and Vibrational Spectroscopy • 8.1 Introduction • 8.2 Infrared Frequency Range • 8.3 Luminescence • • 9 Quantum Wells, Wires, and Dots • 9.1 Introduction • 9.2 Preparation of Quantum Nanostructures • 9.3 Size and Dimensionality Effects • 9.4 Excitons • 9.5 Single-Electron Tunneling • 9.6 Applications • 9.7 Superconductivity • • 10 Self-Assembly and Catalysis • 10.1 Self-Assembly • 10.2 Catalysis • 11 Organic Compounds and Polymers • 11.1 Introduction • 11.2 Forming and Characterizing Polymers • 11.3 Nanocrystals • 11.4 Polymers • 11.5 Supramolecular Structures • • 12 Biological Materials • 12.1 Introduction • 12.2 Biological Building Blocks • 12.3 Nucleic Acids • 12.4 Biological

Nanostructures • • 13 Nanomachines and Nanodevices • 13.1 Microelectromechanical Systems (MEMS) • 13.2 Nanoelectromechanical Systems (NEMS) • 13.3 Molecular and Supramolecular Switches • • 14 Applications of Nanotechnology • 14.1 Nanotechnology for Environmental Engineering • 14.2 Nanotechnology for Textile Industry • 14.3 Nanotechnology in Agriculture and Food • 14.4 Nanotechnology Applications for Air and Soil • 14.5 Nanotechnology in Industry, Defence, and Security • 14.6 Water Demands for Nanotechnology • 14.7 Therapeutics and Regenerative Medicine • 14.8 Nanotechnology and the Energy Challenge • • Summary • Keywords • Multiple-Choice Questions • Review Questions • Further Reading • • Appendices • • A Two-Dimensional Nanostructures • A.1 Introduction • A.2 Examples of 2D nanostructures • A.3 Synthesis of 2D Nanostructures • A.4 Applications of 2D Nanostructures • • B Formulas for Dimensionality • B.1 Introduction • B.2 Delocalization • B.3 Partial Confinement • • C Tabulations of Semiconducting Material Properties • • D Answers to Multiple-Choice Questions • • Index

9789354240201 | ₹ 1009



Nanoscience and Nanotechnology: Fundamentals to Frontiers | e | k

Rao

About the Author

Dr. M.S. Ramachandra Rao is a professor in the Department of Physics and head of the "Nanostructured Thin Films and Advanced Materials" group at IIT Madras. His research activities are primarily focused on Physics and applications of nanostructures and nanomaterials.

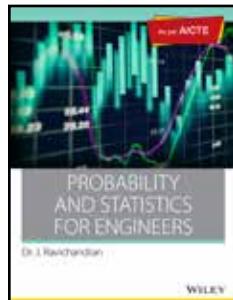
Table of Contents

- 1. The Science behind Nanotechnology • 1.1 History of Nanoscience • 1.2 Definition of Nanometer, Nanomaterial, and Nanotechnology • 1.3 Classification of Nanomaterial • 1.4 Nanotechnology from the Perspective of Medieval Period • • 2. Concepts of Solid-State Physics Relevant to Low-Dimensional Systems • 2.1 Introduction • 2.2 Crystal Symmetries, Crystal Directions, and Crystal Planes • 2.3 Band Structure • 2.4 Classification of Solid-State Materials • 2.5 Bulk Properties of Materials • 2.6 Magnetic Materials • 2.7 Effect of Size Reduction on Bulk Properties • 2.8 Optoelectronic Property of Bulk and Nanostructures • 2.9 Electronic Structure of Nanomaterial and the Fermi Surface • 2.10 Luminescence from Nanoparticles • 2.11 Raman Spectroscopy of Nanoparticles • 2.12 Thermodynamics of Nanomaterial: Change in Melting Point • • 3. Quantum Mechanics of Low-Dimensional Systems and Its Application to Nanoscience • 3.1 Introduction • 3.2 Energy Considerations: Bound States and Density of States • 3.3 Quantum Confinement • 3.4 Super lattices • 3.5 Band Offsets • 3.6 Quantum Transport in Nano clusters /Quantum Dots • • 4. Basic Aspects of Synthesis of Nanomaterial and Device Fabrication • 4.1 Introduction • 4.2 Synthesis of Bulk Polycrystalline Samples • 4.3 Growth of Single Crystals • 4.4 Synthesis Techniques for the Preparation of Nanoparticles • 4.5 Requirements for Realizing Semiconductor Nanostructures • 4.6 Some Specialized Growth Techniques for Nanostructures • 4.7 Electrostatic-Induced Growth • 4.8 Thermally Annealed Quantum Wells • 4.9 Semiconductor Nano crystals • • 5. Different Types of Nanostructures • 5.1 Introduction • 5.2 Shapes and Structures of Nanomaterial • 5.3 Quantum Dots • 5.4 Semiconductor Nanoparticles • • 6. Diffusion Kinetics • 6.1 Introduction • 6.2 Thermodynamics of Diffusion • 6.3 Grain Boundary Effect • 6.4 Effect of Defects on Diffusion • • 7. Nanostructured Thin Films and Nano composites • 7.1 Introduction • 7.2 Micro- and Nano scale Thin-Film Fabrication Techniques • 7.3 Optical, Electrical, and Magnetic Properties of Nanostructured • Thin Films • 7.4 Nano composites • 7.5 Physical and Optical Properties • 7.6 Metal/Dielectric-Organic Nano composites • • 8. Nano scale Characterization Techniques • 8.1 Introduction • 8.2 X-Ray Diffraction and Scherzer Method • 8.3 Scanning Electron Microscopy • 8.4 Transmission Electron Microscopy • 8.5 Stoichiometry Study by Energy-Dispersive X-Ray Analysis • 8.6 Scanning Probe Microscopy • 8.7 Atomic Force Microscopy • 8.8 Piezoresponse Microscopy • 8.9 X-Ray Photoelectron Spectroscopy • 8.10 XANES and XAFS • 8.11 Angle-Resolved Photoemission Spectroscopy • 8.12 Diffuse Reflectance Spectra • 8.13 Photoluminescence Spectra • 8.14 Raman Spectroscopy • 8.15 DC Magnetization • 8.16 Electrical Resistivity Measurements • 8.17 Theory of Linear Four-Probe Method • • 9. Recent Advances in Nanotechnology • 9.1 Introduction • 9.2 Designing Molecules for Nano electronics • 9.3 Advances of Nanotechnology in Materials Science • • 10.



New Trends in Nanoscience and Applications of Nanotechnology in Various Fields • 10.1 Introduction • 10.2 Applications in Material Science • 10.3 Applications in Biology and Medicine • 10.4 Applications in Surface Science • 10.5 Applications in Energy and Environment • 10.6 Applications of Nanostructured Thin Films • 10.7 Applications of Quantum Dots • 10.8 Carbon Nanotechnology • 10.9 Applications of Magnetic Nanoparticles • Appendix A - Useful Lab Experiments • Appendix B - Useful Tables • Index

9788126542017 | ₹ 859



Probability and Statistics for Engineers: As per AICTE | IM | e

Ravichandran

About the Author

Dr. J. Ravichandran is an associate professor at the Department of Mathematics, Amrita Vishwa Vidhyapeetham, Coimbatore, India. Earlier, he served the Statistical Quality Control department at a manufacturing industry for more than 12 years. His areas of research include statistical quality control, statistical inference, six sigma, total quality management and statistical pattern recognition. A senior member of the American Society for Quality (ASQ) for over 20 years and a member of the Indian Society for Technical Education (ISTE)

Table of Contents

- 1. Probability Concepts • 1.1 Introduction • 1.2 Important Definitions • 1.3 Approaches of Measuring Probability • 1.4 Bayes' Theorem • 2. Random Variables and Distribution Functions • 2.1 Introduction • 2.2 Random Variable • 2.3 Discrete Random Variable • 2.4 Continuous Random Variable • 2.5 Cumulative Distribution Function • 3. Expectation and Moment-Generating Function • 3.1 Introduction • 3.2 Definition and Properties of Expectation • 3.3 Moments and Moment-Generating Function • 4. Standard Discrete Distribution Functions • 4.1 Introduction • 4.2 Discrete Distributions • 5. Some Standard Continuous Distribution Functions • 5.1 Introduction • 5.2 Uniform Random Variable and Its Distribution • 5.3 Exponential Random Variable and Its Distribution • 5.4 Gamma Random Variable and Its Distribution • 5.5 Normal Random Variable and Its Distribution • 6. Chebyshev's Inequality and Central Limit Theorem • 6.1 Introduction • 6.2 Chebyshev's Theorem (or Inequality) • 6.3 Asymptotic Properties of Random Sequences • 6.4 Central Limit Theorem • 7. Two-Dimensional Random Variables • 7.1 Introduction • 7.2 Discrete Case: Joint Probability Mass Function • 7.3 Continuous Case: Joint Probability Density Function • 7.4 Stochastic Independence of Random Variables • 7.5 Expectation of Two-Dimensional Random Variables • 7.6 Conditional Mean and Conditional Variance • 8. Transformation of Random Variables • 8.1 Introduction • 8.2 One-Dimensional Random Variable • 8.3 Two-Dimensional Random Variables • 9. Point Estimation and Minimum Risk Estimator • 9.1 Introduction • 9.2 Types of Estimation • 10. Sampling Distributions and Interval Estimation • 10.1 Introduction • 10.2 Sampling Distributions • 10.3 Interval Estimation • 11. Testing of Hypotheses • 11.1 Introduction • 11.2 Testing of Hypothesis • 11.3 Classification of Hypothesis Tests • 11.4 Large Sample Tests • 11.5 Small Sample Tests • 12. Simple Correlation and Regression • 12.1 Introduction to Simple Correlation • 12.2 Properties of Correlation Coefficient • 12.3 Rank Correlation Coefficient • 12.4 Introduction to Simple Regression • 13. Analysis of Variance: One-Way and Two-Way Analyses • 13.1 Introduction • 13.2 Single-Factor (One-Way ANOVA) Experiment and Linear Statistical Model • 13.3 Fixed Effects Model and ANOVA • 13.4 Random Effects Model and ANOVA • 13.5 Computations for Sum of Squares • 13.6 Multiple Comparison Test: Grouping of Means • 13.7 Single-Factor (Two-Way ANOVA) Experiment and Linear Statistical Model (Completely Randomized Block Design) • 13.8 Fixed Effects Model for Two-Way ANOVA • 13.9 Random Effects Model for Two-Way ANOVA • 13.10 Computations for Sum of Squares • 14. Latin Square Design and Two-Factor Factorial Design • 14.1 Introduction • 14.2 Latin Square Design • 14.3 Two-Factor Factorial Experiment • 15. Statistical Quality Control and Six Sigma Metrics • 15.1 Introduction • 15.2 Statistical Quality Control • 15.3 Control Charts for Variables • 15.4 Control Charts for Attributes • 15.5 Out-of-Control Situations in Control Charts and Process Monitoring • 15.6 Process Capability and Process Capability Index • 15.7 Six Sigma • Appendix A Other Standard Distributions • Appendix B Standard Normal Table • Appendix C t-Table • Appendix D Chi-Square Table • Appendix E F-Table • Appendix F Construction of Various Control Charts • Appendix G Least Significant Studentized Ranges • Answers • Index

9788126512348 | ₹ 929

Process Dynamics and Control, 4ed An Indian Adaptation | IM | e | k

Seborg

About the Author

Dale E. Seborg is a Professor Emeritus and Research Professor in the Department of Chemical Engineering at the University of California, Santa Barbara.

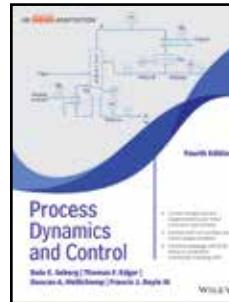


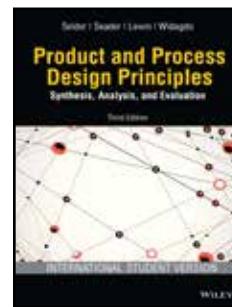
Table of Contents

- Preface to the Adapted Edition • Preface • Part One: Introduction to Process Control • Chapter 1 Introduction to Process Control • 1.1 Need for Control Systems • 1.2 Characteristics of Process Control Problems • 1.3 Designing Control Systems for a Process • 1.4 Classification of Process Control Strategies • 1.5 Multiloop Versus Multivariable Control • 1.6 Design Aspects of Control Systems • • Chapter 2 Theoretical Models of Chemical Processes • 2.1 Dynamic Process Models – Their Strengths and Limitations • 2.2 General Modeling Principles • 2.3 Degrees of Freedom Analysis • 2.4 Degrees of Freedom Analysis for Process Control • 2.5 Dynamic Models of Representative Processes • 2.6 Solving Differential Equations using MATLAB • • Part Two: Dynamic Behavior of Processes • Chapter 3 Laplace Transforms • 3.1 Laplace Transforms of Representative Functions • 3.2 Solution of Differential Equations by Laplace Transform Techniques • 3.3 Partial Fraction Expansion (PFE) • 3.4 Other Laplace Transform Properties • 3.5 A Transient Response Example • 3.6 Solving Laplace Transform Problems using MATLAB • • Chapter 4 Transfer Function and State-Space Models • 4.1 Introduction to Transfer Function Models • 4.2 Properties of Transfer Functions • 4.3 Linearization of Nonlinear Models • 4.4 State-Space and Transfer Function Matrix Models • 4.5 Poles and Zeros and Their Effect on Process Response • 4.6 Converting One Form of Model to Another using MATLAB • • Chapter 5 Dynamic Behavior of First-Order and Second-Order Processes • 5.1 Standard Process Inputs • 5.2 Zero-Order Systems (Instantaneous Processes) • 5.3 First-Order Processes and Their Characteristics • 5.4 Response of First-Order Processes • 5.5 Response of First-Order Integrating Processes • 5.6 First-Order Processes with Variable Time Constant and Gain • 5.7 First-Order Processes with Numerator Dynamics • 5.8 Second-Order Processes and Their Types • 5.9 Response of Second-Order Processes • 5.10 Second-Order Processes with Numerator Dynamics • 5.11 Determining Step Response Characteristics using MATLAB • • Chapter 6 Dynamic Behavior of Higher-Order Processes • 6.1 Processes with Time Delays • 6.2 Approximation of Higher-Order Transfer Functions • 6.3 Interacting and Noninteracting Processes • 6.4 Multiple-Input, Multiple-Output (MIMO) Processes • 6.5 Fitting First- and Second-Order Models Using Step Tests • • Part Three: Classical Feedforward Control • Chapter 7 Feedback Controllers • 7.1 Introduction • 7.2 Basic Control Modes • 7.3 Features of PID Controllers • 7.4 Digital Versions of PID Controllers • 7.5 Typical Responses of Feedback Control Systems • 7.6 On-Off Controllers • 7.7 SIMULINK Model for a Feedback Control System • • Chapter 8 Control System Instrumentation • 8.1 Sensors, Transmitters, and Transducers • 8.2 Final Control Elements • 8.3 Accuracy in Instrumentation • 8.4 Piping and Instrumentation Diagrams (P&ID) • • Chapter 9 Dynamic Behavior and Stability of Closed-Loop Control Systems • 9.1 Block Diagram Representation • 9.2 Closed-Loop Transfer Functions • 9.3 Closed-Loop Responses of Simple Control Systems • 9.4 Stability of Closed-Loop Control Systems • 9.5 Root Locus Diagrams • 9.6 Rules for Drawing Root Locus Diagram • 9.7 Generating Root Locus Diagram using MATLAB • • Chapter 10 Frequency Response Analysis and Control System Design • 10.1 Sinusoidal Forcing of A First-order Process • 10.2 Sinusoidal Forcing of an nth-Order Process • 10.3 Bode Diagrams • 10.4 Frequency Response Characteristics of Feedback Controllers • 10.5 Nyquist Diagrams • 10.6 Bode Stability Criterion • 10.7 Controller Design Based on Bode Stability Criterion • 10.8 Gain and Phase Margins • • Chapter 11 PID Controller Design, Tuning, and Troubleshooting • 11.1 Performance Criteria For Closed-Loop Systems • 11.2 Model-Based Design Methods • 11.3 Controller Tuning Relations • 11.4 Controllers With Two Degrees of Freedom • 11.5 Controller Tuning Based On Simple Performance Criterion (One-Quarter Decay Ratio) • 11.6 On-Line Controller Tuning • 11.7 Guidelines For Common Control Loops • 11.8 Troubleshooting Control Loops • • Part Four: Advanced Process Control • Chapter 12 Enhanced Single-Loop Control Strategies • 12.1 Feedforward Control • 12.2 Ratio Control • 12.3 Cascade Control • 12.4 Time-Delay Compensation • 12.5 Inferential Control • 12.6 Selective Control Systems • 12.7 Nonlinear Control Systems • 12.8 Adaptive Control Systems • • Chapter 13 Digital Sampling, Filtering, and Control • 13.1 Components of Digital Computer Control Loop • 13.2 Continuous To Discrete

Prices are subject to change without prior notice.

Transformation • 13.3 Signal Processing and Data Filtering • 13.4 Discrete to Continuous Transformation • 13.5 z-Transform Analysis For Digital Control • 13.6 Tuning of Digital PID Controllers • 13.7 Direct Synthesis for Design of Digital Controllers • 13.8 Minimum Variance Control • • Chapter 14 Multiloop and Multivariable Control • 14.1 Process Interactions and Control Loop Interactions • 14.2 Pairing of Controlled and Manipulated Variables • 14.3 Singular Value Analysis • 14.4 Tuning of Multiloop PID Control Systems • 14.5 Decoupling and Multivariable Control Strategies • 14.6 Strategies for Reducing Control Loop Interactions • • Chapter 15 Model Predictive Control • 15.1 Overview of Model Predictive Control • 15.2 Predictions for SISO Models • 15.3 Predictions for MIMO Models • 15.4 Model Predictive Control Calculations • 15.5 Set-Point Calculations • 15.6 Selection of Design and Tuning Parameters • 15.7 Implementation of MPC • • Chapter 16 Development of Empirical Models from Process Data • 16.1 Model Development Using Linear or Nonlinear Regression • 16.2 Neural Network Models • 16.3 Development of Discrete-Time Dynamic Models • 16.4 Identifying Discrete-Time Models from Experimental Data • • Chapter 17 Process Monitoring • 17.1 Traditional Monitoring Techniques • 17.2 Quality Control Charts • 17.3 Extensions of Statistical Process Control • 17.4 Multivariate Statistical Techniques • 17.5 Control Performance Monitoring • • Chapter 18 Batch Process Control • 18.1 Batch Control Systems • 18.2 Sequential and Logic Control • 18.3 Control During the Batch • 18.4 Run-to-Run Control • 18.5 Batch Production Management • • Chapter 19 Digital Process Control Systems: Hardware and Software • 19.1 Distributed Digital Control Systems • 19.2 Analog and Digital Signals and Data Transfer • 19.3 Microprocessors and Digital Hardware in Process Control • 19.4 Software Organization • • Summary • References • Exercises • Multiple Choice Questions • Answer Key • • Appendix A: Review of Thermodynamic Concepts for Conservation Equations • A.1 Single-Component Systems • A.2 Multicomponent Systems • • Appendix B: Control Simulation Software • B.1 MATLAB Operations and Equation Solving • B.1.1 Matrix Operations • B.1.2 Solution of Algebraic Linear or Nonlinear Equations • B.1.3 m-files • B.1.4 Functions and Scripts • B.1.5 Solving a System of Differential Equations • B.1.6 Plots • B.1.7 MATLAB Toolboxes • B.2 Computer Simulation with Simulink • B.3 Computer Simulation with LabVIEW • • Appendix C: Process Control Modules • C.1 Introduction • C.2 Module Organization • C.3 Hardware and Software Requirements • C.4 Installation • C.5 Running the Software • • Appendix D: Review of Basic Concepts From Probability and Statistics • D.1 Probability Concepts • D.2 Means and Variances • D.2.1 Means and Variances for Probability Distributions • D.2.2 Means and Variances for Experimental Data • D.3 Standard Normal Distribution • D.4 Error Analysis • • Appendix E: Process Safety and Process Control • E.1 Layers of Protection • E.1.1 The Role of the Basic Process Control System • E.1.2 Process Alarms • E.1.3 Safety Instrumented System (SIS) • E.1.4 Interlocks and Emergency Shutdown Systems • E.2 Alarm Management • E.2.1 Alarm Guidelines • E.2.2 Alarm Rationalization • E.3 Abnormal Event Detection • E.3.1 Fault Detection Based on Sensor and Signal Analysis • E.3.2 Model-Based Methods • E.3.3 Knowledge-Based Methods • E.4 Risk Assessment • E.4.1 Reliability Concepts • E.4.2 Overall Failure Rates • E.4.3 Fault and Event Tree Analysis • • Appendix F: Real-Time Optimization • F.1 Basic Requirements in Real-Time Optimization • F.1.1 Implementation of RTO in Computer Control • F.1.2 Planning and Scheduling • F.2 The Formulation and Solution of RTO Problems • F.3 Unconstrained and Constrained Optimization • F.3.1 Single-Variable Optimization • F.3.2 Multivariable Optimization • F.4 Linear Programming • F.4.1 Linear Programming Concepts • F.5 Quadratic and Nonlinear Programming • F.5.1 Quadratic Programming • F.5.2 Nonlinear Programming Algorithms and Software • • Appendix G: Biosystems Control Design • G.1 Process Modeling and Control in Pharmaceutical Operations • G.1.1 Bioreactors • G.1.2 Crystallizers • G.1.3 Granulation • G.2 Process Modeling and Control for Drug Delivery • G.2.1 Type 1 Diabetes • G.2.2 Blood Pressure Regulation • G.2.3 Cancer Treatment • G.2.4 Controlled Treatment for HIV/AIDS • G.2.5 Cardiac-Assist Devices • G.2.6 Additional Medical Opportunities for Process Control • • Appendix H: Dynamics and Control of Biological Systems • H.1 Systems Biology • H.2 Gene Regulatory Control • H.2.1 Circadian Clock Network • H.3 Signal Transduction Networks • H.3.1 Chemotaxis • H.3.2 Insulin-Mediated Glucose Uptake • H.3.3 Simple Phosphorylation Transduction Cascade • • Appendix I*: Introduction to Plantwide Control • Appendix J*: Plantwide Control System Design • Appendix K*: Dynamic Models and Parameters Used for Plantwide Control Chapters • Appendix L*: Additional Closed-Loop Frequency Response Material • Appendix M*: Contour Mapping and the Principle of the Argument • Appendix N*: Partial Fraction Expansions for Repeated and Complex Factors • Index

9789354248429 | ₹ 1089



Product and Process Design Principles: Synthesis, Analysis and Evaluation, 3ed, ISV | IM

Seider

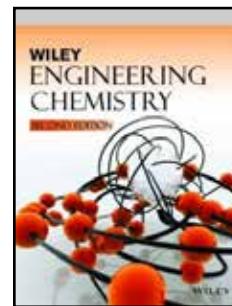
About the Author

Waren D. Seider is Professor of Chemical Engineering at the University of Pennsylvania. Seider has contributed to the fields of process analysis, simulation, design, and control.

Table of Contents

- 1. Introduction to Chemical Product Design • 1S Supplement to Chapter • 2. Product-Development Process • Part 1 Basic Chemicals Product Design • 3. Materials Technology for Basic Chemicals: Molecular-Structure Design • 3S Supplement to Chapter • 4. Process Creation for Basic Chemicals • 5. Simulation to Assist in Process Creation • 6. Heuristics for Process Synthesis • 7. Reactor Design and Synthesis of Networks Containing Reactors
- 7S Supplement to Chapter • 8. Synthesis of Separation Trains • 9. Heat and Power Integration • 9S Supplement to Chapter 9 Second Law Analysis • 10. Mass Integration
- 11. Optimal Design and Scheduling of Batch Processes • 12. Plant wide Controllability Assessment • 12S Supplement to Chapter 12 Flowsheet Controllability Analysis • 13. Basic Chemicals • Part 2 Industrial Chemicals Product Design • 14. Materials and Process / Manufacturing Technologies for Industrial Chemical Products • 15. Industrial Chemicals
- Part 3 Configured Consumer Product Design • 16. Materials, Process/Manufacturing, and Product Technologies for Configured Consumer Products • 16S Supplement to Chapter 16 • 17. Configured Consumer Part 4 Detailed Design, Equipment Sizing, Optimization and Product-Quality Analysis • 18. Heat Exchanger Design • 19. Separation Tower Design • 20. Pumps, Compressors and Expanders • 21. Polymer Compounding
- 22. Cost Accounting and Capital Cost Estimation • 22S Supplement to Chapter 22 • 23. Annual Costs, Earnings and Probability Analysis • 23S Supplement to Chapter 23 • 24. Design Optimization • 25. Six-Sigma Design Strategies • Part 5 Design Report • 26. Written Reports and Oral Presentations • Appendixes • Indices

9788126557486 | ₹ 1339



Engineering Chemistry, 2ed | IM | e | k

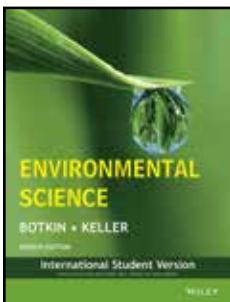
Wiley Editorial Team

Table of Contents

- Chemical Bonding • Solid State and Liquid Crystals
- Coordination Chemistry • Thermodynamics and Chemical Equilibrium • Chemical Kinetics • Phase Rule
- Electrochemistry • Adsorption • Organic Reaction Mechanisms • Stereochemistry • Chemical Methods of Analysis • Instrumental Methods of Analysis • Polymers • Engineering Materials • Metals and Alloys • Fuels • Non-Conventional Energy Resources • Corrosion and its Control • Water and its Treatment • Environment Study • Green Chemistry and its Applications • Nanochemistry • Biotechnology

9788126543205 | ₹ 939

CIVIL ENGINEERING



Environmental Science, 8ed, ISV | e

Botkin

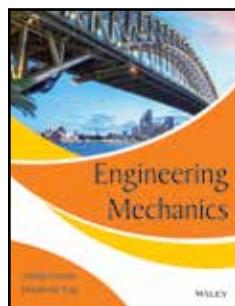
About the Author

Daniel B. Botkin is President of The Center for the Study of Environment and Professor Emeritus of Ecology, Evolution and Marine Biology, University of California, Santa Barbara. For more than three decades, Professor Botkin has been active in the application of ecological science to environmental management. He is the winner of the Mitchell International Prize for Sustainable Development and the Fennow Prize for International Forestry, and he has been elected to the California Environmental hall of Fame.

Table of Contents

- Key Themes in Environmental Science • Science as A Way of Knowing • The Big Picture: Systems of Change • The Human Population and The Environment • Ecosystems • The Biogeochemical Cycle • Dollars and Environmental Sense • Biological Diversity and Biological Invasions • Ecological Restoration • Environmental Heath, Pollution, and Toxicology • Agriculture, Aquaculture, and The Environment • Landscapes: Forests, Parks, and Wilderness • Wildlife, Fisheries, and Endangered Species • Energy: Some Basics • Fossil Fuels and The Environment • Alternative Energy and The Environment • Nuclear Energy and The Environment • Water Supply, Use, and Management • Water Pollution and Treatment • The Atmosphere, Climate, and Global Warming • Air Pollution • Urban Environments • Materials Management • Our Environmental Future.

9788126534142 | ₹ 1259



Engineering Mechanics | e | k

Chanda

About the Author

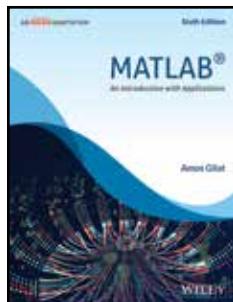
Dr. Abhijit Chanda is currently a Professor of Mechanical Engineering department, Jadavpur University, Kolkata. Dr. Chanda has over 15 years of teaching experience. He co-authored a book on Strength of Materials published by Wiley India. His research interests are in the fields of Material Science, Bio-Materials, Bio Engineering and related topics.

Table of Contents

- Preface • Statics • Chapter 1 a Quick Glimpse to Vector algebra • 1.1 Introduction • 1.2 Unit Vector • 1.3 Direction Cosines • 1.4 Vector as a Line Segment • 1.5 Position Vector • 1.6 Vector Addition and Subtraction • 1.7 Product of Two Vectors • 1.8 Vector Equation • 1.8.1 Linearly Independent Vectors • 1.9 A Look to Different Coordinate Systems • Chapter 2 introduction to Mechanics • 2.1 Mechanics – Basic Definitions • 2.2 Idealisations and Basic Assumptions • 2.3 Dimensions, Law of Dimensional Homogeneity and Units • Chapter 3 Vector Mechanics • 3.1 Introduction • 3.2 An Introduction to Vector Algebra • 3.3 Miscellaneous Vectors • 3.4 Vector Resolution and Cartesian Vector • 3.5 Position Vector • 3.6 Product of Vectors • 3.7 Couple-Moment • Chapter 4 Equivalent Force and Moment • 4.1 Introduction • 4.2 Basic Concept • 4.3 Varigon's Theorem of Moment • Chapter 5 Equilibrium • 5.1 Introduction • 5.2 Analysis Methodology • 5.3 Free Body Diagrams • 5.4 Two-Force Member • 5.5 Three-Force Member • 5.6 Frames and Machines • Chapter 6 Truss • 6.1 Introduction • 6.2 Types of Truss • 6.3 Analysis of Truss • Chapter 7 Friction • 7.1 Introduction • 7.2 Governing Equation of Friction • 7.3 Steps of Analysis • 7.4 Friction in Simple Machines • Chapter 8 Central Points and Properties of Surfaces • 8.1 Introduction • 8.2 Centre of Mass and Centre of Gravity • 8.3 Area Moment of Inertia • 8.4 Product Area-Moment of Inertia • 8.5 Parallel Axis Theorem • 8.6 Perpendicular Axis Theorem • 8.7 Area Moment of Inertia for Composite Area • 8.8 Centroid of Shell Element • Chapter 9 Distributed Force Systems • 9.1 Introduction • 9.2 Types of Distributed Load • 9.3 Analysis of Plane Distributed Load • Chapter 10 Virtual Work • 10.1 Introduction • 10.2 Virtual Work Theorems and Equation of Equilibrium Formulations • Dynamics • Chapter 1 Particle Kinematics • Objectives • 1.1 Introduction • 1.2 Study of Kinematics • 1.3 Rectilinear Motion • 1.4 Plane Curvilinear Motion in X-Y Coordinates • 1.5 n-t Coordinates for

Curvilinear Motion • 1.6 Curvilinear Motion in Polar Coordinates • 1.7 Kinematics of Connected Bodies • Chapter 2 Kinetics • 2.1 Introduction • 2.2 Kinetics of a Particle • 2.3 Two-Dimensional Kinetics of a Slab-Like Rigid Body • 2.4 D'Alembert's Principle • 2.5 Types of Kinetics Problems • Chapter 3 Work, Energy and Power • 3.1 Introduction • 3.2 Work Done by Various Types of Forces • 3.3 Energy • 3.4 Conservative Forces • 3.5 Work-Energy Principle • 3.6 Power • Chapter 4 Momentum and Impulse • 4.1 Impulse and Linear Momentum of a Particle • 4.2 Angular Momentum • 4.3 Conservation of Linear Momentum • 4.4 Conservation of Angular Momentum • 4.5 Linear Momentum for a System of Mass Particles • 4.6 Impulsive Forces and Moments • 4.7 Collision of Bodies • Chapter 5 Dynamics of System of Particles • 5.1 Introduction • 5.2 Kinematics of System • 5.3 Kinetics of the System • Chapter 6 Plane Kinematics of Rigid Body • 6.1 Rigid Body • 6.2 Motion of Rigid Body in Two Dimensions • 6.3 Instantaneous Centre of Velocity • 6.4 Piston Displacement and Velocity of a Reciprocating Mechanism • 6.5 Special Discussion on the Locus of a Point on the Connecting Rod • 6.6 Rolling Motion of Cylinder-Like Body • Chapter 7 Rotational Kinetics of Rigid Bodies • 7.1 Introduction • 7.2 Equations of Motion of Body Undergoing Plane Fixed-Axis Rotation • 7.3 D'Alembert's Principle • 7.4 Mass-Moment of Inertia • Chapter 8 Introduction to Dynamics of Vibration • 8.1 Introduction • 8.2 Free Vibration of an SDOF System • 8.3 Consideration of Mass of the Spring Element • 8.4 Damped Free Vibration of Single Degree of Freedom System • 8.5 Viscous Damping • 8.6 Forced Vibration of Single Degree of Freedom System • 8.7 Forced Vibration • Solved Examples • Practice Problems • Index

9788126570935 | ₹ 719



MATLAB: An Introduction with Applications, 6ed, An Indian Adaptation | IM

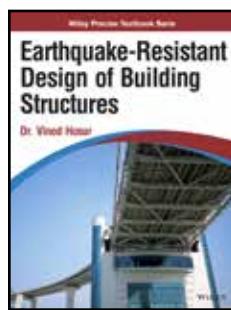
Gilat

Table of Contents

- Preface to the U.S. Edition • Preface to the Adapted Edition • Introduction • Introduction • The Purpose of This Book • Topics Covered • The Framework of a Typical Chapter • Software and Hardware • The Order of Topics in the Book • Chapter 1 Starting with MATLAB • 1.1 Installing MATLAB • 1.2 System Requirements for Different Operating Platforms • 1.3 Starting MATLAB, MATLAB Windows • 1.4 Working in the Command Window • 1.5 Arithmetic Operations with Scalars • 1.6 Display Formats • 1.7 Elementary Math Built-in Functions • 1.8 Defining Scalar Variables • 1.9 Useful Commands for Managing Variables • 1.10 Script Files • 1.11 Examples of MATLAB Applications • Chapter 2 Creating Arrays • 2.1 Creating a One-Dimensional Array (Vector) • 2.2 Creating a Two-Dimensional Array (Matrix) • 2.3 Notes About Variables in MATLAB • 2.4 The Transpose Operator • 2.5 Array Addressing • 2.6 Using a Colon; In Addressing Arrays • 2.7 Adding Elements to Existing Variables • 2.8 Deleting Elements • 2.9 Built-in Functions for Handling Arrays • 2.10 Strings and Strings as Variables • Chapter 3 Mathematical Operations with Arrays • 3.1 Addition and Subtraction • 3.2 Array Multiplication • 3.3 Array Division • 3.4 Element-by-Element Operations • 3.5 Using Arrays in MATLAB Built-in Math Functions • 3.6 Built-in Functions for Analyzing Arrays • 3.7 Generation of Random Numbers • 3.8 Examples of MATLAB Applications • Chapter 4 Using Script Files and Managing Data • 4.1 The MATLAB Workspace and the Workspace Window • 4.2 Input to a Script File • 4.3 Output Commands • 4.4 The save and load Commands • 4.5 Importing and Exporting Data • 4.6 Examples of MATLAB Applications • Chapter 5 Two-Dimensional Plots • 5.1 The plot Command • 5.2 The fplot Command • 5.3 Plotting Multiple Graphs in the Same Plot • 5.4 Formatting a Plot • 5.5 Plots with Logarithmic Axes • 5.6 Plots with Error Bars • 5.7 Plots with Special Graphics • 5.8 Histograms • 5.9 Polar Plots • 5.10 Putting Multiple Plots on the Same Page • 5.11 Multiple Figure Windows • 5.12 Plotting Using the Plots Toolbar • 5.13 Examples of MATLAB Applications • Chapter 6 Programming in MATLAB • 6.1 Relational and Logical Operators • 6.2 Conditional Statements • 6.3 The switch-case Statement • 6.4 Loops • 6.5 Nested Loops and Nested Conditional Statements • 6.6 The break and continue Commands • 6.7 Examples of MATLAB Applications • Chapter 7 User-Defined Functions and Function Files • 7.1 Creating a Function File • 7.2 Structure of a Function File • 7.3 Local and Global Variables • 7.4 Saving a Function File • 7.5 Using a User-Defined Function • 7.6 Examples of Simple User-Defined Functions • 7.7 Comparison between Script Files and Function Files • 7.8 Anonymous Functions • 7.9 Function Functions • 7.10

Subfunctions • 7.11 Nested Functions • 7.12 Examples of MATLAB Applications • Chapter 8 Polynomials, Curve Fitting, and Interpolation • 8.1 Polynomials • 8.2 Curve Fitting • 8.2.1 Curve Fitting with Polynomials; The polyfit Function • 8.2.2 Curve Fitting with Functions Other than Polynomials • 8.3 Interpolation • 8.4 The Basic Fitting Interface • 8.5 Examples of MATLAB Applications • Chapter 9 Applications in Numerical Analysis • 9.1 Solving an Equation with One Variable • 9.2 Finding a Minimum or a Maximum of a Function • 9.3 Numerical Integration • 9.4 Ordinary Differential Equations • 9.5 Examples of MATLAB Applications • Chapter 10 Three-Dimensional Plots • 10.1 Line Plots • 10.2 Mesh and Surface Plots • 10.3 Plots with Special Graphics • 10.4 The view Command • 10.5 Examples of MATLAB Applications • Chapter 11 Symbolic Math • 11.1 Symbolic Objects and Symbolic Expressions • 11.2 Changing the Form of an Existing Symbolic Expression • 11.3 Solving Algebraic Equations • 11.4 Differentiation • 11.5 Integration • 11.6 Solving an Ordinary Differential Equation • 11.7 Plotting Symbolic Expressions • 11.8 Numerical Calculations with Symbolic Expressions • 11.9 Computing Partial Derivatives • 11.10 Examples of MATLAB Applications • Chapter 12 Simulink • 12.1 Introduction • 12.2 Simulink Environment Fundamentals • 12.3 Model-Based Design with Simulink • 12.4 Simulink-Supported Hardware • 12.5 Examples • Chapter 13 Machine Learning (Available Online at Wiley.com) • Appendix: Summary of Characters, Commands, and Functions • Index

9789357462174 | ₹ 899



Earthquake-Resistant Design of Building Structures | e | k

Hosur

About the Author

Dr. Vinod Hosur (MTech, PhD) is the Professor at the Department of Civil Engineering, Gogte Institute of Technology, Belgaum (Karnataka). He has been teaching the courses in Structural Engineering for undergraduate and postgraduate students and guiding research scholars for their PhD degrees. He has published his research papers in reviewed international and Indian journals and

proceedings of conferences.

Table of Contents

- Structural Dynamics • Engineering Seismology • Structural Systems for Seismic Resistance • Computation of Seismic Forces on the Structure • Design and Detailing of Reinforced Concrete Building • Structures for Seismic Resistance • Advances in Seismic Analysis and Design of Structures: • A Review • Bibliography • Glossary • Index

9788126538591 | ₹ 869



Quality Control | e | k

Kulkarni

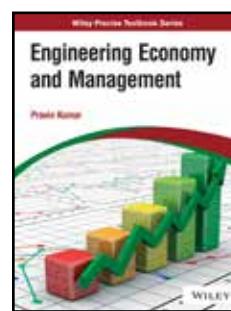
About the Author

Vinay A. Kulkarni is a lecturer, and teaches at the Department of Production Engineering, D.Y. Patil College of Engineering, Pune. He was awarded a gold medal for completing his M.Tech. in Production Engineering (with specialization in Production Management). Besides publishing several technical research papers in national and international journals, he has presented at several national and international conferences. He is a member of various professional bodies and has worked as a resource person at Indian Institute of Production Engineers, Pune.

Table of Contents

- Quality Concepts • Quality Milestones • Juran's Trilogy • Cost of Quality and Value of Quality • Total Quality Management • Statistical Quality Control and Acceptance Sampling • Taguchi's Quality Engineering • Six Sigma • Reliability, Availability and Maintainability • Quality Culture: A Global Paradigm Shift

9788126519071 | ₹ 859



Engineering Economy and Management | e | k

Kumar

About the Author

Pravin Kumar is working as an Associate Professor in the Department of Mechanical Engineering, Delhi Technological University, Delhi. He obtained his PhD in Supply Chain Management from IIT Delhi and M. Tech. in Industrial Management from IIT (BHU) Varanasi. He has more than 19 years of teaching and research experience. His research area is supply chain and operations management. He has published more than 50 research papers in international journals.

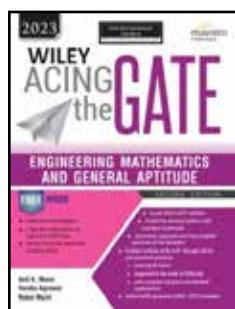
Table of Contents

- Preface • About the Author • Chapter 1 Introduction to Engineering Economics • 1.1 Introduction • 1.2 Concept of Efficiency • 1.3 Theory of Demand • 1.4 Elasticity of Demand • 1.5 Supply and Law of Supply • 1.6 Indifference Curves • 1.7 Budget Line • 1.8 Welfare Analysis • • Chapter 2 Managerial Economics • 2.1 Introduction • 2.2 Scope of Managerial Economics • 2.3 Techniques of Managerial Economics • 2.4 Applications of Managerial Economics • • Chapter 3 Money, National Income, and Goods and Services Tax • 3.1 Money • 3.2 National Income • 3.3 Goods and Services Tax • • Chapter 4 Poverty, Unemployment, and Inflation • 4.1 Scarcity • 4.2 Poverty • 4.3 Unemployment • 4.4 Inflation • • Chapter 5 Banking Systems • 5.1 Introduction to Banking Systems • 5.2 Types of Banks • 5.3 Quantitative Instruments for Credit Control • 5.4 Types of Banking • • Chapter 6 Market Structures • 6.1 Introduction • 6.2 Perfect Competition • 6.3 Monopoly • 6.4 Monopolistic Competition • 6.5 Oligopoly • 6.6 Duopoly • 6.7 Monopsony • 6.8 Monopoly and Monopsony: A Comparison • • Chapter 7 Marketing Management • 7.1 Introduction • 7.2 Marketing Mix • 7.3 Market Segmentation • 7.4 Exchange and Transactions • 7.5 Marketing Research • 7.6 Scope of Marketing • 7.7 Product Life Cycle • 7.8 Demand Forecasting • • Chapter 8 Concepts in Management • 8.1 Introduction • 8.2 Characteristics of Management • 8.3 Scope of Management • 8.4 Classical School of Management • 8.5 Functions of Management • 8.6 Levels of Management • 8.7 Skills of Management • 8.8 Managerial Roles • 8.9 Administration and Management • • Chapter 9 Human Resource Management • 9.1 Human Resource Management • 9.2 Human Resource Planning • 9.3 Recruitment and Selection • 9.4 Job Design • 9.5 Merit Rating • • Chapter 10 Corporate Social Responsibility and Business Ethics • 10.1 Corporate Social Responsibility • 10.2 Types of Corporate Social Responsibilities • 10.3 Ethics • • Chapter 11 Production and Operations Management • 11.1 Production and Operations Management • 11.2 Objectives of Production Management • 11.3 Production Systems • 11.4 Facility Location • 11.5 Plant Layout • • Chapter 12 Demand Forecasting and Cost Estimation • 12.1 Introduction • 12.2 Forecasting Horizons • 12.3 Steps to Forecasting • 12.4 Forecasting Methods • 12.5 Seasonal Adjustments • 12.6 Forecasting Performance Measures • 12.7 Cost Estimation • 12.8 Elements of Cost • 12.9 Computation of Material Variances • 12.10 Break-Even Analysis • • Chapter 13 Time Value of Money • 13.1 Introduction • 13.2 Simple Interest • 13.3 Compound Interest • 13.4 Present Worth Analysis • 13.5 Future Worth Analysis • 13.6 Annual Cash Flow Analysis • 13.7 Rate of Return Analysis • 13.8 Arithmetic Gradient • 13.9 Geometric Gradient • 13.10 Continuous Compounding • 13.11 Normal and Effective Interest Rate • 13.12 Perpetual Payment • • Chapter 14 Project Evaluation • 14.1 Introduction • 14.2 Determining Minimum Attractive Rate of Return • 14.3 Payback (Payout) Period Method • 14.4 Benefit–Cost Ratio • • Chapter 15 Comparison Among Alternatives • 15.1 Introduction • 15.2 Basis for Comparison of Alternatives • 15.3 Study Period • 15.4 Useful Lives of Alternatives Are Equal to the Study Period • 15.5 Useful Lives of Alternatives Are Unequal • 15.6 B–C Ratio Method for Comparison of Alternatives • • Chapter 16 Depreciation and Taxes • 16.1 Introduction • 16.2 Some Important Terms Used in Depreciation • 16.3 Classical Depreciation Methods • 16.4 Modified Accelerated Cost Recovery System • 16.5 Taxes • • Chapter 17 Replacement Analysis • 17.1 Introduction • 17.2 Reasons for Replacement Analysis • 17.3 Lives of Assets • 17.4 Determining the Economic Life of a Challenger • 17.5 Determining the Economic Life of a Defender • 17.6 After-Tax Replacement Studies • • Chapter 18 Concept of Financial Statement • 18.1 Introduction • 18.2 Sources of Company Information • 18.3 Sources of International Economic Data • 18.4 Financial Analysis • 18.5 Financial Statement • 18.6 Trading Account • 18.7 Profit and Loss Account • 18.8 Balance Sheet Requirements • 18.9 Distinction between Profit and Loss Account and Balance Sheet • • Chapter 19 Financial Ratios • 19.1 Introduction • 19.2 Types of



Financial Ratios • 19.3 Advantages and Limitations of Ratio Analysis • • Chapter 20 Capital Budgeting • 20.1 Introduction • 20.2 Capital Financing and Allocation Functions • 20.3 Sources of Capital Funds • 20.4 Capital Asset Pricing Model • 20.5 Weighted Average Cost of Capital • 20.6 Leasing Decisions • 20.7 Capital Allocation • • Chapter 21 Decision Making • 21.1 Introduction • 21.2 Types of Decision-Making Environments • 21.3 Decision Tree Analysis • 21.4 Multiple Criteria Decision Making • • Summary • Points to Remember • Multiple-Choice Questions • State whether True/False • Fill in the Blanks • Review Questions • Exercises • Appendix A • Statistical Tables and Procedures • Appendix B End-of-Period Compound Interest Tables • Appendix C Answers to Objective Type Questions • Bibliography • Index

9788126579921 | ₹ 859



Wiley Acing the GATE: Engineering Mathematics and General Aptitude, 2ed, 2023

Maini

About the Author

Anil K. Maini is a Senior Scientist and a former Director of Laser Science and Technology Centre, an R&D establishment under Defence Research and Development Organization (DRDO), India. He has authored 16 books and published about 150 technical articles and papers in national and international magazines and conferences and has eight patents to his credit.

Table of Contents

- Preface • 1. Linear Algebra • 2. Calculus • 3. Differential Equations • 4. Complex Variables • 5. Probability and Statistics • 6. Numerical Methods • 7. Mathematical Logic
- 8. Set Theory and Algebra • 9. Combinatory • 10. Graph Theory • 11. Transform Theory
- General Aptitude: Verbal Ability • 1. English Grammar • 2. Synonyms • 3. Antonyms
- 4. Sentence Completion • 5. Verbal Analogies • 6. Word Groups • 7. Verbal Deduction
- General Aptitude: Numerical Ability • Unit 1: Basic Arithmetic • 1. Number System • 2. Percentage • 3. Profit and Loss • 4. Simple Interest and Compound Interest • 5. Time and Work • 6. Average, Mixture and Alligation • 7. Ratio, Proportion and Variation • 8. Speed, Distance and Time • • Unit 2: Algebra • 1. Permutation and Combination • 2. Progression • 3. Probability • 4. Set Theory • 5. Surds, Indices and Logarithms • • Unit 3: Reasoning and Data Interpretation • 1. Cubes and Dices • 2. Line Graph • 3. Tables
- 4. Blood Relationship • 5. Bar Diagram • 6. Pie Chart • 7. Puzzles • 8. Analytical Reasoning • • General Aptitude: Solved Gate Previous Years' Questions • • Appendix — GATE 2018 PAPERS • Solved GATE (CS) 2018 • Solved GATE (EC) 2018 • Solved GATE (EE) 2018 • Solved GATE (ME) 2018 Morning Shift • Solved GATE (ME) 2018 Afternoon Shift • Solved GATE (CE) 2018 Morning Shift • Solved GATE (CE) 2018 Afternoon Shift • • Appendix — GATE 2019 PAPERS • Solved GATE (CS) 2019 • Solved GATE (EC) 2019 • Solved GATE (EE) 2019 • Solved GATE (ME) 2019 Morning Shift • Solved GATE (ME) 2019 Afternoon Shift • Solved GATE (CE) 2019 Morning Shift • Solved GATE (CE) 2019 Afternoon Shift • • Appendix — GATE 2020 PAPERS • Solved GATE (CS) 2020 • Solved GATE (EC) 2020 • Solved GATE (EE) 2020 • Solved GATE (ME) 2020 Morning Shift • Solved GATE (ME) 2020 Afternoon Shift • Solved GATE (CE) 2020 Morning Shift
- Solved GATE (CE) 2020 Afternoon Shift • • Appendix — GATE 2021 PAPERS • Solved GATE (CS) 2021 Morning Shift • Solved GATE (CS) 2021 Afternoon Shift • Solved GATE (EC) 2021 • Solved GATE (EE) 2021 • Solved GATE (ME) 2021 Morning Shift • Solved GATE (ME) 2021 Afternoon Shift • Solved GATE (CE) 2021 Morning Shift • Solved GATE (CE) 2021 Afternoon Shift

9789354644948 | ₹ 859



Engineering Mechanics Statics and Dynamics, 9ed, An Indian Adaptation | IM | e | k

Meriam

About the Author

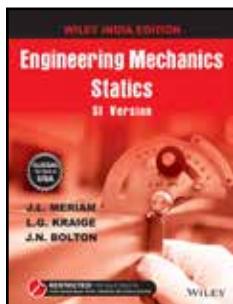
Dr. James L. Meriam has contributed to the field of engineering mechanics as one of the premier engineering educators during the second half of the twentieth century. He had early industrial experience with Pratt and Whitney Aircraft and the General Electric Company. During the Second World War, he served in the U.S.

Coast Guard. He was a member of the faculty of the University of California-Berkeley, Dean of Engineering at Duke University, a faculty member at the California Polytechnic State University, and visiting professor at the University of California-Santa Barbara.

Table of Contents

- Foreword • Preface to the Adapted Edition • Preface • Acknowledgments • Part I Statics • 1 Introduction to Statics • 2 Force Systems • 2.1 Introduction • 2.2 Force • 2.3 Rectangular Components • 2.4 Moment • 2.5 Couple • 2.6 Resultants • 2.7 Rectangular Components • 2.8 Moment and Couple • 2.9 Resultants • 2.10 Chapter Review • 3 Equilibrium • 3.1 Introduction • 3.2 System Isolation and the Free-Body Diagram • 3.3 Equilibrium Conditions • 3.4 Equilibrium Conditions • 3.5 Chapter Review • 4 Structures • 4.1 Introduction • 4.2 Plane Trusses • 4.3 Method of Joints • 4.4 Graphical Method • 4.5 Method of Sections • 4.6 Space Trusses • 4.7 Frames and Machines • 4.8 Chapter Review • 5 Distributed Forces: Center of Mass, Centroid, and Moment of Inertia • 5.1 Introduction • 5.2 Center of Mass • 5.3 Centroids of Lines, Areas, and Volumes • 5.4 Composite Bodies and Figures; Approximations • 5.5 Theorems of Pappus • 5.6 Area Moments of Inertia • 5.7 Mass Moments of Inertia • 5.8 Beams—External Effects • 5.9 Beams—Internal Effects • 5.10 Chapter Review • 6 Friction • 6.1 Introduction • 6.2 Types of Friction • 6.3 Dry Friction • 6.4 Wedges • 6.5 Screws • 6.6 Journal Bearings • 6.7 Thrust Bearings; Disk Friction • 6.8 Flexible Belts • 6.9 Rolling Resistance • 6.10 Chapter Review • 7 Virtual Work • 7.1 Introduction • 7.2 Work • 7.3 Equilibrium • 7.4 Potential Energy and Stability • 7.5 Chapter Review • Part II Dynamics • Part IIA: Dynamics of Particles • 8 Introduction to Dynamics • 8.1 History and Modern Applications • 8.2 Solving Problems in Dynamics • 8.3 Chapter Review • 9 Kinematics of Particles • 9.1 Introduction • 9.2 Rectilinear Motion • 9.3 Plane Curvilinear Motion • 9.4 Rectangular Coordinates (x-y) • 9.5 Normal and Tangential Coordinates (n-t) • 9.6 Polar Coordinates (r-θ) • 9.7 Space Curvilinear Motion • 9.8 Relative Motion (Translating Axes) • 9.9 Constrained Motion of Connected Particles • 9.10 Chapter Review • 10 Kinetics of Particles • 10.1 Introduction • 10.2 Newton's Second Law • 10.3 Equation of Motion and Solution of Problems • 10.4 Rectilinear Motion • 10.5 Curvilinear Motion • 10.6 Work and Kinetic Energy • 10.7 Potential Energy • 10.8 Introduction • 10.9 Linear Impulse and Linear Momentum • 10.10 Angular Impulse and Angular Momentum • 10.11 Introduction • 10.12 Impact • 10.13 Central-Force Motion • 10.14 Relative Motion • 10.15 Chapter Review • 11 Kinetics of Systems of Particles • 11.1 Introduction • 11.2 Generalized Newton's Second Law • 11.3 Work-Energy • 11.4 Impulse-Momentum • 11.5 Conservation of Energy and Momentum • 11.6 Steady Mass Flow • 11.7 Variable Mass • 11.8 Chapter Review • Part IIB: Dynamics of Rigid Bodies • 12 Plane Kinematics of Rigid Bodies • 12.1 Introduction • 12.2 Rotation • 12.3 Absolute Motion • 12.4 Relative Velocity • 12.5 Instantaneous Center of Zero Velocity • 12.6 Relative Acceleration • 12.7 Motion Relative to Rotating Axes • 12.8 Chapter Review • 13 Plane Kinetics of Rigid Bodies • 13.1 Introduction • 13.2 General Equations of Motion • 13.3 Translation • 13.4 Fixed-Axis Rotation • 13.5 General Plane Motion • 13.6 Work-Energy Relations • 13.7 Acceleration from Work-Energy; Virtual Work • 13.8 Impulse-Momentum Equations • 13.9 Chapter Review • 14 Introduction to Three-Dimensional Dynamics of Rigid Bodies • 14.1 Introduction • 14.2 Translation • 14.3 Fixed-Axis Rotation • 14.4 Parallel-Plane Motion • 14.5 Rotation about a Fixed Point • 14.6 General Motion • 14.7 Angular Momentum • 14.8 Kinetic Energy • 14.9 Momentum and Energy Equations of Motion • 14.10 Parallel-Plane Motion • 14.11 Gyroscopic Motion: Steady Precession • 14.12 Chapter Review • 15 Vibration and Time Response • 15.1 Introduction • 15.2 Free Vibration of Particles • 15.3 Forced Vibration of Particles • 15.4 Vibration of Rigid Bodies • 15.5 Energy Methods • 15.6 Chapter Review • Appendix A Introduction to Analytical Mechanics • Appendix B Selected Topics of Mathematics • Appendix C Useful Tables • Index • Problem Answers

9789354248566 | ₹ 1319



Engineering Mechanics: Statics, SI Version | IM | e

Meriam

About the Author

Dr. James L. Meriam has contributed to the field of engineering mechanics as one of the premier engineering educators during the second half of the twentieth century. He had early industrial experience with Pratt and Whitney Aircraft and the General Electric Company. During the Second World War, he served in the U.S. Coast Guard. He was a member of the faculty of the

University of California-Berkeley, Dean of Engineering at Duke University, a faculty member at the California Polytechnic State University, and visiting professor at the University of California-Santa Barbara.

Description

These exciting books use interesting, realistic illustrations to enhance reader comprehension. Also include a large number of worked examples that provide a good balance between initial, confidence building problems and more advanced level problems. Fundamental principles for solving problems are emphasized throughout.

9788126564033 | ₹ 1079

Engineering Mechanics: Dynamics, SI Version | e

Meriam

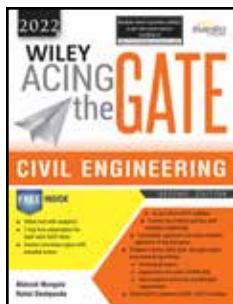
About the Author

Glenn Kraige is Professor in the Department of Engineering Science and Mechanics at Virginia Tech. He is a fellow member of the American Society for Engineering Education,

Description

Known for its accuracy, clarity, and dependability, Meriam, Kraige, and Bolton's Engineering Mechanics: Dynamics, 8th Edition SI Version has provided a solid foundation of mechanics principles to students for more than 60 years. Now in its eighth edition, the text continues to help students develop their problem-solving skills with an extensive variety of engaging problems related to engineering design. In addition to new homework problems, the text also includes a number of helpful sample problems. Students benefit from realistic applications that motivate their desire to learn and develop their skills.

9788126565375 | ₹ 1069



Wiley Acing the GATE: Civil Engineering, 2ed, 2022

Mungule

About the Author

Dr. Mahesh Mungule is currently working as Assistant Professor at Institute of Infrastructure Technology Research and Management (IITRAM), Ahmedabad. Before opting for PhD, he briefly worked for construction company (CCCL, Chennai) in the capacity of Engineer-Planning Engineering. Further, he has an academic experience of more than three years, teaching

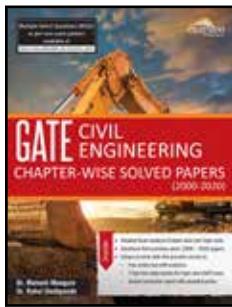
at under-graduate and post-graduate levels in Civil Engineering. He has special interest in the area of structural mechanics and has published numerous papers in journals and conferences of international repute.

Table of Contents

- Preface
- About the Authors
- Acing the GATE
- Syllabus for Civil Engineering (CE)
- 1 Engineering Mechanics
- Introduction
- Fundamental Definitions in Mechanics

- Force and Force System
- Fundamental Principles in Mechanics
- Static Equilibrium
- Application of Statics
- Statics of Rigid Bodies: Effect of Non-concurrent Forces in a Plane
- Equilibrium of Rigid Bodies and Application to Statics
- Beams
- Friction
- Dynamics
- Newton's Law and D'Alembert's Principle
- Work, Energy and Power
- Impact of Elastic Bodies
- Center of Mass and Mass Moment of Inertia
- Principle of Virtual Work
- 2 Solid Mechanics
- Introduction
- Shear Force and Bending Moment Diagram
- Mechanics of Deformable Bodies
- Notion of Principal Stress
- Theories of Failure
- Bending (Flexure) Theory
- Shear Theory or Shearing Stresses
- Torsion Theory
- Deflections
- Columns
- 3 Structural Analysis
- Introduction
- Analysis of Framed Structures
- Analysis of Statically Determinate Structures
- Principle of Superposition
- Analysis of Plane Truss
- Influence Line Diagram
- Analysis of Three-Hinged Arches
- Analysis of Statically Indeterminate Structures
- Matrix Analysis of Structures
- 4 Construction Materials and Management
- Introduction
- Construction Materials
- Construction Management
- Project Planning and Network Analysis
- 5 Concrete Structures
- Introduction
- Concrete Technology
- Concrete Mix Design
- Design of Concrete Structures
- Working Stress Method
- Limit State Design
- Comparison of Working Stress and Limit State Methods
- Analysis in Working Stress Method
- Analysis in Limit State Method
- Design of Structural Elements
- Design of T and L Beams
- Design of Columns
- Design of Slabs
- Prestressed Concrete
- 6 Steel Structures
- Introduction
- Design Philosophy
- Design of Structural Members
- Design of Built-up Columns
- Design of Tension Members
- Design of Beams
- Deformation of Beams
- Design of Built-Up Beams
- Design of Connections
- Plastic Analysis
- Plastic vs. Elastic Designs
- 7 Geotechnical Engineering
- Introduction
- Classification of Soils
- Physical Properties of Soil
- Plasticity Characteristics of Soil
- Permeability
- Seepage Analysis
- Effective Stress Principle
- Earth Pressure Theories
- Vertical Stress Distribution
- Contact Pressure Distribution on Soils for Different Type of Footings
- Stability of Slopes
- Compaction
- 8 Fluid Mechanics and Hydraulics
- Introduction
- Properties of Fluids
- Hydrostatics: Basic Definitions
- Hydrostatics: Forces
- Forces on Floating and Submerged Bodies
- Fluid Flow
- Orifices and Mouthpieces
- Notches and Weirs
- Two-Dimensional Flow
- Streamlines and Stream Functions
- Dimensional Analysis
- Hydraulic Similitude
- Flow through Pipes
- Boundary Layer
- Forces on Submerged Bodies
- Open Channel Flow
- Specific Energy
- Hydraulic Jump
- Impact of Jets
- Basics of Hydraulic Machines
- 9 Hydrology
- Introduction
- Hydrologic Cycle
- Water Budget Equation
- Precipitation
- Evaporation
- Evapotranspiration
- Methods of Stream Flow Measurement
- Interception
- Infiltration
- Depression Storage
- Runoff
- Hydrographs
- Estimating Design Flood
- Instantaneous Unit Hydrograph
- Flood Routing Methods
- Types of Reservoirs
- Groundwater Flow
- Wells
- 10 Irrigation
- Introduction
- Types of Irrigation
- Methods of Irrigation
- Water Requirement of Crops
- Principal Crops and Crop Seasons
- Duty and Delta
- Consumptive Use of Water (Evapo-Transpiration)
- Irrigation Efficiencies
- Irrigation Requirement of Crops
- Crop Rotation
- Spillways
- Diversion Headwork
- Irrigation Channels
- Water Logging and Drainage
- Canal Regulation Works
- Cross Drainage Works
- 11 Environmental Engineering
- Introduction
- Sources of Water
- Water Quality or Characteristics of Water
- Water Quantity Estimation
- Water Intake Structure
- Water Distribution Systems
- Water Treatment
- Wastewater Quantity Estimation
- Characteristics of Sewage
- Wastewater Treatment
- Types of Solid Wastes
- Municipal Solid Waste
- Types of Pollutants
- Units of Measure of Air Pollutants
- Air Pollution Meteorology
- Effects of Air Pollutants on Human Health
- Air Pollution Control
- Properties of Sound Waves
- 12 Transportation Engineering
- Introduction
- Classification of Roads
- Highway Alignment and Engineering Surveys
- Geometric Design of Highways
- Geometric Design of Railway Track
- Geometric Design of Airports
- Pavement Design
- Traffic Engineering
- Statistical Analysis of Traffic Data
- 13 Geomatics Engineering
- Introduction
- Types of Surveying
- Units of Measurement and Conversion Factors
- Compass Surveying
- Measure of Bearing
- Contouring
- Errors
- Limits for Acceptable Errors in Surveying
- Levelling
- Curves
- Photogrammetry
- Remote Sensing
- Global Positioning System (GPS)
- Geographic Information Systems (GIS)
- Important Formulas
- Solved Examples
- Solved GATE Previous Years' Questions
- Practice Exercises
- Answers to Practice Exercises
- List of Codes
- GATE 2018 Paper (Morning Shift)
- GATE 2018 Paper (Afternoon Shift)
- GATE 2019 Paper (Morning Shift)
- GATE 2019 Paper (Afternoon Shift)
- GATE 2020 Paper (Morning Shift)
- GATE 2020 Paper (Afternoon Shift)
- GATE 2021 Paper (Set - I)
- GATE 2021 Paper (Set - II)
- Index

9789354249280 | ₹ 1029



Wiley's GATE Civil Engineering Chapter-wise Solved Papers (2000-2020) | e | k

Mungule

About the Author

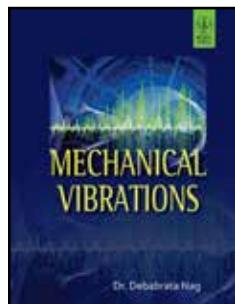
Dr. Mahesh Mungule is currently working as Assistant Professor at Institute of Infrastructure Technology Research and Management (IITRAM), Ahmedabad. He obtained his B.E. in Civil and Water Management Engineering from SGGS University, Nanded, and further continued his studies to earn PhD in Structural

Engineering from Indian Institute of Science (IISc), Bangalore. Before opting for PhD, he briefly worked for construction company (CCCL, Chennai) in the capacity of Engineering Planning Engineering.

Table of Contents

- Preface • Note to the Aspirants • Chapter 1: Engineering Mathematics • Important Formulas • Questions • Answer with Explanation • Chapter 2: Engineering Mechanics • Important Formulas • Questions • Answer with Explanation • Chapter 3: Solid Mechanics • Important Formulas • Questions • Answer with Explanation • Chapter 4: Structural Analysis • Important Formulas • Questions • Answer with Explanation • Chapter 5: Construction Materials and Management • Important Formulas • Questions • Answer with Explanation • Chapter 6: Concrete Structures • Important Formulas • Questions • Answer with Explanation • Chapter 7: Steel Structures • Important Formulas • Questions • Answer with Explanation • Chapter 8: Geotechnical Engineering • Important Formulas • Questions • Answer with Explanation • Chapter 9: Fluid Mechanics and Hydraulics • Important Formulas • Questions • Answer with Explanation • Chapter 10: Hydrology • Important Formulas • Questions • Answer with Explanation • Chapter 11: Irrigation • Important Formulas • Questions • Answer with Explanation • Chapter 12: Environmental Engineering • Important Formulas • Questions • Answer with Explanation • Chapter 13: Transportation Engineering • Important Formulas • Questions • Answer with Explanation • Chapter 14: Geomatics Engineering • Important Formulas • Questions • Answer with Explanation • Solved GATE (CE) 2019 • Solved GATE (CE) 2020"

9788126573233 | ₹ 529



Mechanical Vibrations | IM | e | k

Nag

About the Author

Dr. Debabrata Nag is teaching at the Department of Mechanical Engineering, Jadavpur University, Kolkata. Earlier, he worked with the design consultancy industry for more than a decade, contributing to the field of stress analysis of piping systems for thermal/nuclear power plants, petrochemicals, etc. Dr. Nag teaches Mechanical Vibrations, Strength of Materials, and Engineering Mechanics to the graduate and postgradu-

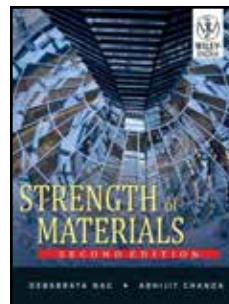
ate students of mechanical, electrical and civil engineering. His active research areas include Numerical Modeling of Non-Newtonian Fluids, Biological Fluids, Mathematical Theories of Mechanical Vibration, Theory of Elasticity and Dynamics of Engineering Systems. Dr. Nag has authored three more textbooks: Fundamentals of Strength of Materials (Wiley), Fundamentals of Engineering Mechanics, and An Introduction to Engineering Mechanics.

Table of Contents

- Introduction to Vibration • Introduction • Systems Undergoing Vibration • Types of Vibration • Importance of Vibration • Sources of Vibration • Mathematical Formulations of Periodic Response • Free Vibration of Undamped Single Degree of Freedom System • Introduction • Free Vibration of Single Degree of Freedom System • Dynamic of Rigid Bodies-A Quick Overview • Energy Considerations of Free Vibration • Damped Free Vibration of Single Degree of Freedom System • Introduction • Viscous Damping • Coulombic Damping • Solution of Differential Equation of Motion of a System with Coulombic Damping • Force Vibration of Single Degree of Freedom

System • Introduction • Forced Vibration • Forced Vibration due to General Periodic Forces/Disturbances • Energy Dissipated due to Viscous Damping-Concept of Equivalent Viscous Damping Coefficient • Structural/ Material Damping • Eddy-Current Damping • Sharpness of Resonance • Some Useful Concluding Remark • Transient Vibration of Single Degree of Freedom Systems • Introduction • Response to Unit Impulse • Response to Arbitrary Excitation • Response to Ground Motion • Vibration of Two Degree of Freedom Systems • Introduction • Free Vibration, Normal Modes of Vibration • Coordinate Systems and Coordinate Coupling • Forced Vibration of Undamped System • Vibration Absorbers • Vibration of Multidegree of Freedom Systems • Introduction • Formulation of Equations of Motion (Force Method) • Stiffness Matrix Formulation • Energy Principle-Lagrange's Equation • Equation for Free Vibration (Undamped System) • Expansion Theorem • Modal Analysis • Damped Free Vibration • Free Vibration of Continuous Systems • Introduction • Tightly-Stretched String or Wire • Vibration of Continuous Elastic Media • Free Vibration of a Membrane • Free Vibration of a Plate • Forced Vibration of Continuous Systems • Introduction • Introduction to Virtual-Work Theorem for a Deformable Body • Forced Vibration of Continuous Systems • Approximate Methods • Introduction • Estimation of Fundamental Frequency • Estimation of Higher-Mode Frequency • Concluding Remarks • Appendix A: Finite Element Method • Appendix B: Vibration Measurements and Control • Appendix C: Vibration and Noise • Appendix D: Special Topics in Vibration • Bibliography • Test Your Comprehension • Answers • Model Test Papers • Index

9788126530908 | ₹ 919



Strength of Materials, 2ed, w/cd | e | k

Nag

About the Author

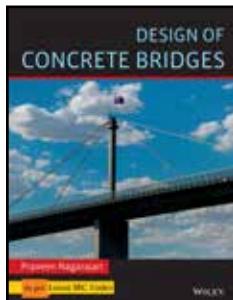
Dr. Debabrata Nag, a graduate in Mechanical Engineering from Jadavpur University, is presently designated as the Reader in the Department of Mechanical Engineering in Applied Mechanics specialisation of his alma mater. He has over 7 years of teaching experience both in Undergraduate and Postgraduate levels and over 12 years of industrial experience in finite element

stress analysis of industrial piping systems. Credited with a number of research papers in various International journals, his research interest includes areas of numerical modeling of non-Newtonian fluids, biological fluids, mathematical theories of mechanical vibration, theory of elasticity and dynamics of engineering systems. Dr. Nag has also co-authored the book "Fundamentals of Engineering Mechanics", published by Scholar Books, Kolkata with Dr. Abhijit Chanda.

Table of Contents

- Part A Elementary Strength of Materials • Stress and Strain • Torsion • Thin-Walled Pressure Vessels • Biaxial Stresses • Shear Force and Bending Moment of Beams • Stresses in Beams • Deflection of Beams • Buckling of Columns • Part B Advanced Strength of Materials • Analysis of Stress and Strain • Energy Principles • Theories of Failure • Combined Loadings • Unsymmetric Bending of Beam • Shear Stresses in Thin-walled beams • Axisymmetric Problems in Strength of Materials • Curved Beam Theory • Leaf Springs • Beams of Composite Materials • Statically Indeterminate Beams • Continuous Beams • Model Question Paper 1 • Model Question Paper 2 • Model Question Paper 3 • Model Question Paper 4 • Appendix A • A.1 Area Moment of Inertia • A.2 Product Area Moment of Inertia • A.3 Parallel-Axis Theorem • Appendix B • B.1 Deflection and Elastic Equations of Some Common Beams • B.2 Area, Centroid and Area Moment of Inertia for Some Common Sections • Appendix C • C.1 Symbols and Units • C.2 System of Units • C.3 Area under Parabola • Appendix D • D.1 Pure Bending • Appendix E • Bibliography • Index

9788126534876 | ₹ 909



Design of Concrete Bridges | e | k

Nagarajan

About the Author

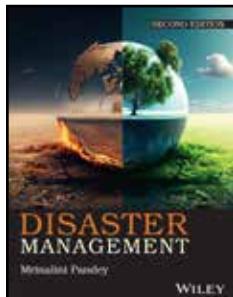
Dr. Praveen Nagarajan had his Civil Engineering education from NIT Calicut and IIT Madras. He was a top-ranking student throughout. After a brief stint as a Bridge Design Engineer at L&T Ramboll, Chennai, he took to academics. His areas of interest are Reinforced and Prestressed Concrete, Bridge Engineering and Structural Reliability. He has published more than 90 technical papers in these areas and has authored the books

Prestressed Concrete Design (published by Pearson) and Matrix Methods of Structural Analysis (published by CRC).

Table of Contents

- Chapter 1: Introduction to Bridges • 1.1 Introduction • 1.2 Components of Bridges • 1.3 Classification of Bridges • 1.4 Selection of the Type of Bridge 1 • • Chapter 2: Road Bridges • 2.1 Introduction • 2.2 Limit State Design • 2.3 Characteristic and Design Loads and Strength of Materials • 2.4 Loads for Design of Road Bridges • 2.5 Materials • 2.6 Stress–Strain Relations of Materials • 2.7 Singly Reinforced Section under Bending • 2.8 Design of Flexural Member for Shear • 2.9 Design for Torsion • 2.10 Checks at Serviceability Limit State • • Chapter 3: Slab Bridges • 3.1 Introduction • 3.2 Design of One-Way Slabs Subjected to Concentrated Loads • 3.3 Dispersion Along the Span – Effective Length • 3.4 Dispersion Along the Support Direction – Effective Width • 3.5 Load for Analysis • 3.6 Stresses due to Temperature • • Chapter 4: Box Culvert • 4.1 Introduction • 4.2 Analysis of Box Culvert • • Chapter 5: Tee Beam Bridges • 5.1 Introduction • 5.2 Components of Tee Beam Bridges • 5.3 Analysis of Two-Way Slabs Subjected to Concentrated Loads • 5.4 Courbou's Method • 5.4.1 Reaction Factor using Courbou's Method • • Chapter 6: Box Girder Bridges • 6.1 Introduction • 6.2 Behaviour and Design of Box Girder Bridge • • Chapter 7: Prestressed Concrete Bridges • 7.1 Introduction • 7.2 Classification of Prestressed Concrete • 7.3 Determination of Stresses in Prestressed Concrete Member • 7.4 Design Loading Stages and Prestressing Force • 7.5 Stress Inequalities • 7.6 Minimum Section Modulus • 7.7 Minimum Prestressing Force and Maximum Eccentricity of Prestressing Force • 7.8 Ultimate Moment of Resistance MR • 7.9 Design Procedure • • Chapter 8: Bearings and Substructures • 8.1 Introduction • 8.2 Bearings • 8.3 Abutments and Piers • • Summary • Review Questions • Exercises • Bibliography • Index

9788126599905 | ₹ 589



Disaster Management, 2ed | e | k

Pandey

About the Author

Dr. Mrinalini Pandey is presently working as a Professor in Department of Management Studies, Indian School of Mines, Dhanbad. She has more than a decade of academic experience in teaching various courses on management both at PG and UG levels. She is a member of leading professional bodies of management, she has contributed many articles in management journals and presented papers in international and national conferences in India and abroad. She is also on the review board of a number of International Journals.

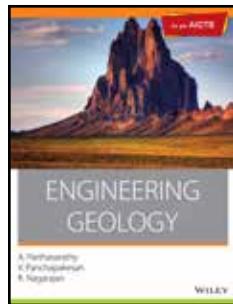
Table of Contents

- Preface • Part I Disaster Management: A Prologue • Chapter 1 Introduction to Disaster Management • 1.1 Concept of Disaster • 1.2 Causes and Types of Disasters • 1.3 Summary of Types of Disasters • 1.4 Dimensions of Natural and Anthropogenic Disasters • 1.5 Aims of Disaster Management • 1.6 National and International Trends in Disaster Management • 1.7 Climate Change and Urban Disasters • 1.8 Principles and Components of Disaster Management • 1.9 Summary • 1.10 Keywords and Phrases • 1.11 Objective Type Questions • 1.12 Questions for Review • 1.13 References • 1.14 Answers • Chapter 2 Disaster Management and Planning • 2.1 Disaster Determinants • 2.2 Nature, Scope and Management Process • 2.3 Policy of Disaster Management • 2.4 Types of Plans: Management by Objectives • 2.5 SWOT Analysis • 2.6 Hazard

and Vulnerability Analysis • 2.7 Identifying Crisis Situations: A Framework • 2.8 Organisational Structure and Design • 2.9 Authority, Delegation and Decentralisation • 2.10 Roles, Skills and Competencies • 2.11 Importance of Control Process in Disaster Management • 2.12 Group Dynamics: Nature, Approach, and Attitudes Required to Establish Effective Autonomous Work Groups • 2.13 Understanding the Importance of Team-Building in Disaster Management • 2.14 Capability Assessment • 2.15 National Disaster Management Authority • 2.16 Summary • 2.17 Keywords and Phrases • 2.18 Objective Type Questions • 2.19 Questions for Review • 2.20 References • 2.21 Answers • Part II Disaster Management Cycle: Practical Applications • Chapter 3 Disaster Mitigation • 3.1 Disaster Management Cycle: An Overview • 3.2 Disaster Mitigation: Meaning and Concept • 3.3 Structural Mitigation • 3.4 Non-Structural Mitigation • 3.5 Disaster Mitigation Strategies • 3.6 Importance of Information and Communication in Disaster Mitigation • 3.7 Emerging Trends in Disaster Mitigation • 3.8 Strengthening Capacity for Reducing Risk • 3.9 Role of Team and Coordination • 3.10 Sustainable Development for Disaster Mitigation • 3.11 National and International Assistance in Disaster Mitigation: An Overview • 3.12 Summary • 3.13 Keywords and Phrases • 3.14 Objective Type Questions • 3.15 Questions for Review • 3.16 References • 3.17 Answers • Chapter 4 Disaster Preparedness • 4.1 Introduction to Disaster Preparedness • 4.2 The Three A's of Disaster Preparedness • 4.3 Principles of Disaster Preparedness • 4.4 Steps of Disaster Preparedness • 4.5 Organisational Structure for Disaster Preparedness • 4.6 Essential Services Preparedness and Logistical Readiness • 4.7 Contingency Planning • 4.8 Importance of Building Team and Community Relations for Environmental and Emergency Managers • 4.9 Training Needs Analysis and Human Resource Development Plan • 4.10 Emergency Operational Plan: Contents • 4.11 Summary • 4.12 Keywords and Phrases • 4.13 Objective Type Questions • 4.14 Questions for Review • 4.15 References • 4.16 Answers • Chapter 5 Disaster Response • Learning Objectives • Opening Case • 5.1 Aims of Response • 5.2 Control Process and Measurement • 5.3 Security Issues • 5.4 Profile of an Effective Crisis Leader • 5.5 Leading at the Time of Crisis: Competencies and Challenges • 5.6 Evacuation and Migration • 5.7 Administering First-Aid • 5.8 Handling of Injured at Hospitals: Challenges and Issues • 5.9 Mobilisation and Restoration of Essential Services • 5.10 Search and Rescue Work • 5.11 Modern and Traditional Methods of Response • 5.12 A Model of an Ideal Command Centre • 5.13 International Cooperation in Disaster Response • 5.14 Summary • 5.15 Key words and Phrases • 5.16 Objective Type Questions • 5.17 Questions for Review • 5.18 References • 5.19 Answers • Chapter 6 Disaster Recovery • 6.1 Introduction to Medium- and Long-Term Recovery Aspects • 6.2 Community Participation in Defining Objectives and Their Priorities • 6.3 Identifying and Ascertaining Impact of Disaster • 6.4 Participative Rehabilitation: Physical and Social Infrastructure • 6.5 Social and Economic Rehabilitation: Capacity Building for Reconstruction and Rehabilitation • 6.6 Recovery and Rebuilding Works • 6.7 Facilitating Compensations to be Paid through Insurances and Government • 6.8 Coping Strategies: Providing Counselling and Psychological Support • 6.9 Summary • 6.10 Keywords and Phrases • 6.11 Objective Type Questions • 6.12 Questions for Review • 6.13 References • 6.14 Answers • Part III Contemporary Issues and Challenges in Disaster Management • Chapter 7 Ascertaining Roles and Responsibilities • 7.1 Global Thrust for Disaster Management • 7.2 Roles and Responsibilities of Agencies • 7.3 International and National Agencies • 7.4 State and Local Bodies • 7.5 Philanthropic Organisations • 7.6 Role of Stakeholders • 7.7 Impact and Role of Media • 7.8 Planning Commission and Its Role • 7.9 Community-Based Approach to Disaster Management • 7.10 Summary • 7.11 Keywords and Phrases • 7.12 Objective Type Questions • 7.13 Questions for Review • 7.14 References • 7.15 Answers • Chapter 8 Insights on Challenges in Management of Disaster • 8.1 Disaster Profile of India • 8.2 Management of Disasters in India • 8.3 Disaster Management Policy • 8.4 Education on Disasters • 8.5 Public Awareness • 8.6 Public Health System: Its Role in Disaster Management Prevention • 8.7 Addressing Challenges Through Triage Process • 8.8 Charting a Hazard Map • 8.9 Effect of Culture and Disaster Management • 8.10 Environmental Degradation and Disasters: Addressing Challenges • 8.11 Enabling Role of Science and Technology in Management of Disasters • 8.12 Role of Innovations in Managing Disasters • 8.13 Media Relations and External Communications During a Disaster • 8.14 Summary • 8.15 Keywords and Phrases • 8.16 Objective Type Questions • 8.17 Questions for Review • 8.18 References • 8.19 Answers • Chapter 9 Behavioral Aspects of Disaster Management • 9.1 Identifying Socio-Psychological Needs in Mass Emergency • 9.2 Different Psychological Considerations • 9.3 Training in Humanitarian Professionalism • 9.4 Community and Individual Empowerment • 9.5 Community Building in Developing Local Resilience to Disasters • 9.6 Developing Leaders • 9.7 Importance of Communication and Commitment • 9.8 Negotiating the Conditions and Effects of Vulnerability and Disaster • 9.9 Ethical Issues in Disaster Management • 9.10 Summary • 9.11 Key Words and Phrases • 9.12

Objective Type Questions • 9.13 Questions for Review • 9.14 References • 9.15 Answers
• Model Question Paper 1 • Model Question Paper 2 • Model Question Paper 3 • Model Question Paper 4 • Index

9789357461610 | ₹ 929



Engineering Geology: As per AICTE | e

Parthasarathy

About the Author

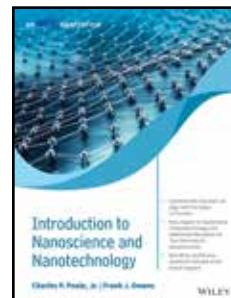
Prof. A. Parthasarathy graduated from the Presidency College, University of Madras in 1945 and joined the faculty. He joined the faculty of the Indian Institute of Technology, Bombay, in 1959 where he worked till his retirement in 1985.

Table of Contents

- Foreword • Preface • About the Authors •
- Acknowledgements •
- I Basic Geosciences • 1. Geological Concepts and Data • 1.1 Introduction • 1.2 Solar System • 1.3 Earth and Its Origin •
- 2 Geological Processes on the Earth's Surface • 2.1 Introduction • 2.2 Weathering and Soil Formation • 2.3 Geological Work of Wind • 2.4 Geological Work of Running Water • 2.5 Glaciers • 2.6 Oceans and Seas •
- 3 Materials of the Earth's Crust • 3.1 Introduction • 3.2 Mineralogy • 3.3 X-Ray Methods of Mineral Identification • 3.4 Select Rock-Forming Minerals • 3.5 Petrology •
- 4 Disposition of Rocks • 4.1 Introduction • 4.2 Forms of Intrusive Rocks • 4.3 Planar and Linear Features • 4.4 Geological Structures • 4.5 Geological Maps •
- II Engineering Geology and Allied Fields • 5 Geomorphology and Hydrogeology • 5.1 Introduction • 5.2 Geomorphology • 5.3 Hydrogeology • 5.4 Geothermal Springs •
- 6 Natural Hazards and Environment • 6.1 Introduction • 6.2 Natural Hazards • 6.3 Environmental Hazards •
- 7 Clay Mineralogy • 7.1 Introduction • 7.2 Classification of Clay Minerals • 7.3 Clay Mineral Groups • 7.4 Crystal Structure of Clay Minerals • 7.5 Clay Mineral Properties • 7.6 Thermal Methods • 7.7 Base Exchange Capacity • 7.8 Industrial Applications • 7.9 Origin of Clay • 7.10 Clay Mineral Equilibria •
- 8 Remote Sensing and Geographic Information System • 8.1 Introduction • 8.2 Aerial Photographs • 8.3 Orbital Satellites • 8.4 Spectral Reflectance • 8.5 Visual Interpretation of Satellite Image • 8.6 Airborne Survey • 8.7 Geographical Information System • 8.8 Applications •
- 9 Quarrying, Excavation and Drilling • 9.1 Introduction • 9.2 Surface Investigations • 9.3 Sub-Surface Investigations •
- 10 Geophysical Methods • 10.1 Introduction • 10.2 Resistivity Methods • 10.3 Seismic Methods •
- 11 Geotechnical Aspects of Soils • 11.1 Introduction • 11.2 Soil Investigations • 11.3 Soil Engineering Properties • 11.4 Soil Classification •
- III Rock Properties, Behaviour and Applications • 12 Geo-Engineering • 12.1 Introduction • 12.2 Stress and Strain in Rocks • 12.3 Intact and In Situ Rocks • 12.4 Evaluation for Suitability of Site • 12.5 Weathering • 12.6 Physical and Engineering Properties • 12.7 Discontinuities, Joints and Bedding •
- 13 Engineering Rock Classifications • 13.1 Introduction • 13.2 Intact Rock Classifications • 13.3 Rock Mass Classifications • 13.4 Significance of Q-System and RMR Studies •
- 14 Engineering Behaviour of Rocks • 14.1 Introduction • 14.2 Hard Rocks • 14.3 Soft Rocks • 14.4 Engineering Properties of Select Rocks •
- 15 Dams and Reservoirs • 15.1 Introduction • 15.2 Dam Site Investigations and Data Acquisition • 15.3 Types of Dams • 15.4 Properties of Rocks and Soils of Dam Sites • 15.5 Major Criteria for the Selection of Dam Sites • 15.6 Failure Risks and Remedial Measures •
- 16 Tunnels and Underground Openings • 16.1 Introduction • 16.2 Terminology and Prime Requirements for Tunnelling • 16.3 Geological and Structural Guidelines • 16.4 Tunnelling and Strata Disposition • 16.5 Arching and Lining of Tunnels • 16.6 Rock Loads and Support System • 16.7 Rock Classification – Application to Tunnelling • 16.8 An Integrated Approach – Tunnel Geology and Engineering Rock Classification •
- 17 Landslides • 17.1 Introduction • 17.2 Landslide – Definition and Characteristics • 17.3 Lithology, Structure and Stratigraphy • 17.4 Classification of Slides • 17.5 Failure and Slide Type • 17.6 Causes of Failure • 17.7 Slope Stability • 17.8 General Observations • 17.9 Case Studies •
- 18 Rocks in Construction • 18.1 Introduction • 18.2 Building Stones • 18.3 Aggregates •
- 18.4 Foundations • 18.5 Grouting •
- 19 Case Studies • 19.1 Dams and Reservoirs • 19.2 Tunnels •
- IV State-Wise Indian Geological Set-Up • 20 Geology of India • 20.1 Introduction • 20.2 Physiography of India • 20.3 Indian Stratigraphy •
- Summary •

Objective-Type Questions • Review Questions • Answers • Conversion Table • References
• Bibliography • List of Permissions • Index

9788126509461 | ₹ 959



Introduction to Nanoscience and Nanotechnology, An Indian Adaptation | e | k

Poole

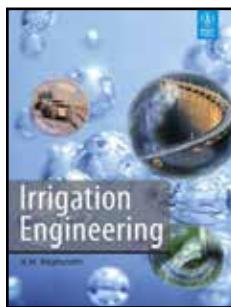
About the Author

Charles P. Poole Jr., PhD, is a professor emeritus in the Department of Physics and Astronomy at the University of South Carolina is a member of the USC nanotechnology center.

Table of Contents

- 1 Introduction • 1.1 History of Nanoscience and Nanotechnology • 1.2 Definition and Classification of Nanomaterials • 1.3 Present and Future Perspectives of Nanomaterials and Nanotechnology •
- 2 Introduction to Solid State Physics • 2.1 Structure • 2.2 Energy Bands • 2.3 Localized Particles •
- 3 Methods of Measuring Properties • 3.1 Introduction • 3.2 Structure Analysis • 3.3 Microscopic Techniques • 3.4 Spectroscopic Techniques •
- 4 Properties and Synthesis of Nanoparticles • 4.1 Introduction • 4.2 Metal Nanoclusters and Nanoparticles • 4.3 Semiconducting Nanoparticles • 4.4 Rare Gas and Molecular Clusters • 4.5 Methods of Synthesis • 4.6 Conclusion •
- 5 Carbon-Based Nanostructures • 5.1 Introduction • 5.2 Carbon Molecules • 5.3 Carbon Clusters • 5.4 Carbon Nanotubes • 5.5 Applications of Carbon Nanotubes •
- 6 Nanostructured Materials • 6.1 Solid Disordered Nanostructures • 6.2 Nanostructured Crystals •
- 7 Nanostructured Ferromagnetism • 7.1 Basics of Ferromagnetism • 7.2 Effect of Bulk Nanostructuring of Magnetic Properties • 7.3 Dynamics of Nanomagnets • 7.4 Nanopore Containment of Magnetic Particles • 7.5 Nanocarbon Ferromagnets • 7.6 Giant and Colossal Magnetoresistance • 7.7 Ferrofluids •
- 8 Optical and Vibrational Spectroscopy • 8.1 Introduction • 8.2 Infrared Frequency Range • 8.3 Luminescence •
- 9 Quantum Wells, Wires, and Dots • 9.1 Introduction • 9.2 Preparation of Quantum Nanostructures • 9.3 Size and Dimensionality Effects • 9.4 Excitons • 9.5 Single-Electron Tunneling • 9.6 Applications • 9.7 Superconductivity •
- 10 Self-Assembly and Catalysis • 10.1 Self-Assembly • 10.2 Catalysis • 11 Organic Compounds and Polymers •
- 11.1 Introduction • 11.2 Forming and Characterizing Polymers • 11.3 Nanocrystals • 11.4 Polymers • 11.5 Supramolecular Structures •
- 12 Biological Materials • 12.1 Introduction • 12.2 Biological Building Blocks • 12.3 Nucleic Acids • 12.4 Biological Nanostructures •
- 13 Nanomachines and Nanodevices • 13.1 Microelectromechanical Systems (MEMS) • 13.2 Nanoelectromechanical Systems (NEMS) • 13.3 Molecular and Supramolecular Switches •
- 14 Applications of Nanotechnology • 14.1 Nanotechnology for Environmental Engineering • 14.2 Nanotechnology for Textile Industry • 14.3 Nanotechnology in Agriculture and Food • 14.4 Nanotechnology Applications for Air and Soil •
- 14.5 Nanotechnology in Industry, Defence, and Security • 14.6 Water Demands for Nanotechnology • 14.7 Therapeutics and Regenerative Medicine • 14.8 Nanotechnology and the Energy Challenge •
- Summary •
- Keywords •
- Multiple-Choice Questions •
- Review Questions •
- Further Reading •
- Appendices •
- A Two-Dimensional Nanostructures •
- A.1 Introduction •
- A.2 Examples of 2D nanostructures •
- A.3 Synthesis of 2D Nanostructures •
- A.4 Applications of 2D Nanostructures •
- B Formulas for Dimensionality •
- B.1 Introduction •
- B.2 Delocalization •
- B.3 Partial Confinement •
- C Tabulations of Semiconducting Material Properties •
- D Answers to Multiple-Choice Questions •
- Index •

9789354240201 | ₹ 1009



Irrigation Engineering | e | k

Raghunath

About the Author

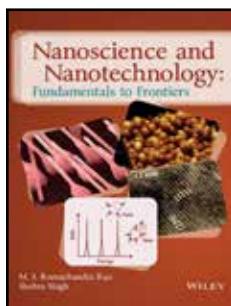
H.M. Raghunath is a formerly professor of civil engineering at Jawaharlal Nehru Agricultural University, G.B. Pant University of Agriculture and Technology and Manipal Institute of Technology. Professor Raghunath also worked as a research engineer at Mysore Engineering Research Station, Krishnaraja Sagar, and as a water resources specialist for the southern region in APRO and participant in UNDP. Besides being a member of

many expert committees on water resources evaluation with the World Bank (ARC-AFC) team, Prof. Raghunath has published several bestselling books on groundwater and hydrology. He is an M.Sc. in Engineering (specialization in Hydraulics, Irrigation and Flood Control) from the University of Kerala, B.E. (Civil) from the University of Mysore and has a postgraduate certificate in computer programming from Indian Institute of Science (IISc), Bangalore.

Table of Contents

- Part A: Irrigation Systems • Introduction • Flow Irrigation • Tank Irrigation • Soil Moisture and Consumptive Use • Lift Irrigation • Sprinkler Irrigation • Drip Irrigation and Principles of Soil and Water Conservation • Flooding and Border Irrigation • Furrow and Corrugation Irrigation • Crop Rotation and Irrigation Assessment • Irrigation Water Quality • Saline and Alkaline Soils and Their Reclamation • Doctrine of Water Rights • Canal Lining • Stable Channels in Alluvium and Channel Transitions • River Behavior and Training • Diversion Head Works • Dams and Reservoirs • Multipurpose Reservoirs
- Canal Systems • Environmental Aspects • Part B: Irrigation Structures: Design and Drawing • Plate 1. Reservoir Design • Plate 2. Low-Gravity Dam and Spillway • Plate 3. Hydraulic Energy Dissipaters and Model Studies • Plate 4. High-Gravity Dam • Plate 5. Arch Dams • Plate 6. Tank Bund • Plate 7. Seepage and Drainage of Earthen Bunds • Plate 8. Earth Dam • Plate 9. Rock-Fill Dam • Plate 10. Composite Dam • Plate 11. Buttress Dam • Plate 12. Tank Sluices • Plate 13. Tank Surplus Escape (Core Wall Type) • Plate 14. Tank Surplus Weir (Wing Wall Type) • Plate 15. Canal Sluice • Plate 16. Irrigation Outlet (Crump Type) • Plate 17. Canal in Gravelly Soil • Plate 18. Canal Regulator (Cross Regulator) • Plate 19. Canal Drops • Plate 20. Aqueduct • Plate 21. Siphon Aqueduct • Plate 22. Barrage • Plate 23. Vertical Drop Weir • Plate 24. Bell's Guide Bunds • Plate 25. Canal Siphon • Plate 26. Super Passage • Plate 27. Gomti Aqueduct-A Case Study • Model Question Papers • References • Index

9788126528813 | ₹ 939



Nanoscience and Nanotechnology: Fundamentals to Frontiers | e | k

Rao

About the Author

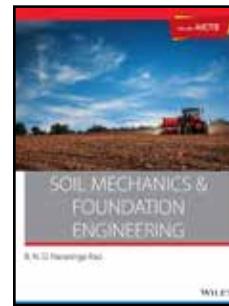
Dr. M.S. Ramachandra Rao is a professor in the Department of Physics and head of the "Nanostructured Thin Films and Advanced Materials" group at IIT Madras. His research activities are primarily focused on Physics and applications of nanostructures and nanomaterial.

Table of Contents

- 1. The Science behind Nanotechnology • 1.1 History of Nanoscience • 1.2 Definition of Nanometer, Nanomaterial, and Nanotechnology • 1.3 Classification of Nanomaterial • 1.4 Nanotechnology from the Perspective of Medieval Period • 2. Concepts of Solid-State Physics Relevant to Low-Dimensional Systems • 2.1 Introduction • 2.2 Crystal Symmetries, Crystal Directions, and Crystal Planes • 2.3 Band Structure • 2.4 Classification of Solid-State Materials • 2.5 Bulk Properties of Materials • 2.6 Magnetic Materials • 2.7 Effect of Size Reduction on Bulk Properties • 2.8 Optoelectronic Property of Bulk and Nanostructures • 2.9 Electronic Structure of Nanomaterial and the Fermi Surface • 2.10 Luminescence from Nanoparticles • 2.11 Raman Spectroscopy of Nanoparticles • 2.12 Thermodynamics of Nanomaterial: Change in Melting Point • 3. Quantum Mechanics of Low-Dimensional Systems and Its Application to Nanoscience • 3.1 Introduction • 3.2 Energy Considerations: Bound

- States and Density of States • 3.3 Quantum Confinement • 3.4 Super lattices • 3.5 Band Offsets • 3.6 Quantum Transport in Nano clusters /Quantum Dots • 4. Basic Aspects of Synthesis of Nanomaterial and Device Fabrication • 4.1 Introduction • 4.2 Synthesis of Bulk Polycrystalline Samples • 4.3 Growth of Single Crystals • 4.4 Synthesis Techniques for the Preparation of Nanoparticles • 4.5 Requirements for Realizing Semiconductor Nanostructures • 4.6 Some Specialized Growth Techniques for Nanostructures • 4.7 Electrostatic-Induced Growth • 4.8 Thermally Annealed Quantum Wells • 4.9 Semiconductor Nano crystals • 5. Different Types of Nanostructures • 5.1 Introduction • 5.2 Shapes and Structures of Nanomaterial • 5.3 Quantum Dots • 5.4 Semiconductor Nanoparticles • 6. Diffusion Kinetics • 6.1 Introduction • 6.2 Thermodynamics of Diffusion • 6.3 Grain Boundary Effect • 6.4 Effect of Defects on Diffusion • 7. Nanostructured Thin Films and Nano composites • 7.1 Introduction • 7.2 Micro- and Nano scale Thin-Film Fabrication Techniques • 7.3 Optical, Electrical, and Magnetic Properties of Nanostructured • Thin Films • 7.4 Nano composites • 7.5 Physical and Optical Properties • 7.6 Metal/Dielectric-Organic Nano composites • 8. Nano scale Characterization Techniques • 8.1 Introduction • 8.2 X-Ray Diffraction and Scherer Method • 8.3 Scanning Electron Microscopy • 8.4 Transmission Electron Microscopy • 8.5 Stoichiometry Study by Energy-Dispersive X-Ray Analysis • 8.6 Scanning Probe Microscopy • 8.7 Atomic Force Microscopy • 8.8 Piezoresponse Microscopy • 8.9 X-Ray Photoelectron Spectroscopy • 8.10 XANES and XAFS • 8.11 Angle-Resolved Photoemission Spectroscopy • 8.12 Diffuse Reflectance Spectra • 8.13 Photoluminescence Spectra • 8.14 Raman Spectroscopy • 8.15 DC Magnetization • 8.16 Electrical Resistivity Measurements • 8.17 Theory of Linear Four-Probe Method • 9. Recent Advances in Nanotechnology • 9.1 Introduction • 9.2 Designing Molecules for Nano electronics • 9.3 Advances of Nanotechnology in Materials Science • 10. New Trends in Nanoscience and Applications of Nanotechnology in Various Fields • 10.1 Introduction • 10.2 Applications in Material Science • 10.3 Applications in Biology and Medicine • 10.4 Applications in Surface Science • 10.5 Applications in Energy and Environment • 10.6 Applications of Nanostructured Thin Films • 10.7 Applications of Quantum Dots • 10.8 Carbon Nanotechnology • 10.9 Applications of Magnetic Nanoparticles • Appendix A - Useful Lab Experiments • Appendix B - Useful Tables • Index

9788126542017 | ₹ 859



Soil Mechanics and Foundation Engineering: As per AICTE

Rao

About the Author

The author Dr. B.N.D. Narasinga Rao, University First in M.E. (Soil Mechanics) and Ph.D. with CSIR SRF from Andhra University, in 1997, has over 25 years of teaching, research and consultancy experience which prompted him to write the present book on Soil Mechanics and Foundation Engineering. The author is formerly Professor and Principal of KKIT and KITS Engineering colleges and is currently Professor and Head of Civil Engineering, Anil Neerukonda Institute of Technology & Sciences (ANITS), Sangivalasa, Visakhapatnam.

Table of Contents

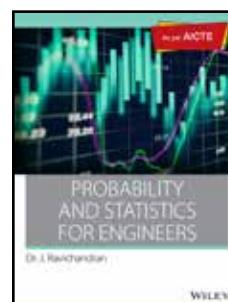
- Foreword • Preface • Acknowledgements • 1 Introduction • 1.1 Introduction • 1.2 Definitions • 1.3 History of Soil Mechanics • 1.4 Applications of Soil Mechanics • 1.5 Professional Activities in Geotechnical Engineering • 2 Origin and Formation of Soils • 2.1 Introduction • 2.2 Soil Formation • 2.3 Weathering • 2.4 Erosion • 2.5 Factors Influencing Weathering and Soil Formation • 2.6 Residual Soils • 2.7 Transported Soils • 2.8 Types of Soil Profile • 2.9 Soil Horizons • 2.10 Soil Deposits of India • 3 Soil Mineralogy and Structure • 3.1 Introduction • 3.2 General Types of Soils Based on Particle Size • 3.3 Soil Mineralogy • 3.4 Primary and Secondary Minerals • 3.5 Bonding in Soils • 3.6 Mineralogy of Fine-Grained Soils • 3.7 Kaolinite • 3.8 Montmorillonite • 3.9 Illite • 3.10 Chlorite • 3.11 Vermiculite • 3.12 Isomorphous Substitution • 3.13 Properties of Clay Minerals • 3.14 Identification of Clay Minerals • 3.15 Soil Structure and Soil Fabric • 3.16 Mineralogy of Cohesionless Soils • 4 Physical Properties of Soils • 4.1 Introduction • 4.2 Three-Phase System of Soil • 4.3 Phase Diagram of Soil • 4.4 Physical Properties of Soils • 4.5 Functional Relationships between Physical Properties • 4.6 Physical Properties in Terms of Mass • 4.7 Functional Relationships of Physical Properties in Terms of Mass •



4.8 Preparation of Soil Samples for Determination of Physical Properties • 4.9 Determination of Water Content • 4.10 Determination of Specific Gravity • 4.11 Determination of in-situ Density • 4.12 Relative Density • 5 Plasticity Characteristics of Soils • 5.1 Introduction • 5.2 Consistency • 5.3 Consistency Limits • 5.4 Liquid Limit • 5.5 Plastic Limit • 5.6 Index Properties of Soils • 5.7 Shrinkage Limit • 5.8 Uses of Consistency Limits • 5.9 Classification of Soils Based on Index Properties • 6 Soil Classification • 6.1 Need for Soil Classification • 6.2 Particle Size Classification • 6.3 Scientific Basis for Soil Classification • 6.4 Grain Size Analysis of Soil • 6.5 Grain Size Distribution Curve • 6.6 Textural Classification • 6.7 AASHTO Classification • 6.8 Unified Soil Classification System • 6.9 Indian Standard Soil Classification (IS:1498 – 1970) • 6.10 Field Identification Tests for Fine-Grained Soils • 7 Stresses Due to Self-Weight • 7.1 Introduction • 7.2 Total Stress • 7.3 Pore Water Pressure • 7.4 Effective Stress Principle • 7.5 Effective Stress • 8 Vertical Stress Due to Applied Loads • 8.1 Introduction • 8.2 Boussinesq Theory for Vertical Stress Due to Concentrated Load • 8.3 Vertical Stress below Strip Footing • 8.4 Newmark's Influence Chart • 8.5 Westergaard's Theory for Vertical Stress • 8.6 The 2:1 Distribution Method • 8.7 Comparison of Different Methods for Determination of Vertical Stress • 9 Permeability of Soils • 9.1 Introduction • 9.2 Types of Soil Water • 9.3 Flow of Water through Soil • 9.4 Permeability • 9.5 Darcy's Law • 9.6 Coefficient of Absolute Permeability • 9.7 Factors Affecting Permeability of Soils • 9.8 Determination of Permeability • 9.9 Constant Head Permeability Test • 9.10 Falling Head Permeability Test • 9.11 Capillary Permeability Test • 9.12 Consolidation Test • 9.13 Permeability of Stratified Soil Deposits • 10 Seepage Analysis • 10.1 Introduction • 10.2 Types of Soil Formations • 10.3 Basic Definitions • 10.4 In Situ Tests for Determination of Permeability • 10.5 Pumping-Out Tests • 10.6 Pumping-In Tests • 10.7 Seepage Velocity • 10.8 Total Head, Pressure Head, and Datum Head • 10.9 Seepage Pressure and Quicksand • 10.10 Laplace Equation for Two-Dimensional Flow • 10.11 Flow Net • 10.12 Methods of Drawing a Flow Net • 10.13 Calculation of Hydraulic Parameters from a Flow Net • 10.14 Flow Net for Anisotropic Soils • 10.15 Phreatic Line in Earth Dams • 10.16 Failure of Hydraulic Structures by Piping • 10.17 Seepage Control in Hydraulic Structures: Prevention of Piping Failures • 10.18 Design of Graded Filter • 11 Consolidation • 11.1 Introduction • 11.2 Significance of Compressibility and Consolidation • 11.3 Mechanism of Consolidation: Terzaghi's Soil-Spring Analogy • 11.4 Parameters for Measurement of Compressibility of Soils • 11.5 Determination of Consolidation Settlement • 11.6 Terzaghi's Theory of Consolidation • 11.7 Odometer or Consolidation Test • 11.8 Pre-Compression and Pre-Consolidation Pressure • 11.9 Effect of Stress History on Compression of Clays • 11.10 Components of Settlement • 11.11 Construction Period Correction: Prediction of Field Consolidation Curve • 11.12 Acceleration of Consolidation Using Sand Drains • 11.13 Three-Dimensional Consolidation • 12 Compaction • 12.1 Introduction • 12.2 Principle of Compaction • 12.3 Effect of Compaction on Engineering Properties of the Soil • 12.4 Laboratory Compaction Test • 12.5 IS Light Compaction Test • 12.6 IS Heavy Compaction Test • 12.7 Ideal Compaction Curve-Zero Air Void Line • 12.8 Compaction Curve for Sands • 12.9 Factors Affecting Compaction • 12.10 Field Compaction Procedure • 13 Shear Strength • 13.1 Introduction • 13.2 Principal Stresses and Principal Planes • 13.3 Mohr's Circle of Stresses • 13.4 Mohr-Coulomb Failure Theory • 13.5 Determination of Shear Strength • 13.6 Direct Shear Test • 13.7 Triaxial Compression Test • 13.8 Unconfined Compression Test • 13.9 Vane Shear Test • 13.10 Bore Hole Shear Test • 13.11 Sensitivity • 13.12 Pore Pressure Parameters • 13.13 Stress Path • 14 Soil Exploration • 14.1 Introduction • 14.2 Need for Soil Exploration • 14.3 Planning and Execution of Soil Exploration • 14.4 Methods of Soil Exploration • 14.5 Soil Samples • 14.6 Soil Samplers • 14.7 Location of GWT • 14.8 In Situ Tests • 14.9 Soil Investigation Report • 15 Lateral Earth Pressure • 15.1 Introduction • 15.2 Lateral Earth Pressure • 15.3 Types of Lateral Earth Pressure • 15.4 Derivation of Expression for Earth Pressure at Rest • 15.5 Rankine's Theory of Active Earth Pressure for Cohesionless Backfill • 15.6 Rankine's Active Earth Pressure for Cohesive Backfill • 15.7 Fully Submerged Cohesive Backfill • 15.8 Rankine's Theory of Passive Earth Pressure for Cohesionless Backfill • 15.9 Rankine's Passive Earth Pressure for Cohesive Backfill • 15.10 Rankine's Earth Pressure for Retaining Wall with Inclined Back • 15.11 Coulomb's Wedge Theory for Earth Pressure • 15.12 Poncelet (or Rebhan's) Construction for Active Earth Pressure • 15.13 Poncelet (or Rebhan's) Construction for Passive Earth Pressure • 15.14 Culmann's Construction for Active Earth Pressure • 15.15 Coulomb's Theory of Active Earth Pressure for Cohesive Backfill • 15.16 Trial Wedge Method for Lateral Earth Pressure • 15.17 Coulomb's Theory for Passive Earth Pressure for Cohesionless Backfill • 15.18 Passive Earth Pressure by Friction Circle Method • 16 Retaining Structures • 16.1 Introduction • 16.2 Selection of Backfill and Drainage • 16.3 Types of Retaining Walls • 16.4 Cantilever Sheet Pile in Granular Soil • 16.5 Cantilever Sheet Pile in Cohesive Soil • 16.6 Anchored Sheet Pile in Cohesionless Soil: Free Earth Support Method • 16.7

Anchored Sheet Pile in Cohesive Soil • 16.8 Anchored Sheet Pile in Granular Soil: Fixed Earth Support Method • 16.9 Rowe's Moment Reduction for Anchored Wall • 16.10 Miscellaneous Types of Retaining Structures • 17 Stability of Earth Slopes • 17.1 Introduction • 17.2 Definition of Factor of Safety • 17.3 Types of Slope Failures • 17.4 Stability Analysis of Infinite Slopes • 17.5 Stability Analysis of Finite Slopes: Culmann's Method • 17.6 Stability Analysis of Finite Slopes Using the Swedish Circle Method • 17.7 Stability Analysis of Slopes of Earth Dams • 17.8 Bishop's Simplified Method of Slices • 17.9 Friction Circle Method • 17.10 Taylor's Stability Number and Stability Charts • 17.11 Improving the Stability of Slopes • 18 Bearing Capacity of Shallow Foundations • 18.1 Introduction • 18.2 Design Criteria of Shallow Foundations • 18.3 Basic Terms and Definitions • 18.4 Rankine's Theory of Bearing Capacity • 18.5 Prandtl's Theory of Bearing Capacity • 18.6 Terzaghi's Theory of Bearing Capacity • 18.7 Types of Shear Failure of Soil • 18.8 Skempton's Theory of Bearing Capacity • 18.9 Meyerhof's Theory • 18.10 Hansen's Theory of Bearing Capacity • 18.11 Vesic's Theory of Bearing Capacity • 18.12 IS Code Method • 19 Settlement of Shallow Foundations • 19.1 Introduction • 19.2 Depth of Foundation • 19.3 Types of Shallow Foundations • 19.4 Components of Settlement • 19.5 Steps Involved in Settlement Computation • 19.6 Estimation of Settlements for Cohesionless Soils • 19.7 Plate Load Test • 19.8 Estimation of Settlement for Cohesive Soils • 19.9 Correction to Total Settlement for Depth and Rigidity of Foundation • 19.10 Differential Settlements and Distortion • 19.11 Allowable Settlements • 19.12 Indian Standard (IS:1080) Specifications for Foundations • 20 Pile Foundations • 20.1 Introduction • 20.2 Classification of Pile Foundations • 20.3 Construction of Piles • 20.4 Load-Transfer Mechanism from Pile to Soil • 20.5 Estimation of Load Capacity of Piles: Static Formulae • 20.6 Estimation of Load Capacity of Piles: Dynamic Formulae • 20.7 Estimation of Load Capacity of Pile from SCPT • 20.8 Estimation of Load Capacity from SPT • 20.9 Estimation of Load Capacity from Load Test on Piles • 20.10 Group Action in Piles • 20.11 Settlement of a Pile Group • 20.12 Negative Skin Friction • 20.13 Under-Ream Pile Foundations • 21 Well Foundations • 21.1 Introduction • 21.2 Caissons • 21.3 Shapes of Well Foundations • 21.4 Components of Well Foundation • 21.5 Depth of a Well Foundation • 21.6 Forces Acting on Well Foundations • 21.7 Stability Analysis of Well Foundations • 21.8 Factor of Safety • 21.9 Construction of Well Foundations • 21.10 Tilting and Shifting of Wells • Summary • Objective Questions • Review Questions • Answers • Index • In CD • 22 Soil Dynamics and Machine Foundations • 22.1 Introduction • 22.2 Types of Machines • 22.3 Types of Machine Foundations • 22.4 Methods of Dynamic Analysis • 22.5 Procedure for Dynamic Analysis of Machine Foundation • 22.6 Dynamic Soil Properties • 22.7 Design Criteria of Machine Foundations • 22.8 Vibration and Shock Isolation • 23 Ground Improvement Techniques • 23.1 Introduction • 23.2 Objectives of Ground Improvement • 23.3 Classification of Ground Improvement Methods • 23.4 Mechanical Stabilization • 23.5 Sand Compaction Piles • 23.6 Blasting • 23.7 Dynamic Compaction • 23.8 Preloading • 23.9 Sand Drains • 23.10 Prefabricated Vertical Drains • 23.11 Stone Columns • 23.12 Reinforced Earth • 23.13 Soil Nailing • 23.14 Geosynthetics • 23.15 Foundation Grouting • 23.16 In-Situ Soil Mixing • 23.17 Seepage Control and Dewatering Systems • 23.18 Freezing • 23.19 Heating • 24 Foundations in Expansive Soils • 24.1 Introduction • 24.2 Damage to Structures Built on Expansive Soils • 24.3 Factors Affecting Seasonal Moisture Variations • 24.4 Active Zone • 24.5 Mechanism of Swelling • 24.6 Factors Influencing Heave • 24.7 Estimation of Heave • 24.8 Determination of Swelling Pressure • 24.9 Identification and Classification of Expansive Soils • 24.10 Foundation Techniques in Expansive Soils • 24.11 Pavements on Expansive Soils • 24.12 Remedial Options • Summary • Objective Questions • Review Questions • Answers • Bibliography • List of IS Codes

9788126540396 | ₹ 969



Probability and Statistics for Engineers: As per AICTE | IM | e

Ravichandran

About the Author

Dr. J. Ravichandran is an associate professor at the Department of Mathematics, Amrita Vishwa Vidhyapeetham, Coimbatore, India. Earlier, he served the Statistical Quality Control department at a manufacturing industry for more than 12 years. His areas of research include statistical quality control, statistical inference, six sigma, total quality management and sta-

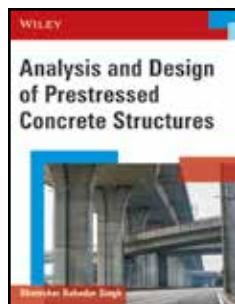


tical pattern recognition. A senior member of the American Society for Quality (ASQ) for over 20 years and a member of the Indian Society for Technical Education (ISTE)

Table of Contents

- 1. Probability Concepts • 1.1 Introduction • 1.2 Important Definitions • 1.3 Approaches of Measuring Probability • 1.4 Bayes' Theorem • 2. Random Variables and Distribution Functions • 2.1 Introduction • 2.2 Random Variable • 2.3 Discrete Random Variable • 2.4 Continuous Random Variable • 2.5 Cumulative Distribution Function • 3. Expectation and Moment-Generating Function • 3.1 Introduction • 3.2 Definition and Properties of Expectation • 3.3 Moments and Moment-Generating Function • 4. Standard Discrete Distribution Functions • 4.1 Introduction • 4.2 Discrete Distributions • 5. Some Standard Continuous Distribution Functions • 5.1 Introduction • 5.2 Uniform Random Variable and Its Distribution • 5.3 Exponential Random Variable and Its Distribution • 5.4 Gamma Random Variable and Its Distribution • 5.5 Normal Random Variable and Its Distribution • 6. Chebyshev's Inequality and Central Limit Theorem • 6.1 Introduction • 6.2 Chebyshev's Theorem (or Inequality) • 6.3 Asymptotic Properties of Random Sequences • 6.4 Central Limit Theorem • 7. Two-Dimensional Random Variables • 7.1 Introduction • 7.2 Discrete Case: Joint Probability Mass Function • 7.3 Continuous Case: Joint Probability Density Function • 7.4 Stochastic Independence of Random Variables • 7.5 Expectation of Two-Dimensional Random Variables • 7.6 Conditional Mean and Conditional Variance • 8. Transformation of Random Variables • 8.1 Introduction • 8.2 One-Dimensional Random Variable • 8.3 Two-Dimensional Random Variables • 9. Point Estimation and Minimum Risk Estimator • 9.1 Introduction • 9.2 Types of Estimation • 10. Sampling Distributions and Interval Estimation • 10.1 Introduction • 10.2 Sampling Distributions • 10.3 Interval Estimation • 11. Testing of Hypotheses • 11.1 Introduction • 11.2 Testing of Hypothesis • 11.3 Classification of Hypothesis Tests • 11.4 Large Sample Tests • 11.5 Small Sample Tests • 12. Simple Correlation and Regression • 12.1 Introduction to Simple Correlation • 12.2 Properties of Correlation Coefficient • 12.3 Rank Correlation Coefficient • 12.4 Introduction to Simple Regression • 13. Analysis of Variance: One-Way and Two-Way Analyses • 13.1 Introduction • 13.2 Single-Factor (One-Way ANOVA) Experiment and Linear Statistical Model • 13.3 Fixed Effects Model and ANOVA • 13.4 Random Effects Model and ANOVA • 13.5 Computations for Sum of Squares • 13.6 Multiple Comparison Test: Grouping of Means • 13.7 Single-Factor (Two-Way ANOVA) Experiment and Linear Statistical Model (Completely Randomized Block Design) • 13.8 Fixed Effects Model for Two-Way ANOVA • 13.9 Random Effects Model for Two-Way ANOVA • 13.10 Computations for Sum of Squares • 14. Latin Square Design and Two-Factor Factorial Design • 14.1 Introduction • 14.2 Latin Square Design • 14.3 Two-Factor Factorial Experiment • 15. Statistical Quality Control and Six Sigma Metrics • 15.1 Introduction • 15.2 Statistical Quality Control • 15.3 Control Charts for Variables • 15.4 Control Charts for Attributes • 15.5 Out-of-Control Situations in Control Charts and Process Monitoring • 15.6 Process Capability and Process Capability Index • 15.7 Six Sigma • Appendix A Other Standard Distributions • Appendix B Standard Normal Table • Appendix C t-Table • Appendix D Chi-Square Table • Appendix E F-Table • Appendix F Construction of Various Control Charts • Appendix G Least Significant Studentized Ranges • Answers • Index

9788126512348 | ₹ 929



Analysis and Design of Prestressed Concrete Structures | e | k

Singh

About the Author

Dr. Shamsher Bahadur Singh is P.E. (Civil) license holder from the state of Michigan, USA and Postdoctorate (LTU), USA, Fellow of American Society of Civil Engineers (F.ASCE), Fellow of Structural Engineering Institute (F.SEI), Fellow of Coalition Disaster Resilience Infrastructure (F.CDRI), Fellow of Indian Association of Structural Engineers (FIAStructE), Chartered Engineer (INDIA), Fellow of Institution of Engineers (F.IE), PhD (IIT Kanpur), and currently Senior Professor of Civil Engineering Department at Birla Institute of Technology and Science (BITS), Pilani. His current areas of research are development of design guidelines for Functionally Graded Composite materials and Fiber Reinforced Polymer (FRP) reinforced prestressed concrete structures in particular and composite materials and structures in general including nonlinear finite element modeling.

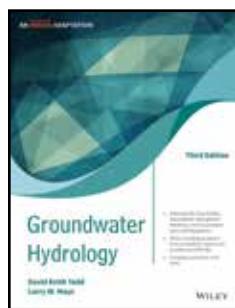
Table of Contents

- Contents • Preface • About the Author • Notations • 1. Introduction • 1.1 Comparison between Reinforced Concrete and Prestressed Concrete • 1.2 General Concepts of Prestressing • 1.3 Classification and Types of Prestressed Concrete Structures • 1.4 Stages of Loading • 1.5 Historical Development of Prestressing • 1.6 Economics of Prestressed Concrete • 1.7 Partial Prestressing • 1.8 Design Codes • 1.9 Terminology • 1.10 Demonstrative Prestressed Concrete Structures • 2. Materials and Systems for Prestressing • 2.1 Introduction • 2.2 Strength Requirements of Concrete • 2.3 Stress-Strain Characteristics of Concrete • 2.4 Lightweight Aggregate Concrete • 2.5 Self-Stressing Cement or Expansive Cement • 2.6 Prestressing Steels • 2.7 Prestressing Systems and Anchorage • 3. Loss of Prestress • 3.1 Loss due to Elastic Shortening of Concrete • 3.2 Time Dependent Losses • 3.3 Prestress Loss due to Anchorage Slip • 3.4 Prestress Loss due to Friction • 3.5 PCI Committee Recommendation for Computing Time-Dependent Losses • 3.6 Total Amount of Losses • 4 Analysis of Prestressed Concrete Sections for Flexural Loadings • 4.1 Introduction and Sign Convention • 4.2 Analysis of Prestress in Concrete • 4.3 Resultant Stresses in Prestressed Concrete Section due to Loads • 4.4 Location of Thrust Line and Internal Resisting Couple • 4.5 Load Carrying Mechanism in Prestressed and Reinforced Concrete Beams • 4.6 Load Balancing Method • 4.7 Variation of Stresses in Tendons due to Loads • 4.8 Kern Point Locations and Kern Distances • 4.9 Cracking Moment • 4.10 Analysis of Composite Sections • 4.11 Stresses due to Differential Shrinkage in Composite Structures • 5 Flexural Strength of Prestressed Concrete Sections • 5.1 Sudden Rupture of Tendons and/or Steels • 5.2 Failure Mode of Under-Reinforced Sections • 5.3 Failure Mode of Over-Reinforced Sections • 5.4 Other Failure Modes • 5.5 Methods of Analysis for Flexural Strength • 6 Shear and Torsional Strength of Prestressed Concrete Members • 6.1 Introduction • 6.2 Shear and Principal Stresses in Beams • 6.3 Types of Shear Cracks • 6.4 Ultimate Shear Strength of Prestressed Concrete Members • 6.5 Design of Shear Reinforcements • 6.6 Horizontal Shear Strength in Composite Construction • 6.7 Torsional Strength and Behavior of Prestressed Concrete Members • 6.8 Design of Prestressed Concrete Member for Torsion • 6.9 Failure Modes in Beam Subjected to Combined Bending and Twisting Moment • 6.10 IS 1343:2012 Design Recommendations for Combined Bending, Shear and Torsion • 6.11 Steps for Design for Torsion as per Modified Truss Analogy Method • 6.12 Design of Reinforcements for Torsion as per British Code (BS: 8110) • 7 Indeterminate Prestressed Concrete Structural Elements • 7.1 Introduction • 7.2 Disadvantages of Indeterminate Prestressed Concrete Structures • 7.3 Layouts of Tendons for Continuous Beams • 7.4 Elastic Theory for Analysis of Continuous Prestressed Concrete Elements • 7.5 Linear Transformation and Concordance of Tendons • 7.6 Procedure to Obtain a Concordant Tendon Profile • 7.7 Cable Location with its Limiting Zone • 7.8 Ultimate Load Analysis and Behavior of Continuous Prestressed Concrete Beam • 7.9 Practical Cable Profile • 8 Deflection, Camber, and Crack Control of Prestressed Concrete Members • 8.1 Introduction • 8.2 Factors affecting Deflections or Camber • 8.3 Basic Assumptions in Deflection Calculation • 8.4 Short-Term Deflection of Uncracked Members • 8.5 Long-Term Deflection of Uncracked Members • 8.6 Short-Term Deflection of Cracked Members • 8.7 Long-Term Deflection and Camber • 8.8 Serviceability Limit States of Deflection • 8.9 Crack Width in Prestressed Beams • 8.10 Limit State of Serviceability for Cracking (IS 1343:2012) • 8.11 Limit State of Serviceability for Deflection • 9 Design of Prestressed Concrete Sections • 9.1 Introduction • 9.2 Minimum Required Section Modulus • 9.3 Proper Selection of Beam Sections and Properties • 9.4 Trial and Error Approach for Design of Section under Service Load Condition • 9.5 Elastic Design of Composite Sections • 9.6 Design of Section Based on Ultimate Strength • 9.7 Comparison of Ultimate and Elastic Design Approaches • 9.8 A Note on Prestressing in Stages and Arrangement of Steel Tendons • 10 Design of Transfer and Anchorage Zones • 10.1 Introduction • 10.2 Transfer of Prestressing Force in Pre-Tensioned Members • 10.3 Transfer of Prestressing Force in Post-Tensioned Members • 11 Design of Prestressed Concrete Flexural Members • 11.1 Introduction • 11.2 Guidelines for Fixing the Preliminary Dimensions of Flexural Members • 11.3 Evaluation of the Self-Weight of the Members • 11.4 Partial Safety Factors for Loads • 11.5 Partial Safety Factors for Material • 11.6 Design Examples for Prestressed Concrete Members • 11.7 Design of Prestressed Concrete Members using Trial and Error Approach Based Section Design • 11.8 Example on Elastic Design of Composite Sections • 11.9 Example on Prestressing of Concrete Members in Stages • 11.10 Example on Design of Continuous Beams • 11.11 Analysis and Design of Continuous Beam using Load Balancing Concepts • 12 Design of Prestressed Slabs • 12.1 Introduction • 12.2 Design of Prestressed Concrete One-Way Slab • 12.3 Two-Dimensional Load Balancing • 12.4 Shear Force in Slab Supported on Edges • 12.5 Distribution of Prestressing Tendons in Prestressed Concrete Flat Slabs •



12.6 Equivalent Frame Method • 12.7 Notes on Minimum Bonded Reinforcements as per ACI Code • 12.8 Deflection of Flat Plate Panels • 13 Design of Tension Members and Circumferential Prestressing • 13.1 Introduction • 13.2 Deformation Behavior • 13.3 Decompression and Cracking • 13.4 Ultimate Tensile Strength and Safety Factors • 13.5 Procedure for Design of Tension Members • 13.6 IS 1343 Recommendations • 13.7 Circumferential Prestressing • 13.8 Vertical Prestressing in Tanks • 13.9 Crack Controls in Walls of Circular Prestressed Concrete Tanks • 13.10 Design of Shell Roof Dome of Tank • 13.11 Design of Prestressed Ring Beams • 14 Design of Compression Members • 14.1 Introduction • 14.2 Analysis of Prestressed Compression Members • 14.3 Analysis of Columns under Eccentric Load • 14.4 Ultimate Failure Load of Short Columns under Combined Axial Compression and Moment • 14.5 Analysis and Design of Prestressed Concrete Slender Columns • 14.6 Procedure for the Design of Slender or Long Columns • 14.7 Analysis and Design of Compression Members in Bi-Axial Bending • 14.8 Design of Prestressed Concrete Piles • Review Questions • Practice Problems • Appendix A: Geometrical Properties of Standard Sections • Appendix B: Properties of Steel Strands, Wires, and Bars • Appendix C: Short Questions and Answers • Bibliography • Index

9789354644153 | ₹ 1129



Groundwater Hydrology, 3ed, An Indian Adaptation (Exclusively distributed by CBS Publishers & Distributors) | IM | e

Todd

About the Author

David Keith Todd, worldwide authority on groundwater, retired from the University of California and became professor emeritus on December 30, 1980. Dr. Todd's work appeared in 123 articles, books, papers, reports, and other publications. His book Groundwater

Hydrology was published in 1959, the second edition in 1980. It has been used in more than 50 US universities, and translated into Spanish, Portuguese, Turkish, Persian, Hindi, and Malaysian.

Table of Contents

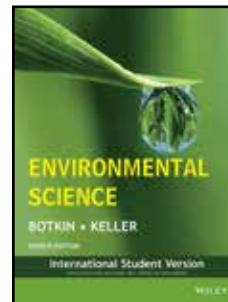
- 1. Introduction • 1.1 Scope • 1.2 Historical Background • 1.3 Trends in Water Withdrawals and Use • 1.4 Utilization of Groundwater • 1.5 Groundwater in the Hydrologic Cycle • 1.6 Hydrologic Budget Case Study—Lake Five-O, Florida • 1.7 Publication Sources • 1.8 Data Sources • 2. Occurrence Of Groundwater • 2.1 Origin and Age of Groundwater • 2.2 Rock Properties Affecting Groundwater • 2.3 Vertical Distribution of Groundwater • 2.4 Zone of Aeration • 2.5 Zone of Saturation • 2.6 Geologic Formations as Aquifers • 2.7 Types of Aquifers • 2.8 Storage Coefficient • 2.9 Groundwater Basins/Regional Groundwater Flow Systems • 2.10 Springs • 3. Groundwater Movement • 3.1 Darcy's Law • 3.2 Permeability • 3.3 Determination of Hydraulic Conductivity • 3.4 Anisotropic Aquifers • 3.5 Groundwater Flow Rates • 3.6 Groundwater Flow Directions • 3.7 General Flow Equations • 3.8 Unsaturated Flow • 3.9 Kinematic Wave • 3.10 Infiltration: The Green-Ampt Method • 3.11 Double Ring Infiltrometer • 4. Groundwater And Well Hydraulics • 4.1 Steady Unidirectional Flow • 4.2 Steady Radial Flow to a Well • 4.3 Well in a Uniform Flow • 4.4 Unsteady Radial Flow in a Confined Aquifer • 4.5 Unsteady Radial Flow in an Unconfined Aquifer • 4.6 Unsteady Radial Flow in a Leaky Aquifer • 4.7 Well Flow Near Aquifer Boundaries • 4.8 Multiple Well Systems • 4.9 Partially Penetrating Wells • 4.10 Well Flow for Special Conditions
- 5. Water Wells • 5.1 Test Holes and Well Logs • 5.2 Methods for Constructing Shallow Wells • 5.3 Methods for Drilling Deep Wells • 5.4 Well Completion • 5.5 Well Development • 5.6 Testing Wells for Yield • 5.7 Pumping Equipment • 5.8 Protection of Wells • 5.9 Well Rehabilitation • 5.10 Horizontal Wells • 5.11 Characteristic Well Losses • 5.12 Specific Capacity and Well Efficiency • 5.13 Slug Tests • 6. Groundwater Levels And Environmental Influences • 6.1 Time Variations of Levels • 6.2 Streamflow and Groundwater Levels • 6.3 Fluctuations Due to Evapotranspiration • 6.4 Fluctuations Due to Meteorological Phenomena • 6.5 Fluctuations Due to Tides • 6.6 Urbanization
- 6.7 Earthquakes • 6.8 External Loads • 6.9 Effects of Global Climate Change On Groundwater • 7. Quality Of Groundwater • 7.1 Natural Groundwater Quality • 7.2 Sources of Salinity • 7.3 Measures of Water Quality • 7.4 Chemical Analysis • 7.5

Graphical Representations • 7.6 Physical Analysis • 7.7 Biological Analysis • 7.8 Groundwater Samples • 7.9 Water-Quality Criteria • 7.10 Changes in Chemical Composition • 7.11 Dissolved Gases • 7.12 Temperature • 7.13 Saline Groundwater • 7.14 Monitoring Groundwater Quality • 7.15 Solute Transport in Saturated Porous Media • 7.16 Dispersion • 7.17 Advection–Dispersion Equation for Solute Transport in Saturated Porous Media • 7.18 Groundwater Tracers • 8. Pollution Of Groundwater • 8.1 Pollution in Relation to Water Use • 8.2 Municipal Sources and Causes and Causes • 8.4 Agricultural Sources and Causes • 8.5 Miscellaneous Sources and Causes • 8.6 Attenuation of Pollution • 8.7 Distribution of Pollution Underground • 8.8 Remediation of Contaminated Groundwater • 8.9 Conventional Pump-and-Treatment Systems • 9. Groundwater Flow Modeling Techniques • 9.1 Why Develop Groundwater Models? • 9.2 Types of Groundwater Models • 9.3 Steps in the Development of a Groundwater Model • 9.4 Simulation of Two-Dimensional Groundwater Systems • 9.5 Three-Dimensional Groundwater Flow Model • 9.6 Tools for Numerical Groundwater Modeling • 9.7 Case Study—Using MODFLOW: Lake Five-O, Florida • 9.8 Example Applications and Input of MODFLOW • 9.9 Groundwater Modeling Software Support • 10. Management Of Groundwater • 10.1 Concepts of Basin Management • 10.2 Groundwater Basin Investigations and Data Collection • 10.3 Yield • 10.4 Conjunctive Use and Watershed Management • 10.5 Groundwater Management: Water Laws and Policies • 10.6 Groundwater Management: Initiatives in India • 10.7 Groundwater Management Using Models • 11. Surface Investigations Of Groundwater • 11.1 Geologic Methods • 11.2 Remote Sensing • 11.3 Geophysical Exploration • 11.4 Electrical Resistivity Method • 11.5 Seismic Refraction Method • 11.6 Gravity and Magnetic Methods • 12. Subsurface Investigations Of Groundwater • 12.1 Test Drilling • 12.2 Water-Level Measurement • 12.3 Geophysical Logging • 12.4 Resistivity Logging • 12.5 Spontaneous Potential Logging • 12.6 Radiation Logging • 12.7 Temperature Logging • 12.8 Caliper Logging • 12.9 Fluid-Conductivity Logging • 12.10 Fluid-Velocity Logging • 12.11 Miscellaneous Logging Techniques • 12.12 Other Subsurface Methods • 12.13 Case Study • 13. Artificial Recharge Of Groundwater • 13.1 Concept of Artificial Recharge • 13.2 Recharge Methods • 13.3 Wastewater Recharge For Reuse • 13.4 Soil Aquifer Treatment (SAT) Systems • 13.5 Innovative Approaches • 13.6 Induced Recharge • 14. Saline Water Intrusion In Aquifers • 14.1 Occurrence of Saline-Water Intrusion • 14.2 Ghyben–Herzberg Relation Between Fresh and Saline Waters • 14.3 Shape of the Fresh–Saltwater Interface • 14.4 Structure of the Fresh–Saltwater Interface • 14.5 Effect of Wells on Seawater Intrusion • 14.6 Upconing of Saline Water • 14.7 Fresh–Saltwater Relations on Oceanic Islands • 14.8 Seawater Intrusion in Karst Terrains • 14.9 Control of Saline-Water Intrusion • 14.10 Examples of Seawater Intrusion • Problems • References • Multiple Choice Questions • Appendix A: Metric Units and English Equivalents • Appendix B: List of Websites and Nongovernmental Organizations • Appendix C: Modflow Input and Output Data for Examples in Chapter 9 • Index

Supplements

9788194726333

ENVIRONMENTAL / EARTH SCIENCE & ENGINEERING SCIENCES



Environmental Science, 8ed, ISV | e

Botkin

About the Author

Daniel B. Botkin is President of The Center for the Study of Environment and Professor Emeritus of Ecology, Evolution and Marine Biology, University of California, Santa Barbara. For more than three decades, Professor Botkin has been active in the application of ecological science to environmental management. He is the winner of the Mitchell International Prize for Sustainable Development and the Fennow Prize for International Forestry, and he has been elected to the California Environmental hall of Fame.

Table of Contents

- Key Themes in Environmental Science. • Science as A Way of Knowing • The Big Picture: Systems of Change • The Human Population and The Environment • Ecosystems • The Biogeochemical Cycle • Dollars and Environmental Sense • Biological Diversity and

Biological Invasions • Ecological Restoration • Environmental Heath, Pollution, and Toxicology • Agriculture, Aquaculture, and The Environment • Landscapes: Forests, Parks, and Wilderness • Wildlife, Fisheries, and Endangered Species • Energy: Some Basics • Fossil Fuels and The Environment • Alternative Energy and The Environment • Nuclear Energy and The Environment • Water Supply, Use, and Management • Water Pollution and Treatment • The Atmosphere, Climate, and Global Warming • Air Pollution • Urban Environments • Materials Management • Our Environmental Future.

9788126534142 | ₹ 1259



Quality Control | e | k

Kulkarni

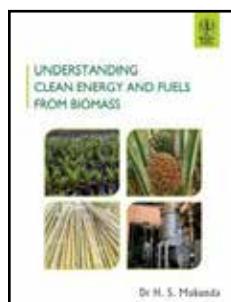
About the Author

Vinay A. Kulkarni is a lecturer, and teaches at the Department of Production Engineering, D.Y. Patil College of Engineering, Pune. He was awarded a gold medal for completing his M.Tech. in Production Engineering (with specialization in Production Management). Besides publishing several technical research papers in national and international journals, he has presented at several national and international conferences. He is a member of various professional bodies and has worked as a resource person at Indian Institute of Production Engineers, Pune.

Table of Contents

- Quality Concepts • Quality Milestones • Juran's Trilogy • Cost of Quality and Value of Quality • Total Quality Management • Statistical Quality Control and Acceptance Sampling • Taguchi's Quality Engineering • Six Sigma • Reliability, Availability and Maintainability • Quality Culture: A Global Paradigm Shift

9788126519071 | ₹ 859



Understanding Clean Energy and Fuels from Biomass | e | k

Mukunda

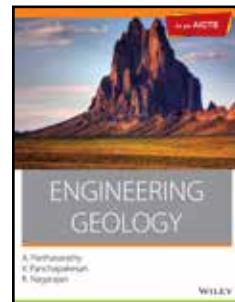
About the Author

Professor H. S. Mukunda is recognized as one of the foremost combustion scientists in India. His work spans combustion processes in aerospace and industrial fields. With the same rigor, he has researched thermo-chemical conversion processes of solid fuels like biomass and wastes. Research and development efforts led to technologies on gasification of biomass; these have been implemented and systems are being built in service of industry and society. He has taught and researched at IISc for over 35 years, published extensively and spoken at numerous national and international conferences. He is recognized by many distinctions and awards. This work follows two earlier books: "Understanding combustion" that is currently in its second edition, and "Understanding Aerospace Chemical Propulsion".

Table of Contents

- Introduction • Summary • Questions • Bibliography • What Biomass? Production, Magnitude and Location • Summary • Questions • Bibliography • Routes for Conversion of Biowastes • Summary • Questions • Bibliography • Chapter 4: Principles of Combustion • Summary • Questions • Bibliography • Biomethanation or Anaerobic Digestion • Summary • Questions • Bibliography • Gasification • Summary • Questions • Bibliography • Power from Producer Gas • Summary • Questions • Bibliography • Gasifier Stoves • Summary • Questions • Bibliography • Torrefaction and Pyrolytic Oils • Summary • Questions • Bibliography • Biorefinery • Summary • Questions • Bibliography • Urban Solid Waste • Summary • Questions • Bibliography • Other Technologies • Summary • Questions • Bibliography • Historical Notes • Index

9788126529698 | ₹ 1009



Engineering Geology: As per AICTE | e

Parthasarathy

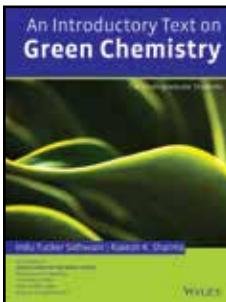
About the Author

Prof. A. Parthasarathy graduated from the Presidency College, University of Madras in 1945 and joined the faculty. He joined the faculty of the Indian Institute of Technology, Bombay, in 1959 where he worked till his retirement in 1985.

Table of Contents

- Foreword • Preface • About the Authors • Acknowledgements • I Basic Geosciences • 1. Geological Concepts and Data • 1.1 Introduction • 1.2 Solar System • 1.3 Earth and Its Origin • 2 Geological Processes on the Earth's Surface • 2.1 Introduction • 2.2 Weathering and Soil Formation • 2.3 Geological Work of Wind • 2.4 Geological Work of Running Water • 2.5 Glaciers • 2.6 Oceans and Seas • 3 Materials of the Earth's Crust • 3.1 Introduction • 3.2 Mineralogy • 3.3 X-Ray Methods of Mineral Identification • 3.4 Select Rock-Forming Minerals • 3.5 Petrology • 4 Disposition of Rocks • 4.1 Introduction • 4.2 Forms of Intrusive Rocks • 4.3 Planar and Linear Features • 4.4 Geological Structures • 4.5 Geological Maps • II Engineering Geology and Allied Fields • 5 Geomorphology and Hydrogeology • 5.1 Introduction • 5.2 Geomorphology • 5.3 Hydrogeology • 5.4 Geothermal Springs • 6 Natural Hazards and Environment • 6.1 Introduction • 6.2 Natural Hazards • 6.3 Environmental Hazards • 7 Clay Mineralogy • 7.1 Introduction • 7.2 Classification of Clay Minerals • 7.3 Clay Mineral Groups • 7.4 Crystal Structure of Clay Minerals • 7.5 Clay Mineral Properties • 7.6 Thermal Methods • 7.7 Base Exchange Capacity • 7.8 Industrial Applications • 7.9 Origin of Clay • 7.10 Clay Mineral Equilibria • 8 Remote Sensing and Geographic Information System • 8.1 Introduction • 8.2 Aerial Photographs • 8.3 Orbital Satellites • 8.4 Spectral Reflectance • 8.5 Visual Interpretation of Satellite Image • 8.6 Airborne Survey • 8.7 Geographical Information System • 8.8 Applications • 9 Quarrying, Excavation and Drilling • 9.1 Introduction • 9.2 Surface Investigations • 9.3 Sub-Surface Investigations • 10 Geophysical Methods • 10.1 Introduction • 10.2 Resistivity Methods • 10.3 Seismic Methods • 11 Geotechnical Aspects of Soils • 11.1 Introduction • 11.2 Soil Investigations • 11.3 Soil Engineering Properties • 11.4 Soil Classification • III Rock Properties, Behaviour and Applications • 12 Geo-Engineering • 12.1 Introduction • 12.2 Stress and Strain in Rocks • 12.3 Intact and In Situ Rocks • 12.4 Evaluation for Suitability of Site • 12.5 Weathering • 12.6 Physical and Engineering Properties • 12.7 Discontinuities, Joints and Bedding • 13 Engineering Rock Classifications • 13.1 Introduction • 13.2 Intact Rock Classifications • 13.3 Rock Mass Classifications • 13.4 Significance of Q-System and RMR Studies • 14 Engineering Behaviour of Rocks • 14.1 Introduction • 14.2 Hard Rocks • 14.3 Soft Rocks • 14.4 Engineering Properties of Select Rocks • 15 Dams and Reservoirs • 15.1 Introduction • 15.2 Dam Site Investigations and Data Acquisition • 15.3 Types of Dams • 15.4 Properties of Rocks and Soils of Dam Sites • 15.5 Major Criteria for the Selection of Dam Sites • 15.6 Failure Risks and Remedial Measures • 16 Tunnels and Underground Openings • 16.1 Introduction • 16.2 Terminology and Prime Requirements for Tunnelling • 16.3 Geological and Structural Guidelines • 16.4 Tunnelling and Strata Disposition • 16.5 Arching and Lining of Tunnels • 16.6 Rock Loads and Support System • 16.7 Rock Classification – Application to Tunnelling • 16.8 An Integrated Approach – Tunnel Geology and Engineering Rock Classification • 17 Landslides • 17.1 Introduction • 17.2 Landslide – Definition and Characteristics • 17.3 Lithology, Structure and Stratigraphy • 17.4 Classification of Slides • 17.5 Failure and Slide Type • 17.6 Causes of Failure • 17.7 Slope Stability • 17.8 General Observations • 17.9 Case Studies • 18 Rocks in Construction • 18.1 Introduction • 18.2 Building Stones • 18.3 Aggregates • 18.4 Foundations • 18.5 Grouting • 19 Case Studies • 19.1 Dams and Reservoirs • 19.2 Tunnels • IV State-Wise Indian Geological Set-Up • 20 Geology of India • 20.1 Introduction • 20.2 Physiography of India • 20.3 Indian Stratigraphy • Summary • Objective-Type Questions • Review Questions • Answers • Conversion Table • References • Bibliography • List of Permissions • Index

9788126509461 | ₹ 959



An Introductory Text on Green Chemistry : For Undergraduate Students | e | k

Sidhwani

About the Author

Dr. Indu Tucker Sidhwani retired as an Associate Professor in April 2017 from the Department of Chemistry, Gargi College, University of Delhi after a teaching career spanning 43 years. Dr. Sidhwani is involved in the "greening" of Chemistry education and improving existing experiments while also designing

new green chemistry experiments for undergraduate and postgraduate students. She regularly conducts workshops for students as well as teachers of various schools, colleges and universities.

Table of Contents

- Chapter 1 Introduction to Green Chemistry • 1.1 History Prior to Emergence of Green Chemistry • 1.2 Chemical Industries and Pollutants • 1.3 Environmental Movements for Public Awareness • 1.4 Environmental Laws • 1.5 What is Green Chemistry? • 1.6 Green Chemistry Advances Towards a Sustainable Future • 1.7 Conclusion • • Chapter 2 Twelve Principles of Green Chemistry • 2.1 Introduction • 2.2 Principle 1: Prevention of Waste • 2.3 Principle 2: Atom Economy • 2.4 Principle 3: Designing Less Hazardous Chemical Synthesis • 2.5 Principle 4: Designing Safer Products • 2.6 Principle 5: Safer Solvents and Auxiliaries • 2.7 Principle 6: Design for Energy Efficiency • 2.8 Principle 7: Renewable Resources • 2.9 Principle 8: Reduce Derivative • 2.10 Principle 9: Use of Selective Catalyst • 2.11 Principle 10: Design for Degradation • 2.12 Principle 11: You Cannot Control What You Cannot Measure • 2.13 Principle 12: Inherently Safer Chemistry for Accident Prevention • 2.14 Conclusions • • Chapter 3 Emerging Green Solvents • 3.1 Introduction • 3.2 Defining Green Solvents • 3.3 Different Types of Green Solvents and their Role in Diverse Organic Transformations • 3.4 Switchable Solvent System • 3.5 Conclusion • • Chapter 4 Green Chemistry and Catalysis • 4.1 Introduction • 4.2 Examples of Heterogeneous Catalyst for Better Environment • 4.3 Nanocatalyst as Green Solution • 4.4 Chlorine Removal from Wastewater • 4.5 Emerging Trends in Green Catalysis • 4.6 Endangered Elements of the Periodic Table • 4.7 Conclusion • • Chapter 5 Alternative Green Energy Sources and Sustainability • 5.1 Introduction • 5.2 Microwave Chemistry • 5.3 Sonochemistry • 5.4 Light-Induced Photochemical Reactions • 5.5 Green Energy and Sustainability • 5.6 Conclusion • • Chapter 6 Some Important Green Syntheses • 6.1 Introduction • 6.2 Synthesis of Various Compounds of Importance • 6.3 Microwave-Assisted Reactions in Water • 6.4 Microwave-Assisted Reactions in Organic Solvents • 6.5 Microwave-Assisted Solvent-Free Reaction • 6.6 Sonochemical Reactions • 6.7 Conclusions • • Chapter 7 Green Methodology in Pharmaceutical Industry • 7.1 Introduction • 7.2 Emergence of Green Pharmaceutical Industry • 7.3 Some Problems Faced by Pharmaceutical Industry • 7.4 Green Chemistry Solutions to Pharmaceutical Industry • 7.5 Green Metrics Used in the Pharmaceutical Industry • 7.6 Greening of Pharmaceutical Industry • 7.7 Conclusion • • Chapter 8 Real-World Cases in Green Chemistry • 8.1 Introduction • 8.2 Green Chemistry Challenge Awards 2019 • 8.3 Designing Greener Chemicals Award 2018: • 8.4 Academic Award 2017: • 8.5 Greener Reaction Conditions Award 2016: • 8.6 Designing Greener Chemicals Award 1996: Did you know? • 8.7 Academic Award 1997: Did you know? • 8.8 Greener Reaction Conditions Award 2002: Did you know? • 8.9 Designing Green Chemicals Award 2003: Did you know? • 8.10 Designing Greener Chemicals Award 2004: Did you know? • 8.11 Greener Synthetic Pathways Award 2005: Did you know? • 8.12 Conclusions • • Chapter 9 Some Future Trends in Green Chemistry • 9.1 Introduction • 9.2 Oxidation Reagents and Catalysts • 9.3 Biomimetic Chemistry: Multifunctional Reagent • 9.4 Combinatorial Green Chemistry • 9.5 Proliferation of Solvent-less Reactions • 9.6 Non-Covalent Derivatization • 9.7 Conclusion • • Chapter 10 Green Chemistry in Education (To Meet the Challenges of Sustainable Development) • 10.1 Chemistry Practices in India • 10.2 Incorporation of Green Chemistry in the Curriculum • 10.3 Green Chemistry Network Centre • 10.4 Status of GC at Undergraduate Level in India • 10.5 Major Websites and Journals of GC • 10.6 GC in the Curriculum: Learning Benefits • 10.7 Career Prospects • 10.8 Conclusion • Did you know? • Questions • References

9788126554072 | ₹ 529

ENGINEERING SPECIAL TOPICS

Social Network Analysis | e | k

Chakraborty

About the Author

Dr Tanmoy Chakraborty is an Assistant Professor and a Ramanujan Fellow at the Department of CSE, IIIT Delhi, India. Prior to this, he was a postdoctoral researcher at University of Maryland, College Park, USA. He completed his PhD in 2015 as a Google PhD scholar from IIT Kharagpur, India. He leads a research group, Laboratory for Computational Social Systems (LCS2) that broadly works in the areas of social network analysis and Natural Language Processing with a major focus on designing data-driven solutions for cyber informatics. He is a recipient of several prestigious awards including faculty awards/fellowships from Google, Accenture, and LinkedIn.

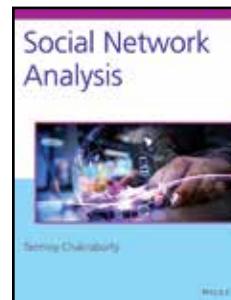
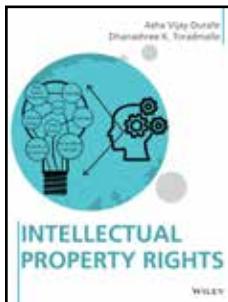


Table of Contents

- Endorsements • Foreword • Preface • Acknowledgements • 1 Networks and Society • 1.1 What is Social Network Analysis? • 1.2 Why do We Study Social Networks? • 1.3 Applications of Social Network Analysis • 1.4 Preliminaries • 1.5 Three Levels of Social Network Analysis • 1.6 Historical Development • 1.7 Graph Visualisation Tools • 1.8 Chapter Summary • 2 Network Measures • 2.1 Network Basics • 2.2 Node Centrality • 2.3 Assortativity • 2.4 Transitivity and Reciprocity • 2.5 Similarity • 2.6 Degeneracy • 2.7 Chapter Summary • 3 Network Growth Models • 3.1 Properties of Real-World Networks • 3.2 Random Network Model • 3.3 Ring Lattice Network Model • 3.4 Watts-Strogatz Model • 3.5 Preferential Attachment Model • 3.6 Price's Model • 3.7 Local-world Network Growth Model • 3.8 Network Model with Accelerating Growth • 3.9 Aging in Preferential Attachment • 3.10 Chapter Summary • 4 Link Analysis • 4.1 Applications of Link Analysis • 4.2 Signed Networks • 4.3 Strong and Weak Ties • 4.4 Link Analysis Algorithms • 4.5 PageRank • 4.6 Personalised PageRank • 4.7 DivRank • 4.8 SimRank • 4.9 PathSIM • 4.10 Chapter Summary • 5 Community Structure in Networks • 5.1 Applications of Community Detection • 5.2 Types of Communities • 5.3 Community Detection Methods • 5.4 Disjoint Community Detection • 5.5 Overlapping Community Detection • 5.6 Local Community Detection • 5.7 Community Detection vs Community Search • 5.8 Evaluation of Community Detection Methods • 5.9 Chapter Summary • 6 Link Prediction • 6.1 Applications of Link Prediction • 6.2 Temporal Changes in a Network • 6.3 Problem Definition • 6.4 Evaluating Link Prediction Methods • 6.5 Heuristic Models • 6.6 Probabilistic Models • 6.7 Supervised Random Walk • 6.8 Information-theoretic Model • 6.9 Latest Trends in Link Prediction • 6.10 Chapter Summary • 7 Cascade Behaviours and Network Effects • 7.1 Preliminaries and Important Terminologies • 7.2 Cascade Models • 7.3 Case Study – The "Indignados" Movement • 7.4 Probabilistic Cascades • 7.5 Epidemic Models • 7.6 Independent Cascade Models • 7.7 Cascade Prediction • 7.8 Chapter Summary • 8 Anomaly Detection in Networks • 8.1 Outliers versus Network-based Anomalies • 8.2 Challenges • 8.3 Anomaly Detection in Static Networks • 8.4 Anomaly Detection in Dynamic Networks • 8.5 Chapter Summary • 9 Graph Representation Learning • 9.1 Machine Learning Pipelines • 9.2 Intuition behind Representation Learning • 9.3 Benefits of Representation Learning • 9.4 Criterion for Graph Representation Learning • 9.5 Graph Representation Learning Pipeline • 9.6 Representation Learning Methods • 9.7 Chapter Summary • 10 Applications and Case Studies • 10.1 Malicious Activities on OSNs • 10.2 Sockpuppets in OSNs • 10.3 Collusion on Online Social Networks • 10.4 Modelling the Spread of COVID-19 • 10.5 Recommender Systems • 10.6 Chapter Summary • Index

9789354247835 | ₹ 1009



Intellectual Property Rights | e | k

Durafe

About the Author

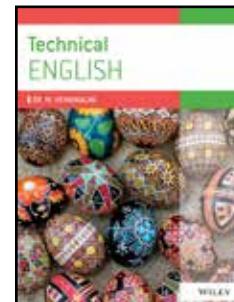
Asha Vijay Durafe is an Assistant Professor in the Electronics and Computer Science Department of Shah & Anchor Kutchhi Engineering College, Chembur, Mumbai, India. Having 15+ years of experience in the field of education, she likes to explore in the areas of Intellectual Property Rights, Communication Networks and Cyber Security, Chaotic Encryption, Image Processing, Analog and Digital Communication and

Power Electronics.

Table of Contents

- Chapter 1 Components of IPR and Their Importance • 1.1 Introduction • 1.2 Concept and Meaning of IPR • 1.3 General Principles of IPR • 1.4 Need for Intellectual Property • 1.5 Different Categories of IPR Instruments • 1.6 Importance of IPR in Modern Economic Environment • • Chapter 2 Enforcement of Intellectual Property Rights • 2.1 Introduction • 2.2 Factors that Create and Sustain Counterfeiting/Piracy • 2.3 International Agreements/International Conventions, Treaties: WIPO • 2.4 International Treaties on IPR • 2.5 International Treaties on Patent • 2.6 International Treaties on Trademark • 2.7 International Treaties on Copyright and Related Rights • 2.8 International Treaties on Industrial Design and Integrated Circuit • 2.9 International Law Relating to Cybercrimes • 2.10 International Organizations Active in IPR Enforcement • 2.11 Introduction to Indian Scenario of IPR • 2.12 The Origins of IP • 2.13 Overview of IP Laws in India • 2.14 Indian IPR Administrative Machinery • 2.15 Major International Treaties Signed by India • 2.16 Enforcement of IPR at National Level • • Chapter 3 Emerging Issues in Intellectual Property Rights • 3.1 Introduction • 3.2 Challenges for IP in Digital Economy • 3.3 Challenges for IP in E-Commerce • 3.4 Challenges for IP in Human Genome • 3.5 Challenges for IP in Biodiversity and Traditional Knowledge • 3.6 The Impact of the Internet on IPR • 3.7 Abuse of IP • • Chapter 4 Basics of Patents • 4.1 Introduction • 4.2 Definition of Patents • 4.3 Scope of Patent Law • 4.4 Historical overview of the Patents Law in India • 4.5 Conditions of Patentability • 4.6 Patentable and Non-Patentable Inventions • 4.7 Types of Patent Applications • 4.8 Process Patent and Product Patent • 4.9 Precautions while Patenting • 4.10 Types of Patent Specification • 4.11 Disclosures and Non-Disclosures • 4.12 Some Grounds for Opposition • 4.13 The Notion of 'Abuse' of Patent Rights • • Chapter 5 Patent Filing and Patent Search • 5.1 Introduction • 5.2 Procedure for Filing a Patent • 5.3 The Indian Patent Act, 1970 • 5.4 Patent Drafting and Its Components • 5.5 Procedure of Granting Patents • 5.6 Rights and Liabilities of Patentees • 5.7 Restoration of Lapsed Patents • 5.8 Surrender and Revocation of Patents • 5.9 Patent Infringement: Remedies • 5.10 Patent Litigation • 5.11 Patent Publication, Time Frame and Cost • 5.12 Patent Licensing • 5.13 Patent Databases and Patent Search with Important Websites • 5.14 Searching International Databases • • Chapter 6 Copyright • 6.1 Introduction • 6.2 Copyright: An Overview • 6.3 Indian Copyright Act, 1957 • 6.4 Process of Filing a Copyright • 6.5 Assignment and License • 6.6 Infringement • 6.7 Related or Neighbouring Rights • 6.8 Copyright and Digital Media • • Chapter 7 Geographical Indications of Goods (Registration and Protection) Act, 1999 • 7.1 Introduction • 7.2 Historical Background of Law of GI's of India • 7.3 Meaning/Definition of GI's and GI's Act • 7.4 Duration of Protection: Penalties and Remedies • 7.5 Distinction between GI's and Trademarks • • Chapter 8 Protection of Plant Varieties and Farmers' Rights Act, 2001: An Overview • 8.1 Introduction • 8.2 Plant Varieties and Farmers' Rights: Meaning and Definition • 8.3 Registrable Varieties of Plants • 8.4 Procedure for Registration • 8.5 Plant Varieties Protection • • Chapter 9 Trademark • 9.1 Introduction • 9.2 Definition of Trademark • 9.3 Trademark Act in India • 9.4 Trademark Offences and Penalties • 9.5 Use of TM on Goods/Services and Advertisements • 9.6 Protecting Domain Name as Trademarks • 9.7 Trademark for Services • 9.8 Registration of Trademark for Goods/Services • 9.9 Refusal of Trademark Registration and Passing Off: Absolute and Relative Grounds • 9.10 Infringement and Exceptions to Infringement Action • • Chapter 10 Industrial Design: The Designs Act, 2000 • 10.1 Introduction • 10.2 Introduction to Designs Law • 10.3 Definitions, Registration of Designs and Procedure • 10.4 Cancellation of Registration of Design • 10.5 Piracy of Registered Design and Remedies • 10.6 Semiconductor Integrated Circuits Layout Design • 10.7 Overlapping between Designs, Copyrights and Trademark • • Index

9789390395910 | ₹ 499



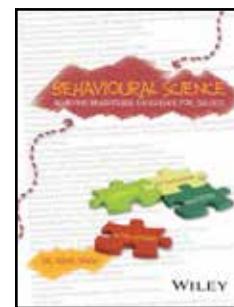
Technical English, (As per syllabus of Anna University), w/cd | k

Hemamalini

Table of Contents

- Vocabulary • Grammar • Writing • Reading • The e-English Listening • Speaking • Modules 1 & 2: Ear Training • Module 3: Conversations • Module 4: Process Description • Module 5: Event Description • Module 6: Academic Discussions • Module 7: Debates • Module 8: Classroom Interaction • Module 9: News Analysis

9788126549115 | ₹ 669



Behavioural Science: Achieving Behavioural Excellence for Success | e | k

Singh

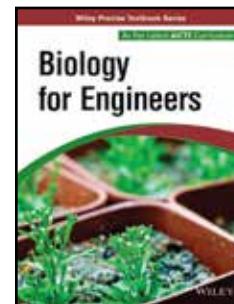
About the Author

Prof. (Dr.) Abha Singh is Director, Amity Institute of Psychology and Allied Sciences, Amity University, Noida (U.P.), India and Acting Head of Amity Institute of Behavioural Health & Allied Sciences, Amity University, Noida (U.P.). Dr. Singh is also Professor of Psychology and Behavioural Science at Amity University, Noida.

Table of Contents

- Understanding Self and Personality • Self-Esteem • Psychology of Attitude • Emotional Intelligence and Competence • Communication Beyond Words • Effective Listening • Behavioural Adjustments and Positive Outcome • Stress Management and Prevention • Coping Styles or Strategies • Summary • Check Your Progress • Review Questions • References • Further Readings • Answers

9788126538027 | ₹ 669



Biology for Engineers: As per Latest AICTE Curriculum | BS | e | k

Wiley Editorial Team

Table of Contents

- Chapter 1 Introduction • 1.1 Science and Engineering • 1.2 Biology • 1.3 Applications of Biology • 1.4 Biological Classification • 1.5 Kingdom Monera • 1.6 Kingdom Protista • 1.7 Kingdom Fungi • 1.8 Kingdom Plantae • 1.9 Kingdom Animalia • 1.10 Viruses • Chapter 2 Cell: The Basic Unit of Life • 2.1 What is a Cell? • 2.2 Basic Properties of Cells • 2.3 An Overview of Cell • 2.4 Prokaryotic Cells • 2.5 Eukaryotic Cells • 2.6 Cell Cycle and Cell Division • 2.7 M Phase • 2.8 Meiosis • 2.9 Cell Differentiation • • Chapter 3 Biochemistry and Molecular Analysis • 3.1 Chemical Composition of Living Forms • 3.2 Analysis of Chemical Composition • 3.3 Carbohydrates • 3.4 Amino acids and Proteins • 3.5 Nucleic Acids • 3.6 Lipids • 3.7 Nature of Bonding and Qualitative Tests • • Chapter 4 Enzymes • 4.1 Enzymes • 4.2 Classification and Nomenclature of Enzymes • 4.3 Co-Factors • 4.4 Importance of Enzymes • • Chapter 5 Introduction to Metabolism • 5.1 Metabolism and Its Concepts • 5.2 Metabolic Basis for Living—Anabolic and Catabolic Pathways • 5.3 Concept of Non-Equilibrium and Steady State • 5.4 Photosynthesis • 5.5 Photorespiration (C2 Cycle) • 5.6 C4 Pathways • 5.7 CAM Cycle (In Succulent Plant) • 5.8 Factors Affecting Photosynthesis • 5.9 Respiration • 5.10 Glycolysis • 5.11 Fermentation • 5.12 Aerobic Respiration • 5.13 Summary of Respiratory Processes and Balance Sheet • 5.14 Role of Respiration in Biosynthesis • 5.15 Amphibolic Pathway • 5.16 Respiratory Quotient • • Chapter 6 Genetics • 6.1 Mendelian Law • 6.2 Mendel's Laws of Inheritance • 6.3 Gene Interaction • 6.4 Multiple Alleles • 6.5 Chromosomal Theory of Inheritance • 6.6 Linkage • 6.7 Recombination (Crossing Over) • 6.8 Chromosome Mapping • 6.9 Genetic Disorders

- Chapter 7 Transfer of Genetic Information • 7.1 Nucleic Acid • 7.2 Replication of DNA • 7.3 Types of RNA • 7.4 Central Dogma of Molecular Biology • 7.5 Transcription • 7.6 Genetic Code • 7.7 Translation • 7.8 Regulation of Gene Expression • • Chapter 8 Evolution • 8.1 Origin of Universe • 8.2 Origin of Life • 8.3 Evolution of Life Forms • 8.4 Evidences of Evolution • 8.5 Adaptive Radiation • 8.6 Theories of Evolution • 8.7 Biological Evolution • 8.8 Hardy-Weinberg Principle • 8.9 A Brief Account of Evolution • Chapter 9 Microbiology and Its Industrial Applications • 9.1 Microorganisms • 9.2 Growth Kinetics • 9.3 Culture Media • 9.4 Sterilization • 9.5 Microscopy • 9.6 Applications of Microbiology • 9.7 Immunology and Immunity • 9.8 Cancer Biology • 9.9 Stem Cell • Key Terms • Objective Type Questions • Review Questions • Answers • Glossary

9788126576340 | ₹ 479



Wiley Acing the Interviews | e | k

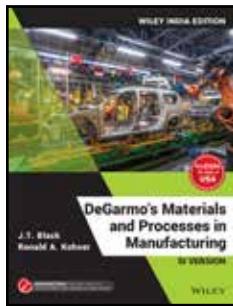
Wiley Editorial Team

Table of Contents

- Section 1: Before The Interview • Chapter 1: The Career Search • Chapter 2: Letter Writing and Drafting Resumes • Chapter 3: The e-English • Chapter 4: Listening Skills and Verbal Communication • Chapter 5: Soft Skills • • Section 2: During The Interview • Chapter 6: Handling Interviews • Chapter 7: Group Discussions • • Section 3: After The Interview • Chapter 8: Follow-Up Communications • Chapter 9: Negotiations • Chapter 10: Understanding Business Communication • Chapter 11: Technical Writing Skills • Chapter 12: Designing and Delivering Online Presentations • Chapter 13: First 30 Days at the Job

9789390395514 | ₹ 519

INDUSTRIAL ENGINEERING



DeGarmo's Materials and Processes in Manufacturing, SI Version, Wiley India Edition | IM | e

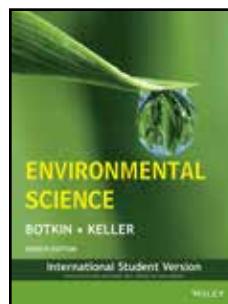
Black

Table of Contents

- Preface • 1 Introduction to DeGarmo's Materials and Processes in Manufacturing • 2 Properties of Materials • 3 Nature of Materials • 4 Equilibrium Phase Diagrams and the Iron-Carbon System • 5 Heat Treatment • 6 Ferrous Metals and Alloys • 7 Nonferrous Metals and Alloys • 8 Nonmetallic Materials: Plastics, Elastomers, Ceramics, and Composites • 9 Material Selection • 10 Fundamentals of Casting • 11 Expendable-Mold Casting Processes • 12 Multiple-Use-Mold Casting Processes • 13 Fabrication of Plastics, Ceramics, and Composites • 14 Fundamentals of Metal Forming • 15 Bulk Forming Processes • 16 Sheet-Forming Processes • 17 Powder Metallurgy (Particulate Processing) • 18 Additive Processes—Including • 19 Fundamentals of Machining/Orthogonal Machining • 20 Cutting Tool Materials • 21 Turning and Boring Processes • 22 Milling • 23 Drilling and Related Hole-Making Processes • 24 Sawing, Broaching, Shaping, and Filing Machining Processes • 25 Abrasive Machining Processes • 26 CNC Processes and Adaptive Control: A(4) and A(5) Levels of Automation • 27 JIG and Fixture Design • 28 Nontraditional Manufacturing Processes • 29 Fundamentals of Joining • 30 Gas Flame and Arc Processes • 31 Resistance and Solid-State Welding Processes • 32 Other Welding Processes, Braze, and Soldering • 33 Adhesive Bonding, Mechanical Fastening, and Joining of Non-Metals • 34 Surface Integrity and Finishing Processes • 35 Nano and Micro-Manufacturing Processes • 36 Measurement and Inspection (online at www.wiley.com/college/black) • 37 Nondestructive Examination (NDE) / Nondestructive Testing (NDT) (online at www.wiley.com/college/black) • 38 Manufacturing Automation and Industrial Robots (online at www.wiley.com/college/black) Advanced Topic 1 • Process Capability and Quality Control (online at www.wiley.com/college/black) Advanced Topic 2 • The Enterprise (Production System) (online at www.wiley.com/college/black) Advanced Topic 3 Lean Engineering (online at www.wiley.com/college/black)

www.wiley.com/college/black) • Advanced Topic 4 • Mixed-Model Final Assembly (online at www.wiley.com/college/black)

9788126572632 | ₹ 1259



Environmental Science, 8ed, ISV | e

Botkin

About the Author

Daniel B. Botkin is President of The Center for the Study of Environment and Professor Emeritus of Ecology, Evolution and Marine Biology, University of California, Santa Barbara. For more than three decades, Professor Botkin has been active in the application of ecological science to environmental management. He is the winner of the Mitchell International Prize for Sustainable Development and the Fennow Prize for International Forestry, and he has been elected to the California Environmental hall of Fame.

Table of Contents

- Key Themes in Environmental Science. • Science as A Way of Knowing • The Big Picture: Systems of Change • The Human Population and The Environment • Ecosystems • The Biogeochemical Cycle • Dollars and Environmental Sense • Biological Diversity and Biological Invasions • Ecological Restoration • Environmental Heath, Pollution, and Toxicology • Agriculture, Aquaculture, and The Environment • Landscapes: Forests, Parks, and Wilderness • Wildlife, Fisheries, and Endangered Species • Energy: Some Basics • Fossil Fuels and The Environment • Alternative Energy and The Environment • Nuclear Energy and The Environment • Water Supply, Use, and Management • Water Pollution and Treatment • The Atmosphere, Climate, and Global Warming • Air Pollution • Urban Environments • Materials Management • Our Environmental Future.

9788126534142 | ₹ 1259



Engineering Mechanics | e | k

Chanda

About the Author

Dr. Abhijit Chanda is currently a Professor of Mechanical Engineering department, Jadavpur University, Kolkata. Dr. Chanda has over 15 years of teaching experience. He co-authored a book on Strength of Materials published by Wiley India. His research interests are in the fields of Material Science, Bio-Materials, Bio Engineering and related topics.

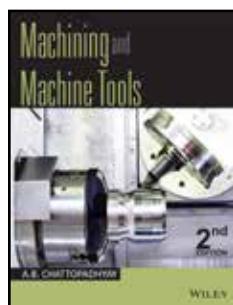
Table of Contents

- Preface • Statics • Chapter 1 a Quick Glimpse to Vector algebra • 1.1 Introduction • 1.2 Unit Vector • 1.3 Direction Cosines • 1.4 Vector as a Line Segment • 1.5 Position Vector • 1.6 Vector Addition and Subtraction • 1.7 Product of Two Vectors • 1.8 Vector Equation • 1.8.1 Linearly Independent Vectors • 1.9 A Look to Different Coordinate Systems • Chapter 2 introduction to Mechanics • 2.1 Mechanics – Basic Definitions • 2.2 Idealisations and Basic Assumptions • 2.3 Dimensions, Law of Dimensional Homogeneity and Units • Chapter 3 Vector Mechanics • 3.1 Introduction • 3.2 An Introduction to Vector Algebra • 3.3 Miscellaneous Vectors • 3.4 Vector Resolution and Cartesian Vector • 3.5 Position Vector • 3.6 Product of Vectors • 3.7 Couple-Moment • Chapter 4 Equivalent Force and Moment • 4.1 Introduction • 4.2 Basic Concept • 4.3 Varigon's Theorem of Moment • Chapter 5 Equilibrium • 5.1 Introduction • 5.2 Analysis Methodology • 5.3 Free Body Diagrams • 5.4 Two-Force Member • 5.5 Three-Force Member • 5.6 Frames and Machines • Chapter 6 Truss • 6.1 Introduction • 6.2 Types of Truss • 6.3 Analysis of Truss • Chapter 7 Friction • 7.1 Introduction • 7.2 Governing Equation of Friction • 7.3 Steps of Analysis • 7.4 Friction in Simple Machines • Chapter 8 Central Points and Properties of Surfaces • 8.1 Introduction • 8.2 Centre of Mass and Centre of Gravity • 8.3 Area Moment of Inertia • 8.4 Product Area-Moment of Inertia • 8.5 Parallel Axis Theorem • 8.6 Perpendicular Axis Theorem • 8.7 Area Moment of Inertia for Composite Area • 8.8 Centroid of Shell Element • Chapter 9 Distributed Force Systems • 9.1 Introduction • 9.2 Types of Distributed Load • 9.3 Analysis of Plane

Prices are subject to change without prior notice.

Distributed Load • Chapter 10 Virtual Work • 10.1 Introduction • 10.2 Virtual Work Theorems and Equation of Equilibrium Formulations • Dynamics • Chapter 1 Particle Kinematics • Objectives • 1.1 Introduction • 1.2 Study of Kinematics • 1.3 Rectilinear Motion • 1.4 Plane Curvilinear Motion in X-Y Coordinates • 1.5 n-t Coordinates for Curvilinear Motion • 1.6 Curvilinear Motion in Polar Coordinates • 1.7 Kinematics of Connected Bodies • Chapter 2 Kinetics • 2.1 Introduction • 2.2 Kinetics of a Particle • 2.3 Two-Dimensional Kinetics of a Slab-Like Rigid Body • 2.4 D'Alembert's Principle • 2.5 Types of Kinetics Problems • Chapter 3 Work, Energy and Power • 3.1 Introduction • 3.2 Work Done by Various Types of Forces • 3.3 Energy • 3.4 Conservative Forces • 3.5 Work-Energy Principle • 3.6 Power • Chapter 4 Momentum and Impulse • 4.1 Impulse and Linear Momentum of a Particle • 4.2 Angular Momentum • 4.3 Conservation of Linear Momentum • 4.4 Conservation of Angular Momentum • 4.5 Linear Momentum for a System of Mass Particles • 4.6 Impulsive Forces and Moments • 4.7 Collision of Bodies • Chapter 5 Dynamics of System of Particles • 5.1 Introduction • 5.2 Kinematics of System • 5.3 Kinetics of the System • Chapter 6 Plane Kinematics of Rigid Body • 6.1 Rigid Body • 6.2 Motion of Rigid Body in Two Dimensions • 6.3 Instantaneous Centre of Velocity • 6.4 Piston Displacement and Velocity of a Reciprocating Mechanism • 6.5 Special Discussion on the Locus of a Point on the Connecting Rod • 6.6 Rolling Motion of Cylinder-Like Body • Chapter 7 Rotational Kinetics of Rigid Bodies • 7.1 Introduction • 7.2 Equations of Motion of Body Undergoing Plane Fixed-Axis Rotation • 7.3 D'Alembert's Principle • 7.4 Mass-Moment of Inertia • Chapter 8 Introduction to Dynamics of Vibration • 8.1 Introduction • 8.2 Free Vibration of an SDOF System • 8.3 Consideration of Mass of the Spring Element • 8.4 Damped Free Vibration of Single Degree of Freedom System • 8.5 Viscous Damping • 8.6 Forced Vibration of Single Degree of Freedom System • 8.7 Forced Vibration • Solved Examples • Practice Problems • Index

9788126570935 | ₹ 719



Machining and Machine Tools, 2ed, w/cd | e | k

Chattopadhyay

About the Author

Dr. A. B. Chattpadhyay has a vast teaching experience spanning nearly half a century, most of which he has spent in teaching and research at the prestigious IIT Kharagpur, of which he was a Professor as well as an Emeritus Professor. He has guided more than 150 academic projects including 20 PhDs and has published more than 150 national and international papers. He

has designed and authored NPTEL web and video courses Manufacturing Processes-II. He has been selection board member for various universities, department head at IIT Kharagpur and a paper setter and examiner for 8 institutions.

Table of Contents

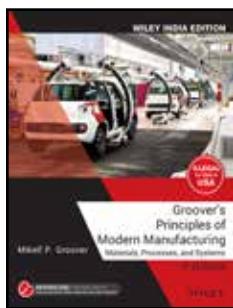
- Preface to the Second Edition • Preface to the First Edition • About the Author •
- Part A – Machining • 1 Introduction to Machining • 1.1 Introduction • 1.2 Engineering Manufacturing • 1.3 Machining • 1.4 Need or Benefits of Learning 'Theory of Machining'
- 1.5 Major Aspects and Topics to be Studied under Machining • 1.6 Solved Problems
- 2 Geometry of Cutting Tools • 2.1 Introduction • 2.2 Geometry of Single-Point Turning Tools • 2.3 Geometry of Multiple-Point Cutting Tools • 2.4 Conversion of Tool Angles • 2.5 Solved Problems •
- 3 Mechanism of Machining • 3.1 Introduction • 3.2 Purpose of Studying Mechanism of Chip Formation in Machining • 3.3 Mechanism of Chip Formation in Machining • 3.4 Geometry and Characteristics of Continuous Chip Formation • 3.5 Chip Formation in Drilling • 3.6 Chip Formation Mechanism in Milling • 3.7 Solved Problems •
- 4 Mechanics of Machining • 4.1 Introduction • 4.2 Generation of Cutting Forces and the Effects of the Cutting Forces in Machining • 4.3 Cutting Force Analysis and Estimation • 4.4 Analysis and Estimation of Forces under Oblique Cutting • 4.5 Mechanics and Estimation of Drilling and Milling Forces • 4.6 Measurement of Cutting Forces • 4.7 Design Considerations for Tool-Force Dynamometers • 4.8 Construction of Typical Tool-Force Dynamometers and Their Functioning • 4.9 Solved Problems •
- 5 Heat Generation and Cutting Temperature in Machining • 5.1 Introduction • 5.2 Location and Causes of Heat Generation in Machining • 5.3 Effects of Cutting Temperature on Job and Tool • 5.4 Determination of Cutting Temperature • 5.5 Control of Cutting Temperature and Application of Cutting Fluid • 5.6 Solved Problems
- 6 Failure, Life and Materials of Cutting Tools • 6.1 Introduction • 6.2 Major Causes

and Modes of Failure of Cutting Tools • 6.3 Wear of Cutting Tools • 6.4 Tool Life • 6.5 Cutting Tool Materials • 6.6 Solved Problems •

- 7 Estimation of Machining Time • 7.1 Introduction • 7.2 Significance of Machining Time and Purposes of Its Evaluation • 7.3 Major Factors that Govern Machining Time • 7.4 Methods of Estimation of Machining Time • 7.5 Solved Problems •
- 8 Machinability, Some Critical Problems and Remedial Measures • 8.1 Introduction • 8.2 Machinability • 8.3 Machining Problems of Some Critical Materials and Remedial Approaches • 8.4 Control of Chips and Chip-Breaking
- 8.5 Some Special Techniques of Improving Machinability • 8.6 Surface Quality of Machined Components •
- 9 Grinding: Fast Machining and Finishing by Bonded Abrasives • 9.1 Introduction • 9.2 Basic Principles, Methods and Applications of Grinding • 9.3 Grinding Requirements • 9.4 Grinding Wheels • 9.5 Mechanism and Mechanics of Grinding • 9.6 Grindability and Its Improvement • 9.7 Advanced Technology of Grinding • 9.8 Some Special Techniques for Improving Grinding Performance • 9.9 Super-Finishing Processes • 9.10 Solved Problems •
- 10 Economy and Eco-Friendliness in Machining • 10.1 Introduction • 10.2 Economy and Optimization of Machining • 10.3 Optimization of Process Schedule and Machining Parameters for Machining Economy • 10.4 Environmental Problems in Machining and Grinding and Remedial Measures • 10.5 Solved Problems •
- Part B – Machine Tools • 11 Introduction to Machine Tools • 11.1 Introduction • 11.2 Definition and Role of Machine Tool • 11.3 Major Components of Machine Tools and Their Functions • 11.4 General Configuration of Common Machine Tools and Their Uses • 11.5 Major Aspects of Machine Tools •
- 12 Functional Principles of Machine Tools • 12.1 Introduction • 12.2 Basic Functions of Machine Tools • 12.3 Generatrix, Directrix and Tool-Work Motions for Various Machining Work •
- 13 Machine Tool Power Drives • 13.1 Introduction • 13.2 Power Sources Used in Machine Tools • 13.3 Estimation of Power Requirement for Machine Tool Drives • 13.4 Hydraulic Drives in Machine Tools • 13.5 Solved Problems •
- 14 Role and Forms of Kinematic Structure in Machine Tools • 14.1 Introduction • 14.2 Role and General Constituents of the Kinematic Structure of Machine Tools • 14.3 Different Forms of Machine Tool Kinematic Structures • 14.4 Mechanisms Commonly Used in Machine Tool Kinematic Systems • 14.5 Solved Problems •
- 15 Methods of Changing Speed and Feed in Machine Tools • 15.1 Introduction • 15.2 Need of Large Number of Speeds and Feeds in Machine Tools • 15.3 Methods of Changing Speed and Feed in Machine Tools •
- 16 Design of Speed Gear Box of Machine Tools • 16.1 Introduction • 16.2 Procedural Steps in Design of SGB • 16.3 Layout of Spindle Speeds in Machine Tools • 16.4 Selection of Gear Layout and Ray Diagram for SGB • 16.5 Determination of Dimensions of the Gears and Shafts of SGB • 16.6 Solved Problems •
- 17 Design Principle of Machine Tools Structural Bodies • 17.1 Introduction • 17.2 Requirements for Design of Machine Tool Structural Body • 17.3 Design of Lathe Bed • 17.4 Design of Lathe Beds from Pre-Set Process Capability •
- 18 Automation in Machine Tools • 18.1 Introduction • 18.2 Role of Automation in Machine Tools • 18.3 Advent of Automation in Manufacturing Industries •
- 18.4 Type of Automation in Machine Tools •
- 19 Classification and Specification of Machine Tools • 19.1 Introduction • 19.2 Advent of Various Machine Tools: History and Reasons • 19.3 Classification of Machine Tools • 19.4 Purpose of Machine Tool Specification • 19.5 Methods of Specification of Conventional Machine Tools •
- 20 Conventional Machine Tools – Their Features and Functioning • 20.1 Introduction • 20.2 General Classification of Machine Tools • 20.3 Characteristic Features of Different Machine Tools and Their Functioning •
- 21 Kinematic Systems of Conventional Machine Tools • 21.1 Introduction • 21.2 Role of Kinematic Systems in Machine Tools • 21.3 Kinematic Systems of General-Purpose Conventional Machine Tools • 21.4 Kinematic System of Gear Teeth Generating Machine Tools • 21.5 Kinematic Systems and Working Principle of Hydraulically Driven Machine Tools • 21.6 Design of Kinematic System for Special-Purpose Machine Tool • 21.7 Solved Problems •
- 22 Machining Applications of Conventional Machine Tools • 22.1 Introduction • 22.2 General Applications of the Conventional Machine Tools • 22.3 Special Applications of Conventional Machine Tools Using Various Attachments •
- 23 Methods of Mounting Blanks and Cutting Tools in Machine Tools • 23.1 Introduction • 23.2 Mounting Blanks and Cutting Tools in Machine Tools • 23.3 General Methods of Mounting Blanks and Cutting Tools in Different •
- Machine Tools •
- 24 Design and Application of Jigs and Fixtures for Aiding Machining • 24.1 Introduction • 24.2 Purpose of Using Fixtures and Jigs in Machine Shops • 24.3 Considerations While Designing Fixtures and Jigs • 24.4 Principles and Methods of Design of Fixtures and Jigs • 24.5 Functions and Design Aspects of Bushes Used in Jigs •
- 24.6 Design of Jigs and Fixtures for Specific Machining Requirements •
- 25 Computer Numerical Controlled Machine Tools • 25.1 Introduction • 25.2 Basic Principles and Applications • 25.3 Construction and Operation of CNC Machine Tools and Machining Centres •
- 26 Foundation, Inspection and Testing of Machine Tools • 26.1 Introduction • 26.2 Purpose of Machine Tool Foundation: Its Design Principle and Construction •
- 26.3

Inspection and Testing of Machine Tools • 26.4 Solved Problems • • Summary • Multiple Choice Questions • Review Questions • Problems • Index

9788126564743 | ₹ 959



Groover's Principles of Modern Manufacturing SI Version, Wiley India Edition | IM | e

Groover

Table of Contents

- 1 Introduction And Overview Of Manufacturing • 1.1 What Is Manufacturing? • 1.2 Materials in Manufacturing
- 1.3 Manufacturing Processes • 1.4 Production Systems • 1.5 Manufacturing Economics • Part I Engineering Materials and Product Attributes • 2 The Nature Of Materials • 2.1 Atomic Structure and the Elements • 2.2 Bonding between Atoms and Molecules • 2.3 Crystalline Structures • 2.4 Noncrystalline (Amorphous) Structures • 2.5 Engineering Materials • 3 Mechanical Properties Of Materials • 3.1 Stress--Strain Relationships • 3.2 Hardness • 3.3 Effect of Temperature on Properties • 3.4 Fluid Properties • 3.5 Viscoelastic Behavior of Polymers • 4 Physical Properties Of Materials • 4.1 Volumetric and Melting Properties • 4.2 Thermal Properties • 4.3 Mass Diffusion • 4.4 Electrical Properties • 4.5 Electrochemical Processes • 5 Engineering Materials • 5.1 Metals and Their Alloys • 5.2 Ceramics • 5.3 Polymers • 5.4 Composite Materials • 6 Dimensions, Surfaces, And Their Measurement • 6.1 Dimensions, Tolerances, and Related Attributes • 6.2 Conventional Measuring Instruments and Gages • 6.3 Surfaces • 6.4 Measurement of Surfaces • 6.5 Effect of Manufacturing Processes • Part II Solidification Processes • 7 Fundamentals Of Metal Casting • 7.1 Overview of Casting Technology • 7.2 Heating and Pouring • 7.3 Solidification and Cooling • 8 Metal Casting Processes • 8.1 Sand Casting • 8.2 Other Expendable-Mold Casting Processes • 8.3 Permanent-Mold Casting Processes • 8.4 Foundry Practice • 8.5 Casting Quality • 8.6 Castability and Casting Metals • 8.7 Product Design Considerations • 9 Glassworking • 9.1 Raw Materials Preparation and Melting • 9.2 Shaping Processes in Glassworking • 9.3 Heat Treatment and Finishing • 9.4 Product Design Considerations • 10 Shaping Processes For Plastics • 10.1 Properties of Polymer Melts • 10.2 Extrusion • 10.3 Production of Sheet and Film • 10.4 Fiber and Filament Production (Spinning) • 10.5 Coating Processes • 10.6 Injection Molding • 10.7 Compression and Transfer Molding • 10.8 Blow Molding and Rotational Molding • 10.9 Thermoforming • 10.10 Casting • 10.11 Polymer Foam Processing and Forming • 10.12 Product Design Considerations • 11 Processing Of Polymer Matrix Composites And Rubber • 11.1 Overview of PMC Processing • 11.2 Open-Mold Processes • 11.3 Closed-Mold Processes • 11.4 Other PMC Shaping Processes • 11.5 Rubber Processing and Shaping • 11.6 Manufacture of Tires and Other Rubber Products • Part III Particulate Processing of Metals and Ceramics • 12 Powder Metallurgy • 12.1 Characterization of Engineering Powders • 12.2 Production of Metallic Powders • 12.3 Conventional Pressing and Sintering • 12.4 Alternative Pressing and Sintering Techniques • 12.5 Materials and Products for Powder Metallurgy • 12.6 Design Considerations in Powder Metallurgy • 13 Processing Of Ceramics And Cermets • 13.1 Processing of Traditional Ceramics • 13.2 Processing of New Ceramics • 13.3 Processing of Cermets • 13.4 Product Design Considerations • Part IV Metal Forming and Sheet Metalworking • 14 Fundamentals Of Metal Forming • 14.1 Overview of Metal Forming • 14.2 Material Behavior in Metal Forming • 14.3 Temperature in Metal Forming • 14.4 Strain Rate Sensitivity • 14.5 Friction and Lubrication in Metal Forming • 15 Bulk Deformation Processes In Metal Working • 15.1 Rolling • 15.2 Forging • 15.3 Extrusion • 15.4 Wire and Bar Drawing • 16 Sheet Metalworking • 16.1 Cutting Operations • 16.2 Bending Operations • 16.3 Drawing • 16.4 Dies and Presses for Sheet Metal Processes • 16.5 Other Sheet-Metal-Forming Operations • 16.6 Sheet Metal Operations Not Performed on Presses • 16.7 Bending of Tube Stock • Part V Material Removal Processes • 17 Theory Of Metal Machining • 17.1 Overview of Machining Technology • 17.2 Theory of Chip Formation in Metal Machining • 17.3 Force Relationships and the Merchant Equation • 17.4 Power and Energy Relationships in Machining • 17.5 Cutting Temperature • 18 Machining Operations And Machine Tools • 18.1 Machining and Part Geometry • 18.2 Turning and Related Operations • 18.3 Drilling and Related Operations • 18.4 Milling • 18.5 Machining Centers and Turning Centers • 18.6 Other Machining Operations • 18.7 Machining Operations for Special Geometries • 18.8 High-Speed Machining • 19 Cutting-Tool Technology • 19.1 Tool Life • 19.2 Tool Materials • 19.3 Tool Geometry • 19.4 Cutting Fluids • 20 Economic And Product Design Considerations In

Machining • 20.1 Machinability • 20.2 Tolerances and Surface Finish • 20.3 Machining Economics • 20.4 Product Design Considerations in Machining • 21 Grinding And Other Abrasive Processes • 21.1 Grinding • 21.2 Related Abrasive Processes • 22 Nontraditional Machining And Thermal Cutting Processes • 22.1 Mechanical Energy Processes • 22.2 Electrochemical Machining Processes • 22.3 Thermal Energy Processes • 22.4 Chemical Machining • 22.5 Application Considerations • • Part VI Property-Enhancing and Surface Processing Operations • 23 Heat Treatment Of Metals • 23.1 Annealing • 23.2 Martensite Formation in Steel • 23.3 Precipitation Hardening • 23.4 Surface Hardening • 23.5 Heat Treatment Methods and Facilities • 24 Surface Processing Operations • 24.1 Industrial Cleaning Processes • 24.2 Diffusion and Ion Implantation • 24.3 Plating and Related Processes • 24.4 Conversion Coating • 24.5 Vapor Deposition Processes • 24.6 Organic Coatings • 24.7 Porcelain Enameling and Other Ceramic Coatings • 24.8 Thermal and Mechanical Coating Processes • • Part VII Joining and Assembly Processes • 25 Fundamentals Of Welding • 25.1 Overview of Welding Technology • 25.2 The Weld Joint • 25.3 Physics of Welding • 25.4 Features of a Fusion-Welded Joint • 26 Welding Processes • 26.1 Arc Welding • 26.2 Resistance Welding • 26.3 Oxyfuel Gas Welding • 26.4 Other Fusion-Welding Processes • 26.5 Solid-State Welding • 26.6 Weld Quality • 26.7 Weldability • 26.8 Design Considerations in Welding • 27 Brazing, Soldering, And Adhesive Bonding • 27.1 Brazing • 27.2 Soldering • 27.3 Adhesive Bonding • 28 Mechanical Assembly • 28.1 Threaded Fasteners • 28.2 Rivets and Eyelets • 28.3 Assembly Methods Based on Interference Fits • 28.4 Other Mechanical Fastening Methods • 28.5 Molding Inserts and Integral Fasteners • 28.6 Design for Assembly • Part VIII Special Processing and Assembly Technologies • 29 Rapid Prototyping And Additive Manufacturing • 29.1 Fundamentals of Rapid Prototyping and Additive Manufacturing • 29.2 Additive Manufacturing Processes • 29.3 Cycle Time and Cost Analysis • 29.4 Additive Manufacturing Applications • 30 Processing Of Integrated Circuits • 30.1 Overview of IC Processing • 30.2 Silicon Processing • 30.3 Lithography • 30.4 Layer Processes Used in IC Fabrication • 30.5 Integrating the Fabrication Steps • 30.6 IC Packaging • 30.7 Yields in IC Processing • 31 Electronics Assembly And Packaging • 31.1 Electronics Packaging • 31.2 Printed Circuit Boards • 31.3 Printed Circuit Board Assembly • 31.4 Electrical Connector Technology • 32 Microfabrication Technologies • 32.1 Microsystem Products • 32.2 Microfabrication Processes • 33 Nanofabrication Technologies • 33.1 Nanotechnology Products and Applications • 33.2 Introduction to Nanoscience • 33.3 Nanofabrication Processes • Part IX Manufacturing Systems • 34 Automation Technologies For Manufacturing Systems • 34.1 Automation Fundamentals • 34.2 Hardware for Automation • 34.3 Computer Numerical Control • 34.4 Industrial Robotics • 35 Integrated Manufacturing Systems • 35.1 Material Handling • 35.2 Fundamentals of Production Lines • 35.3 Manual Assembly Lines • 35.4 Automated Production Lines • 35.5 Cellular Manufacturing • 35.6 Flexible Manufacturing Systems • 35.7 Computer-Integrated Manufacturing • Part X Manufacturing Support Systems • 36 Process Planning And Production Control • 36.1 Process Planning • 36.2 Other Manufacturing Engineering Functions • 36.3 Production Planning and Control • 36.4 Just-In-Time Delivery Systems • 36.5 Lean Production • 37 Quality Control And Inspection • 37.1 Product Quality • 37.2 Process Capability and Tolerances • 37.3 Statistical Process Control • 37.4 Quality Programs in Manufacturing • 37.5 Inspection Principles • 37.6 Modern Inspection Technologies • Appendix: Answers to Selected Problems • Index

9788126573059 | ₹ 1219



Quality Control | e | k

Kulkarni

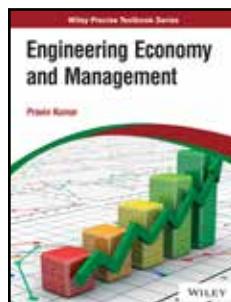
About the Author

Vinay A. Kulkarni is a lecturer, and teaches at the Department of Production Engineering, D.Y. Patil College of Engineering, Pune. He was awarded a gold medal for completing his M.Tech. in Production Engineering (with specialization in Production Management). Besides publishing several technical research papers in national and international journals, he has presented at several national and international conferences. He is a member of various professional bodies and has worked as a resource person at Indian Institute of Production Engineers, Pune.

Table of Contents

- Quality Concepts • Quality Milestones • Juran's Trilogy • Cost of Quality and Value of Quality • Total Quality Management • Statistical Quality Control and Acceptance Sampling • Taguchi's Quality Engineering • Six Sigma • Reliability, Availability and Maintainability • Quality Culture: A Global Paradigm Shift

9788126519071 | ₹ 859



Engineering Economy and Management | e | k

Kumar

About the Author

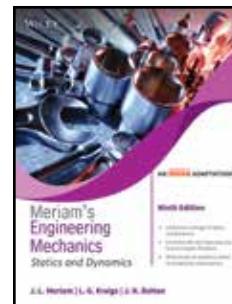
Pravin Kumar is working as an Associate Professor in the Department of Mechanical Engineering, Delhi Technological University, Delhi. He obtained his PhD in Supply Chain Management from IIT Delhi and M. Tech. in Industrial Management from IIT (BHU) Varanasi. He has more than 19 years of teaching and research experience. His research area is supply chain and operations management. He has published more than 50 research papers in international journals.

Table of Contents

- Preface • About the Author • Chapter 1 Introduction to Engineering Economics • 1.1 Introduction • 1.2 Concept of Efficiency • 1.3 Theory of Demand • 1.4 Elasticity of Demand • 1.5 Supply and Law of Supply • 1.6 Indifference Curves • 1.7 Budget Line • 1.8 Welfare Analysis • • Chapter 2 Managerial Economics • 2.1 Introduction • 2.2 Scope of Managerial Economics • 2.3 Techniques of Managerial Economics • 2.4 Applications of Managerial Economics • • Chapter 3 Money, National Income, and Goods and Services Tax • 3.1 Money • 3.2 National Income • 3.3 Goods and Services Tax • • Chapter 4 Poverty, Unemployment, and Inflation • 4.1 Scarcity • 4.2 Poverty • 4.3 Unemployment • 4.4 Inflation • • Chapter 5 Banking Systems • 5.1 Introduction to Banking Systems • 5.2 Types of Banks • 5.3 Quantitative Instruments for Credit Control • 5.4 Types of Banking • • Chapter 6 Market Structures • 6.1 Introduction • 6.2 Perfect Competition • 6.3 Monopoly • 6.4 Monopolistic Competition • 6.5 Oligopoly • 6.6 Duopoly • 6.7 Monopsony • 6.8 Monopoly and Monopsony: A Comparison • • Chapter 7 Marketing Management • 7.1 Introduction • 7.2 Marketing Mix • 7.3 Market Segmentation • 7.4 Exchange and Transactions • 7.5 Marketing Research • 7.6 Scope of Marketing • 7.7 Product Life Cycle • 7.8 Demand Forecasting • • Chapter 8 Concepts in Management • 8.1 Introduction • 8.2 Characteristics of Management • 8.3 Scope of Management • 8.4 Classical School of Management • 8.5 Functions of Management • 8.6 Levels of Management • 8.7 Skills of Management • 8.8 Managerial Roles • 8.9 Administration and Management • • Chapter 9 Human Resource Management • 9.1 Human Resource Management • 9.2 Human Resource Planning • 9.3 Recruitment and Selection • 9.4 Job Design • 9.5 Merit Rating • • Chapter 10 Corporate Social Responsibility and Business Ethics • 10.1 Corporate Social Responsibility • 10.2 Types of Corporate Social Responsibilities • 10.3 Ethics • • Chapter 11 Production and Operations Management • 11.1 Production and Operations Management • 11.2 Objectives of Production Management • 11.3 Production Systems • 11.4 Facility Location • 11.5 Plant Layout • • Chapter 12 Demand Forecasting and Cost Estimation • 12.1 Introduction • 12.2 Forecasting Horizons • 12.3 Steps to Forecasting • 12.4 Forecasting Methods • 12.5 Seasonal Adjustments • 12.6 Forecasting Performance Measures • 12.7 Cost Estimation • 12.8 Elements of Cost • 12.9 Computation of Material Variances • 12.10 Break-Even Analysis • • Chapter 13 Time Value of Money • 13.1 Introduction • 13.2 Simple Interest • 13.3 Compound Interest • 13.4 Present Worth Analysis • 13.5 Future Worth Analysis • 13.6 Annual Cash Flow Analysis • 13.7 Rate of Return Analysis • 13.8 Arithmetic Gradient • 13.9 Geometric Gradient • 13.10 Continuous Compounding • 13.11 Normal and Effective Interest Rate • 13.12 Perpetual Payment • • Chapter 14 Project Evaluation • 14.1 Introduction • 14.2 Determining Minimum Attractive Rate of Return • 14.3 Payback (Payout) Period Method • 14.4 Benefit-Cost Ratio • • Chapter 15 Comparison Among Alternatives • 15.1 Introduction • 15.2 Basis for Comparison of Alternatives • 15.3 Study Period • 15.4 Useful Lives of Alternatives Are Equal to the Study Period • 15.5 Useful Lives of Alternatives Are Unequal • 15.6 B-C Ratio Method for Comparison of Alternatives • • Chapter 16 Depreciation and Taxes • 16.1 Introduction • 16.2 Some Important Terms Used in Depreciation • 16.3 Classical Depreciation Methods • 16.4 Modified Accelerated Cost Recovery System • 16.5 Taxes • • Chapter

- 17 Replacement Analysis • 17.1 Introduction • 17.2 Reasons for Replacement Analysis • 17.3 Lives of Assets • 17.4 Determining the Economic Life of a Challenger • 17.5 Determining the Economic Life of a Defender • 17.6 After-Tax Replacement Studies • • Chapter 18 Concept of Financial Statement • 18.1 Introduction • 18.2 Sources of Company Information • 18.3 Sources of International Economic Data • 18.4 Financial Analysis • 18.5 Financial Statement • 18.6 Trading Account • 18.7 Profit and Loss Account • 18.8 Balance Sheet Requirements • 18.9 Distinction between Profit and Loss Account and Balance Sheet • • Chapter 19 Financial Ratios • 19.1 Introduction • 19.2 Types of Financial Ratios • 19.3 Advantages and Limitations of Ratio Analysis • • Chapter 20 Capital Budgeting • 20.1 Introduction • 20.2 Capital Financing and Allocation Functions • 20.3 Sources of Capital Funds • 20.4 Capital Asset Pricing Model • 20.5 Weighted Average Cost of Capital • 20.6 Leasing Decisions • 20.7 Capital Allocation • • Chapter 21 Decision Making • 21.1 Introduction • 21.2 Types of Decision-Making Environments • 21.3 Decision Tree Analysis • 21.4 Multiple Criteria Decision Making • • Summary • Points to Remember • Multiple-Choice Questions • State whether True/False • Fill in the Blanks • Review Questions • Exercises • Appendix A • Statistical Tables and Procedures • Appendix B End-of-Period Compound Interest Tables • Appendix C Answers to Objective Type Questions • Bibliography • Index

9788126579921 | ₹ 859



Engineering Mechanics Statics and Dynamics, 9ed, An Indian Adaptation | IM | e | k

Meriam

About the Author

Dr. James L. Meriam has contributed to the field of engineering mechanics as one of the premier engineering educators during the second half of the twentieth century. He had early industrial experience with Pratt and Whitney Aircraft and the General Electric Company. During the Second World War, he served in the U.S. Coast Guard. He was a member of the faculty of the University of California-Berkeley, Dean of Engineering at Duke University, a faculty member at the California Polytechnic State University, and visiting professor at the University of California-Santa Barbara.

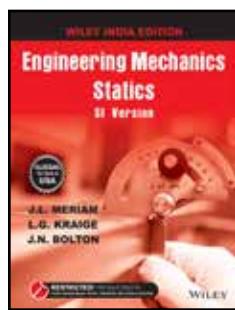
Table of Contents

- Foreword • Preface to the Adapted Edition • Preface • Acknowledgments • Part I Statics • 1 Introduction to Statics • 2 Force Systems • 2.1 Introduction • 2.2 Force • 2.3 Rectangular Components • 2.4 Moment • 2.5 Couple • 2.6 Resultants • 2.7 Rectangular Components • 2.8 Moment and Couple • 2.9 Resultants • 2.10 Chapter Review • 3 Equilibrium • 3.1 Introduction • 3.2 System Isolation and the Free-Body Diagram • 3.3 Equilibrium Conditions • 3.4 Equilibrium Conditions • 3.5 Chapter Review • 4 Structures • 4.1 Introduction • 4.2 Plane Trusses • 4.3 Method of Joints • 4.4 Graphical Method • 4.5 Method of Sections • 4.6 Space Trusses • 4.7 Frames and Machines • 4.8 Chapter Review • 5 Distributed Forces: Center of Mass, Centroid, and Moment of Inertia • 5.1 Introduction • 5.2 Center of Mass • 5.3 Centroids of Lines, Areas, and Volumes • 5.4 Composite Bodies and Figures; Approximations • 5.5 Theorems of Pappus • 5.6 Area Moments of Inertia • 5.7 Mass Moments of Inertia • 5.8 Beams—External Effects • 5.9 Beams—Internal Effects • 5.10 Chapter Review • 6 Friction • 6.1 Introduction • 6.2 Types of Friction • 6.3 Dry Friction • 6.4 Wedges • 6.5 Screws • 6.6 Journal Bearings • 6.7 Thrust Bearings; Disk Friction • 6.8 Flexible Belts • 6.9 Rolling Resistance • 6.10 Chapter Review • 7 Virtual Work • 7.1 Introduction • 7.2 Work • 7.3 Equilibrium • 7.4 Potential Energy and Stability • 7.5 Chapter Review • Part II Dynamics • Part IIA: Dynamics of Particles • 8 Introduction to Dynamics • 8.1 History and Modern Applications • 8.2 Solving Problems in Dynamics • 8.3 Chapter Review • 9 Kinematics of Particles • 9.1 Introduction • 9.2 Rectilinear Motion • 9.3 Plane Curvilinear Motion • 9.4 Rectangular Coordinates (x-y) • 9.5 Normal and Tangential Coordinates (n-t) • 9.6 Polar Coordinates (r- θ) • 9.7 Space Curvilinear Motion • 9.8 Relative Motion (Translating Axes) • 9.9 Constrained Motion of Connected Particles • 9.10 Chapter Review • 10 Kinetics of Particles • 10.1 Introduction • 10.2 Newton's Second Law • 10.3 Equation of Motion and Solution of Problems • 10.4 Rectilinear Motion • 10.5 Curvilinear Motion • 10.6 Work and Kinetic Energy • 10.7 Potential Energy • 10.8 Introduction • 10.9 Linear Impulse and Linear Momentum • 10.10 Angular Impulse and Angular Momentum • 10.11 Introduction • 10.12 Impact • 10.13 Central-Force Motion • 10.14 Relative Motion • 10.15 Chapter Review • 11 Kinetics of



Systems of Particles • 11.1 Introduction • 11.2 Generalized Newton's Second Law • 11.3 Work-Energy • 11.4 Impulse-Momentum • 11.5 Conservation of Energy and Momentum • 11.6 Steady Mass Flow • 11.7 Variable Mass • 11.8 Chapter Review • Part II: Dynamics of Rigid Bodies • 12 Plane Kinematics of Rigid Bodies • 12.1 Introduction • 12.2 Rotation • 12.3 Absolute Motion • 12.4 Relative Velocity • 12.5 Instantaneous Center of Zero Velocity • 12.6 Relative Acceleration • 12.7 Motion Relative to Rotating Axes • 12.8 Chapter Review • 13 Plane Kinetics of Rigid Bodies • 13.1 Introduction • 13.2 General Equations of Motion • 13.3 Translation • 13.4 Fixed-Axis Rotation • 13.5 General Plane Motion • 13.6 Work-Energy Relations • 13.7 Acceleration from Work-Energy; Virtual Work • 13.8 Impulse-Momentum Equations • 13.9 Chapter Review • 14 Introduction to Three-Dimensional Dynamics of Rigid Bodies • 14.1 Introduction • 14.2 Translation • 14.3 Fixed-Axis Rotation • 14.4 Parallel-Plane Motion • 14.5 Rotation about a Fixed Point • 14.6 General Motion • 14.7 Angular Momentum • 14.8 Kinetic Energy • 14.9 Momentum and Energy Equations of Motion • 14.10 Parallel-Plane Motion • 14.11 Gyroscopic Motion: Steady Precession • 14.12 Chapter Review • 15 Vibration and Time Response • 15.1 Introduction • 15.2 Free Vibration of Particles • 15.3 Forced Vibration of Particles • 15.4 Vibration of Rigid Bodies • 15.5 Energy Methods • 15.6 Chapter Review • Appendix A Introduction to Analytical Mechanics • Appendix B Selected Topics of Mathematics • Appendix C Useful Tables • Index • Problem Answers

9789354248566 | ₹ 1319



Engineering Mechanics: Statics, SI Version | IM | e

Meriam

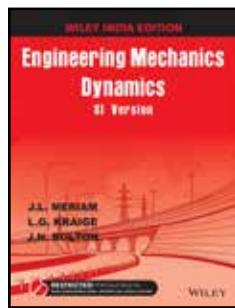
About the Author

Dr. James L. Meriam has contributed to the field of engineering mechanics as one of the premier engineering educators during the second half of the twentieth century. He had early industrial experience with Pratt and Whitney Aircraft and the General Electric Company. During the Second World War, he served in the U.S. Coast Guard. He was a member of the faculty of the University of California-Berkeley, Dean of Engineering at Duke University, a faculty member at the California Polytechnic State University, and visiting professor at the University of California-Santa Barbara.

Description

These exciting books use interesting, realistic illustrations to enhance reader comprehension. Also include a large number of worked examples that provide a good balance between initial, confidence building problems and more advanced level problems. Fundamental principles for solving problems are emphasized throughout.

9788126564033 | ₹ 1079



Engineering Mechanics: Dynamics, SI Version | e

Meriam

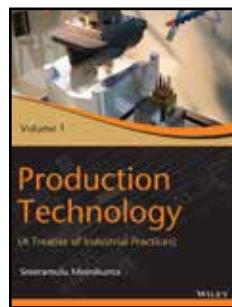
About the Author

Glenn Kraige is Professor in the Department of Engineering Science and Mechanics at Virginia Tech. He is a fellow member of the American Society for Engineering Education,

Description

Known for its accuracy, clarity, and dependability, Meriam, Kraige, and Bolton's Engineering Mechanics: Dynamics, 8th Edition SI Version has provided a solid foundation of mechanics principles to students for more than 60 years. Now in its eighth edition, the text continues to help students develop their problem-solving skills with an extensive variety of engaging problems related to engineering design. In addition to new homework problems, the text also includes a number of helpful sample problems. Students benefit from realistic applications that motivate their desire to learn and develop their skills.

9788126565375 | ₹ 1069



Production Technology: A Treatise of Industrial Practices, Vol 1

| IM | e | k

Moinikunta

About the Author

Mr. Sreeramulu Moinikunta started with Scientific Engineering House Pvt. Ltd, a Hungary-Collaborated Optical Instruments Manufacturing company. He has experience in process technology, manufacturing, surface treatments, assembly and testing of optical instruments with a precision touch. He worked in Hindustan

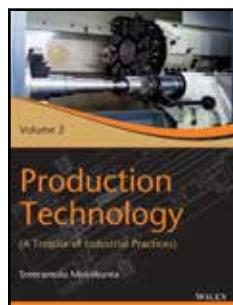
Aeronautics Ltd., Koraput, Orissa, a MIG engine-manufacturing company and had a crucial role in delivering the first MIG engine by manufacturing afterburner flaps in the absence of a profile rolling machine. The MIG engine was dedicated to the nation on time.

Table of Contents

- Foreword • Preface • About the Author • Acknowledgments • • Chapter 1: Casting Process • 1.1 Introduction • 1.2 History • 1.3 Definition of Casting Terms • 1.4 Classification of Casting Process • 1.5 Steps Involved in Casting Process • 1.6 Molding Equipment or Machinery • 1.7 Mold Materials • 1.8 Sand Testing • • Chapter 2: Gating Systems • 2.1 Introduction • 2.2 Pouring Basin • 2.3 Sprue • 2.4 Pouring Time • 2.5 Runner and Gates • 2.6 Design of Riser • 2.7 Methods of Riser Calculations • 2.8 Filling System Design • 2.9 Yield • • Chapter 3: Special Casting Processes • 3.1 Introduction • 3.2 Expendable Castings • 3.3 Permanent Mold Castings • • Chapter 4: Metal Melting Furnaces • 4.1 Introduction • 4.2 Salient Features of Furnace Design or Components of Furnace • 4.3 Application of Furnaces in High Temperature Industries • 4.4 Types of Furnaces • 4.5 Crucible Melting • 4.6 Cupola Furnace • 4.7 Pit Furnace • 4.8 Reverberatory Furnace • 4.9 Induction Furnace • 4.10 Electrical Arc Furnace • 4.11 Electrical Resistance Furnace • 4.12 Tilting Rotary Furnace (Bessemer Converter) • • Chapter 5: Melting, Pouring, and Casting Quality • 5.1 Heating and Pouring • 5.2 Pouring of Molten Metal • 5.3 Solidification of Metals • 5.4 Causes and Remedies of Casting Defects • 5.5 Quality Considerations in Casting Design • 5.6 Parameters of Cost-Effective Design • 5.7 Quality Tests of Castings • 5.8 Criteria for Selection of Casting Process • 5.9 Cleaning or Fettling of Castings • • Chapter 6: Lean Six Sigma • 6.1 Introduction • 6.2 Lean Manufacturing • 6.3 How Does Lean Work? • 6.4 Lean Principles • 6.5 Time-Tested Tools for Lean Production • 6.6 Lean Progression Model • 6.7 Six Sigma • 6.8 Six Sigma Methodologies Applied in Product Lifecycle • 6.9 Quality Management Tools • 6.10 Six Sigma Implementation Roles • 6.11 What Is Lean Six Sigma? • 6.12 Design for Six Sigma (DFSS) • 6.13 Training for Lean Six Sigma • • Chapter 7: Theory of Metal Forming • 7.1 Introduction • 7.2 Classification of Forming Processes • 7.3 Classification by Stresses • 7.4 Theory of Metal Forming • 7.5 Cold Metal Forming • 7.6 Main Laws of Plastic Deformation • 7.7 Warm Working • 7.8 Hot Metal Forming • 7.9 Recovery, Recrystallization, and Grain Growth • • Chapter 8: Bulk Metal-Forming Processes • 8.1 Introduction • 8.2 Description of Metal-Forming Processes • 8.3 Characteristics of Forging • 8.4 Indenting or Coining • 8.5 Metal Spinning • • Chapter 9: Sheet Metal-Forming Processes • 9.1 Introduction • 9.2 Conventional Sheet Forming Processes • 9.3 Shearing Operation • 9.4 Special or Advanced Sheet Metal-Forming Processes • 9.5 High Velocity Forming (HVF) or High Energy Rate Forming • 9.6 Characteristics of Sheet Metal-Forming Processes • 9.7 Presses • 9.8 Press Tools • 9.9 Construction of Press Tool • 9.10 Sheet Metal Test Methods • 9.11 Metal-Forming Defects • • Chapter 10: Welding Processes • 10.1 Introduction • 10.2 Arc Welding • 10.3 Welding Symbols • 10.4 Resistance Welding • 10.5 Butt Welding • 10.6 Electrodes • 10.7 Fluxes • 10.8 Weld Defects and Weld Testing • 10.9 AC and DC Arc Welding • • Chapter 11: Advanced Welding Technologies • 11.1 Introduction • 11.2 Categories of Welding Technologies • 11.3 Advanced Welding Technologies • 11.4 Pressure Welding • • Chapter 12: Gas Welding and Cutting • 12.1 Introduction • 12.2 Oxy-Fuel Equipment • 12.3 Fuels • 12.4 Types of Flames • 12.5 Gas Welding • 12.6 Gas Cutting • 12.7 Safety Precautions • 12.8 Brazing and Soldering • 12.9 Gas Pressure Welding • 12.10 Methods of Gas Butt Welding • • Chapter 13: Powder Metallurgy • 13.1 Introduction • 13.2 Criterion to Select Powder Metallurgy Process • 13.3 Powder Metallurgy Process • 13.4 Techniques of PM Processes • 13.5 Powder Production Technologies • 13.6 Powder Compaction • 13.7 Sintering • 13.8 Secondary or Finishing Operations • 13.9 Advantages and Limitations • 13.10 Applications of Powder Metallurgy • • • Chapter 14: 3D Printing • 14.1 Introduction • 14.2 Types of Additive Manufacturing Processes • 14.3 Direct Metal

Laser Sintering (DMLS) • 14.4 Applications of 3D Printing • 14.5 Future • 14.6 Utilization • 14.7 Materials Used in 3D Printing • • Chapter 15: Plastic Processes • 15.1 Introduction • 15.2 Classification of Plastics • 15.3 Plastic Chemical Compounds • 15.4 Polymers • 15.5 Ingredients of Molding Compound • 15.6 Processing and Fabrication of Plastics • 15.7 Processing of Plastics • 15.8 Lamination and Reinforcement • 15.9 Secondary Processing or Finishing of Plastics • • Summary • Review Questions • Objective-Type Questions • Short Answer Questions • Long Answer Questions • Gate Model Questions • Answers • • References • Index

9788126571253 | ₹ 639



Production Technology : A Treatise of Industrial Practice, Vol 2 | e | k

Moinikunta

About the Author

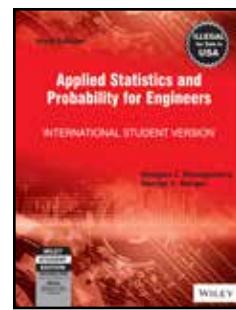
Mr. Sreramulu Moinikunta worked in Hindustan Aeronautics Ltd, Koraput, Orissa, a MIG engine-manufacturing company and had a crucial role in delivering the first MIG engine by manufacturing afterburner flaps in the absence of a profile rolling machine. The MIG engine was dedicated to the nation on time.

Table of Contents

- Foreword • Preface • About the Author • Acknowledgments • • Chapter 1: Theory of Metal Cutting • 1.1 Introduction • 1.2 Theory of Metal Cutting • 1.3 Mechanics of Chip Formation • 1.4 Built-Up Edge Formation (BUE) • 1.5 Chip Breakers • 1.6 Orthogonal Metal Cutting • 1.7 Merchant's Circle Diagram and its Use • 1.8 Temperature in Metal Cutting • • Chapter 2: Cutting Tool Technology • 2.1 Introduction • 2.2 Cutting Tool Materials • 2.3 Tool Wear • 2.4 Mechanics of Cutting Tool Wear/Types of Tool Wears • 2.5 Geometry of Tool Wear • 2.6 Tool Life • 2.7 Machinability • 2.8 Cutting Conditions • 2.9 Cutting Fluids • 2.10 Designing and Manufacturing of Cutting Tools • • Chapter 3: Machining Processes and Machine Tools • 3.1 Introduction • 3.2 Turning Process • 3.3 Turning Machines • 3.4 Milling Process • 3.5 Drilling and Boring • 3.6 Drilling and Boring Machines • 3.7 Planing • 3.8 Planing Machine • 3.9 Slotting • 3.10 Broaching • 3.11 Gear Cutting • • Chapter 4: Abrasive Machining Processes • 4.1 Introduction • 4.2 Characteristics of Grinding Wheels • 4.3 Types of Grinding Wheels • 4.4 Types of Grinding Operations • 4.5 Types of Grinding Machines • 4.6 Abrasive Wheel Bonds and Cutting Speeds • 4.7 Grinding Wheel Wear • 4.8 Dressing and Trueing • • Chapter 5: Superfinishing Processes • 5.1 Introduction • 5.2 Honing Process • 5.3 Lapping Methods • 5.4 Superfinishing Process • 5.5 Polishing • 5.6 Buffing • 5.7 Burnishing • • Chapter 6: Unconventional Machining Processes • 6.1 Introduction • 6.2 Characteristics of UCM Processes • 6.3 Chemical Machining • 6.4 Photochemical Machining • 6.5 Electrochemical Machining • 6.6 Electrochemical Grinding • 6.7 Electrical Discharge Machining • 6.8 Wire-Cut EDM • 6.9 Electron Beam Machining • 6.10 Plasma Arc Machining • 6.11 Laser Beam Machining • 6.12 Ultrasonic Machining • 6.13 Abrasive Jet Machining • 6.14 Water Jet Machining • 6.15 Abrasive Water Jet Machining • • Chapter 7: Engineering Materials • 7.1 Introduction • 7.2 Steels • 7.3 Cast Iron • 7.4 Non-Ferrous Materials • 7.5 Non-Metallic Engineering Materials • • Chapter 8: Phase Transformations • 8.1 Introduction • 8.2 Phase Transformations • 8.3 Terminology • 8.4 Iron-Carbon Phase Diagram • 8.5 Some Conclusions • 8.6 Phase Transformations: Kinetics • 8.7 Isothermal Transformation (Ttt) Diagrams • • Chapter 9: Heat Treatment Processes • 9.1 Introduction • 9.2 Types of Heat Treatment Processes • 9.3 Objective-Based Categorization of Heat Treatment Processes • 9.4 Annealing Processes • 9.5 Hardening • 9.6 Induction Hardening • 9.7 Carburizing • 9.8 Case Hardening • 9.9 Flame Hardening • 9.10 Plasma Nitriding • 9.11 Tempering • • Chapter 10: Surface Treatments • 10.1 Introduction • 10.2 Main Classification • 10.3 Treatments Covering Surfaces • 10.4 Treatment Altering the Surfaces • • Chapter 11: Design for Manufacturing • 11.1 Introduction • 11.2 Design Practices • 11.3 Projections • 11.4 Dimensioning • 11.5 Geometrical Accuracies • 11.6 Introduction to Computer-Aided Design and Drafting (CADD) • 11.7 Design Analysis • • Chapter 12: Limits, Fits, and Tolerances • 12.1 Introduction • 12.2 Limits, Fits, and Tolerances • 12.4 Fundamental Deviation (Allowance) • 12.5 Process Allowance • 12.6 Size Designations in Tolerancing • 12.7 Fits • 12.8 Symbols Used in Fits and Tolerances • 12.9 Preferred Fits • 12.10 Machining Process Capability and its Grades • 12.11 Tolerance and Capability Studies • 12.12 Process Control Charts • • Chapter 13: Surface Finish • Learning Objectives • 13.1 Introduction • 13.2

Components of Surface Texture • 13.3 Main Components of Surface Deviations • 13.4 Measuring Parameters As Per DIN EN ISO 4287-1998 • 13.5 Surface Finish Measurements • 13.6 Manufacturing Process Capability and Achievable Surface Finish • • Chapter 14: Process Planning and CAPP_335 • 14.1 Introduction • 14.2 Basic Functions of Process Planner • 14.3 Manufacturing Process Planning • 14.4 Review and Control Process • 14.5 Introduction to Computer-Aided Process Planning (CAPP) • • Chapter 15: Jigs and Fixtures • 15.1 Introduction • 15.2 Principles of Location • 15.3 Principles of Guiding Elements • 15.4 Drill Jigs • 15.5 Fixtures • 15.6 Power Clamping Systems • 15.7 Modular Fixturing System • • Chapter 16: CNC Machine Tools • 16.1 Introduction • 16.2 What is Numerical Control Machine? • 16.3 What is CNC Machine? • 16.4 Introduction to DNC • 16.5 Basic Principles of CNC Machines • 16.6 CNC Machine Advantages Over NC Machine • 16.7 How CNC Machine Works • 16.8 Application of CNC Machines • 16.9 CNC Machines • 16.10 Special Attachments on CNC Machine Tools • 16.11 CNC Programming • 16.12 Computer-Aided Design and Computer-Aided Manufacturing • 16.13 Modular Tooling Systems • 16.14 Tool Pre-Setting • • Chapter 17: Standardization • 17.1 Introduction • 17.2 Design Standards • 17.3 M-Material Standards • 17.4 Tooling • • Review Questions • Objective-Type Question • Short Answer Questions • Long Answering Questions • GATE Model Questions • Answers • • References • Index

9788126571260 | ₹ 689



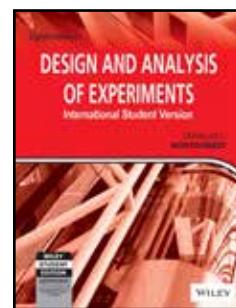
Applied Statistics and Probability for Engineers, 6ed, ISV | IM | e

Montgomery

Table of Contents

- Chapter 1 The Role of Statistics in Engineering • Chapter 2 Probability • Chapter 3 Discrete Random Variables and Probability Distributions • Chapter 4 Continuous Random Variables and Probability Distributions • Chapter 5 Joint Probability Distributions • Chapter 6 Descriptive Statistics • Chapter 7 Sampling Distributions and Point Estimation of Parameters • Chapter 8 Statistical Intervals for a Single Sample • Chapter 9 Tests of Hypotheses for a Single Sample • Chapter 10 Statistical Inference for Two Samples • Chapter 11 Simple Linear Regression and Correlation • Chapter 12 Multiple Linear Regression • Chapter 13 Design and Analysis of Single-Factor Experiments: The Analysis of Variance • Chapter 14 Design of Experiments with Several Factors • Chapter 15 Statistical Quality Control • Appendices

9788126562947 | ₹ 1069



Design and Analysis of Experiments, 8ed, ISV | IM | e

Montgomery

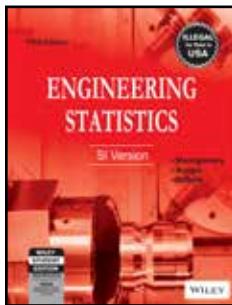
About the Author

"Douglas C. Montgomery, Regents' Professor of Industrial Engineering and Statistics at Arizona State University. He has authored and coauthored many technical papers as well as twelve other books. Dr. Montgomery is a Stewart Medalist of the American Society for Quality."

Table of Contents

- Introduction to Designed Experiments • Basic Statistical Methods • Analysis of Variance • Experiments with Blocking Factors • Factorial Experiments • Two-Level Factorial Designs • Blocking and Confounding Systems for Two-Level Factorials • Two-Level Fractional Factorial Designs • Other Topics on Factorial and Fractional Factorial Designs • Regression Modeling • Response Surface Methodology • Robust Design • Random Effects Models • Experiments with Nested Factors and Hard-to-Change Factors

9788126540501 | ₹ 1079



Engineering Statistics, 5ed, SI Version | IM | e

Montgomery

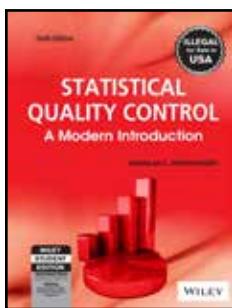
About the Author

Douglas C. Montgomery, Regents' Professor of Industrial Engineering and Statistics at Arizona State University. He has authored and coauthored many technical papers as well as twelve other books. Dr. Montgomery is a Stewart Medalist of the American Society for Quality.

Table of Contents

• The Role of Statistics in Engineering • Data Summary and Presentation • Random Variables and Probability Distributions • Decision Making for a Single Sample • Decision Making for Two Samples • Building Empirical Models • Design of Engineering Experiments • Statistical Process Control

9788126542635 | ₹ 869



Statistical Quality Control: A Modern Introduction, 6ed | IM

Montgomery

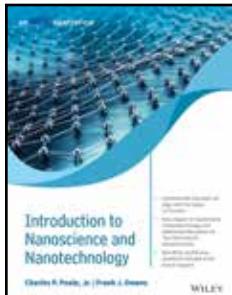
About the Author

Douglas C. Montgomery, Regents' Professor of Industrial Engineering and Statistics at Arizona State University. He has authored and coauthored many technical papers as well as twelve other books. Dr. Montgomery is a Stewart Medalist of the American Society for Quality.

Table of Contents

• Part I: Introduction • Chapter 1: Quality Improvement in the Modern Business Environment • Chapter 2: The DMAIC Process • Part II: Statistical Methods Useful in Quality Control and Improvement • Chapter 3: Modeling Process Quality • Chapter 4: Inferences about Process Quality • Part III: Basic Methods of Statistical Process Control and Capability Analysis • Chapter 5: Methods and Philosophy of Statistical Process Control • Chapter 6: Control Charts for Variables • Chapter 7: Control Charts for Attributes • Chapter 8: Process and Measurement System Capability Analysis • Part IV: Other Statistical Process-Monitoring and Control Techniques • Chapter 9: Cumulative Sum and Exponentially Weighted Moving Average Control Charts • Chapter 10: Other Univariate Statistical Process Monitoring and Control Techniques • Chapter 11: Multivariate Process Monitoring and Control • Chapter 12: Engineering Process Control and SPC • Part V: Process Design and Improvement with Designed Experiments • Chapter 13: Factorial and Fractional Experiments for Process Design and Improvements • Chapter 14: Process Optimization and Designed Experiments • Part VI: Acceptance Sampling • Chapter 15: Lot-by-Lot Acceptance Sampling for Attributes • Chapter 16: Other Acceptance Sampling Techniques • Appendix

9788126525065 | ₹ 1049



Introduction to Nanoscience and Nanotechnology, An Indian Adaptation | e | k

Poole

About the Author

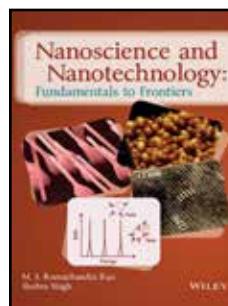
Charles P. Poole Jr., PhD, is a professor emeritus in the Department of Physics and Astronomy at the University of South Carolina is a member of the USC nanotechnology center.

Table of Contents

• 1 Introduction • 1.1 History of Nanoscience and Nanotechnology • 1.2 Definition and Classification of Nanomaterials • 1.3 Present and Future Perspectives of Nanomaterials and Nanotechnology • 2 Introduction to Solid State Physics • 2.1 Structure • 2.2

Energy Bands • 2.3 Localized Particles • 3 Methods of Measuring Properties • 3.1 Introduction • 3.2 Structure Analysis • 3.3 Microscopic Techniques • 3.4 Spectroscopic Techniques • 4 Properties and Synthesis of Nanoparticles • 4.1 Introduction • 4.2 Metal Nanoclusters and Nanoparticles • 4.3 Semiconducting Nanoparticles • 4.4 Rare Gas and Molecular Clusters • 4.5 Methods of Synthesis • 4.6 Conclusion • 5 Carbon-Based Nanostructures • 5.1 Introduction • 5.2 Carbon Molecules • 5.3 Carbon Clusters • 5.4 Carbon Nanotubes • 5.5 Applications of Carbon Nanotubes • 6 Nanostructured Materials • 6.1 Solid Disordered Nanostructures • 6.2 Nanostructured Crystals • 7 Nanostructured Ferromagnetism • 7.1 Basics of Ferromagnetism • 7.2 Effect of Bulk Nanostructuring of Magnetic Properties • 7.3 Dynamics of Nanomagnets • 7.4 Nanopore Containment of Magnetic Particles • 7.5 Nanocarbon Ferromagnets • 7.6 Giant and Colossal Magnetoresistance • 7.7 Ferrofluids • 8 Optical and Vibrational Spectroscopy • 8.1 Introduction • 8.2 Infrared Frequency Range • 8.3 Luminescence • 9 Quantum Wells, Wires, and Dots • 9.1 Introduction • 9.2 Preparation of Quantum Nanostructures • 9.3 Size and Dimensionality Effects • 9.4 Excitons • 9.5 Single-Electron Tunneling • 9.6 Applications • 9.7 Superconductivity • 10 Self-Assembly and Catalysis • 10.1 Self-Assembly • 10.2 Catalysis • 11 Organic Compounds and Polymers • 11.1 Introduction • 11.2 Forming and Characterizing Polymers • 11.3 Nanocrystals • 11.4 Polymers • 11.5 Supramolecular Structures • 12 Biological Materials • 12.1 Introduction • 12.2 Biological Building Blocks • 12.3 Nucleic Acids • 12.4 Biological Nanostructures • 13 Nanomachines and Nanodevices • 13.1 Microelectromechanical Systems (MEMS) • 13.2 Nanoelectromechanical Systems (NEMS) • 13.3 Molecular and Supramolecular Switches • 14 Applications of Nanotechnology • 14.1 Nanotechnology for Environmental Engineering • 14.2 Nanotechnology for Textile Industry • 14.3 Nanotechnology in Agriculture and Food • 14.4 Nanotechnology Applications for Air and Soil • 14.5 Nanotechnology in Industry, Defence, and Security • 14.6 Water Demands for Nanotechnology • 14.7 Therapeutics and Regenerative Medicine • 14.8 Nanotechnology and the Energy Challenge • Summary • Keywords • Multiple-Choice Questions • Review Questions • Further Reading • Appendices • A Two-Dimensional Nanostructures • A.1 Introduction • A.2 Examples of 2D nanostructures • A.3 Synthesis of 2D Nanostructures • A.4 Applications of 2D Nanostructures • B Formulas for Dimensionality • B.1 Introduction • B.2 Delocalization • B.3 Partial Confinement • C Tabulations of Semiconducting Material Properties • D Answers to Multiple-Choice Questions • Index

9789354240201 | ₹ 1009



Nanoscience and Nanotechnology: Fundamentals of Frontiers | e | k

Rao

About the Author

Dr. M. S. Ramachandra Rao is a professor in the Department of Physics and head of the "Nanostructured Thin Films and Advanced Materials" group at IIT Madras. His research activities are primarily focused on Physics and applications of nanostructures and nanomaterials.

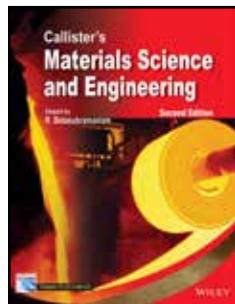
Table of Contents

• 1. The Science behind Nanotechnology • 1.1 History of Nanoscience • 1.2 Definition of Nanometer, Nanomaterial, and Nanotechnology • 1.3 Classification of Nanomaterial • 1.4 Nanotechnology from the Perspective of Medieval Period • 2. Concepts of Solid-State Physics Relevant to Low-Dimensional Systems • 2.1 Introduction • 2.2 Crystal Symmetries, Crystal Directions, and Crystal Planes • 2.3 Band Structure • 2.4 Classification of Solid-State Materials • 2.5 Bulk Properties of Materials • 2.6 Magnetic Materials • 2.7 Effect of Size Reduction on Bulk Properties • 2.8 Optoelectronic Property of Bulk and Nanostructures • 2.9 Electronic Structure of Nanomaterial and the Fermi Surface • 2.10 Luminescence from Nanoparticles • 2.11 Raman Spectroscopy of Nanoparticles • 2.12 Thermodynamics of Nanomaterial: Change in Melting Point • 3. Quantum Mechanics of Low-Dimensional Systems and Its Application to Nanoscience • 3.1 Introduction • 3.2 Energy Considerations: Bound States and Density of States • 3.3 Quantum Confinement • 3.4 Super lattices • 3.5 Band Offsets • 3.6 Quantum Transport in Nano clusters /Quantum Dots • 4. Basic Aspects of Synthesis of Nanomaterial and Device Fabrication • 4.1 Introduction • 4.2 Synthesis of Bulk Polycrystalline Samples • 4.3 Growth of Single Crystals • 4.4 Synthesis Techniques for the Preparation of Nanoparticles • 4.5 Requirements for

Realizing Semiconductor Nanostructures • 4.6 Some Specialized Growth Techniques for Nanostructures • 4.7 Electrostatic-Induced Growth • 4.8 Thermally Annealed Quantum Wells • 4.9 Semiconductor Nano crystals • 5. Different Types of Nanostructures • 5.1 Introduction • 5.2 Shapes and Structures of Nanomaterial • 5.3 Quantum Dots • 5.4 Semiconductor Nanoparticles • 6. Diffusion Kinetics • 6.1 Introduction • 6.2 Thermodynamics of Diffusion • 6.3 Grain Boundary Effect • 6.4 Effect of Defects on Diffusion • 7. Nanostructured Thin Films and Nano composites • 7.1 Introduction • 7.2 Micro- and Nano scale Thin-Film Fabrication Techniques • 7.3 Optical, Electrical, and Magnetic Properties of Nanostructured • Thin Films • 7.4 Nano composites • 7.5 Physical and Optical Properties • 7.6 Metal/Dielectric-Organic Nano composites • 8. Nano scale Characterization Techniques • 8.1 Introduction • 8.2 X-Ray Diffraction and Scherer Method • 8.3 Scanning Electron Microscopy • 8.4 Transmission Electron Microscopy • 8.5 Stoichiometry Study by Energy-Dispersive X-Ray Analysis • 8.6 Scanning Probe Microscopy • 8.7 Atomic Force Microscopy • 8.8 Piezoresponse Microscopy • 8.9 X-Ray Photoelectron Spectroscopy • 8.10 XANES and XAFS • 8.11 Angle-Resolved Photoemission Spectroscopy • 8.12 Diffuse Reflectance Spectra • 8.13 Photoluminescence Spectra • 8.14 Raman Spectroscopy • 8.15 DC Magnetization • 8.16 Electrical Resistivity Measurements • 8.17 Theory of Linear Four-Probe Method • 9. Recent Advances in Nanotechnology • 9.1 Introduction • 9.2 Designing Molecules for Nano electronics • 9.3 Advances of Nanotechnology in Materials Science • 10. New Trends in Nanoscience and Applications of Nanotechnology in Various Fields • 10.1 Introduction • 10.2 Applications in Material Science • 10.3 Applications in Biology and Medicine • 10.4 Applications in Surface Science • 10.5 Applications in Energy and Environment • 10.6 Applications of Nanostructured Thin Films • 10.7 Applications of Quantum Dots • 10.8 Carbon Nanotechnology • 10.9 Applications of Magnetic Nanoparticles • Appendix A - Useful Lab Experiments • Appendix B - Useful Tables • Index

9788126542017 | ₹ 859

MATERIAL SCIENCE

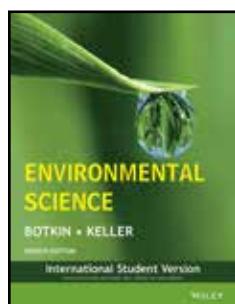


Callister's Materials Science and Engineering, 2ed, w/cd | IM | BS | e
Balasubramaniam

Table of Contents

- Atomic Structure and Interatomic Bonding • The Structure of Crystalline Solids • Imperfections in Solids • Diffusion • Mechanical Properties of Metals • Dislocations and Strengthening Mechanisms • Failure • Phase Diagrams • Phase Transformations: Development of Microstructure and Alteration of Mechanical Properties • Applications and Processing of Metal Alloys • Structures and Properties of Ceramics • Applications and Processing of Ceramics
- Polymer Structures • Characteristics, Applications, and Processing of Polymers • Composites • Corrosion and Degradation of Materials • Electrical Properties • Thermal Properties • Magnetic Properties • Optical Properties • Economic, Environmental and Societal Issues in Materials Science and Engineering

9788126541607 | ₹ 1159



Environmental Science, 8ed, ISV | e

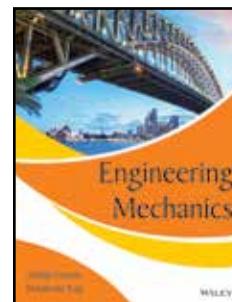
About the Author

Daniel B. Botkin is President of The Center for the Study of Environment and Professor Emeritus of Ecology, Evolution and Marine Biology, University of California, Santa Barbara. For more than three decades, Professor Botkin has been active in the application of ecological science to environmental management. He is the winner of the Mitchell International Prize for Sustainable Development and the Fennow Prize for International Forestry, and he has been elected to the California Environmental hall of Fame.

Table of Contents

- Key Themes in Environmental Science • Science as A Way of Knowing • The Big Picture: Systems of Change • The Human Population and The Environment • Ecosystems • The Biogeochemical Cycle • Dollars and Environmental Sense • Biological Diversity and Biological Invasions • Ecological Restoration • Environmental Heath, Pollution, and Toxicology • Agriculture, Aquaculture, and The Environment • Landscapes: Forests, Parks, and Wilderness • Wildlife, Fisheries, and Endangered Species • Energy: Some Basics • Fossil Fuels and The Environment • Alternative Energy and The Environment • Nuclear Energy and The Environment • Water Supply, Use, and Management • Water Pollution and Treatment • The Atmosphere, Climate, and Global Warming • Air Pollution • Urban Environments • Materials Management • Our Environmental Future.

9788126534142 | ₹ 1259



Engineering Mechanics | e | k

Chanda

About the Author

Dr. Abhijit Chanda is currently a Professor of Mechanical Engineering department, Jadavpur University, Kolkata. Dr. Chanda has over 15 years of teaching experience. He co-authored a book on Strength of Materials published by Wiley India. His research interests are in the fields of Material Science, Bio-Materials, Bio Engineering and related topics.

Table of Contents

- Preface • Statics • Chapter 1 a Quick Glimpse to Vector algebra • 1.1 Introduction • 1.2 Unit Vector • 1.3 Direction Cosines • 1.4 Vector as a Line Segment • 1.5 Position Vector • 1.6 Vector Addition and Subtraction • 1.7 Product of Two Vectors • 1.8 Vector Equation • 1.8.1 Linearly Independent Vectors • 1.9 A Look to Different Coordinate Systems • Chapter 2 introduction to Mechanics • 2.1 Mechanics – Basic Definitions • 2.2 Idealisations and Basic Assumptions • 2.3 Dimensions, Law of Dimensional Homogeneity and Units • Chapter 3 Vector Mechanics • 3.1 Introduction • 3.2 An Introduction to Vector Algebra • 3.3 Miscellaneous Vectors • 3.4 Vector Resolution and Cartesian Vector • 3.5 Position Vector • 3.6 Product of Vectors • 3.7 Couple-Moment • Chapter 4 Equivalent Force and Moment • 4.1 Introduction • 4.2 Basic Concept • 4.3 Varigon's Theorem of Moment • Chapter 5 Equilibrium • 5.1 Introduction • 5.2 Analysis Methodology • 5.3 Free Body Diagrams • 5.4 Two-Force Member • 5.5 Three-Force Member • 5.6 Frames and Machines • Chapter 6 Truss • 6.1 Introduction • 6.2 Types of Truss • 6.3 Analysis of Truss • Chapter 7 Friction • 7.1 Introduction • 7.2 Governing Equation of Friction • 7.3 Steps of Analysis • 7.4 Friction in Simple Machines • Chapter 8 Central Points and Properties of Surfaces • 8.1 Introduction • 8.2 Centre of Mass and Centre of Gravity • 8.3 Area Moment of Inertia • 8.4 Product Area-Moment of Inertia • 8.5 Parallel Axis Theorem • 8.6 Perpendicular Axis Theorem • 8.7 Area Moment of Inertia for Composite Area • 8.8 Centroid of Shell Element • Chapter 9 Distributed Force Systems • 9.1 Introduction • 9.2 Types of Distributed Load • 9.3 Analysis of Plane Distributed Load • Chapter 10 Virtual Work • 10.1 Introduction • 10.2 Virtual Work Theorems and Equation of Equilibrium Formulations • Dynamics • Chapter 1 Particle Kinematics • Objectives • 1.1 Introduction • 1.2 Study of Kinematics • 1.3 Rectilinear Motion • 1.4 Plane Curvilinear Motion in X-Y Coordinates • 1.5 n-t Coordinates for Curvilinear Motion • 1.6 Curvilinear Motion in Polar Coordinates • 1.7 Kinematics of Connected Bodies • Chapter 2 Kinetics • 2.1 Introduction • 2.2 Kinetics of a Particle • 2.3 Two-Dimensional Kinetics of a Slab-Like Rigid Body • 2.4 D'Alembert's Principle • 2.5 Types of Kinetics Problems • Chapter 3 Work, Energy and Power • 3.1 Introduction • 3.2 Work Done by Various Types of Forces • 3.3 Energy • 3.4 Conservative Forces • 3.5 Work-Energy Principle • 3.6 Power • Chapter 4 Momentum and Impulse • 4.1 Impulse and Linear Momentum of a Particle • 4.2 Angular Momentum • 4.3 Conservation of Linear Momentum • 4.4 Conservation of Angular Momentum • 4.5 Linear Momentum for a System of Mass Particles • 4.6 Impulsive Forces and Moments • 4.7 Collision of Bodies • Chapter 5 Dynamics of System of Particles • 5.1 Introduction • 5.2 Kinematics of System • 5.3 Kinetics of the System • Chapter 6 Plane Kinematics of Rigid Body • 6.1 Rigid Body • 6.2 Motion of Rigid Body in Two Dimensions • 6.3 Instantaneous Centre of Velocity • 6.4 Piston Displacement and Velocity of a Reciprocating Mechanism • 6.5 Special Discussion on the Locus of a Point on the Connecting Rod • 6.6 Rolling Motion of Cylinder-Like Body • Chapter 7 Rotational Kinetics of Rigid Bodies • 7.1 Introduction • 7.2 Equations



of Motion of Body Undergoing Plane Fixed-Axis Rotation • 7.3 D'Alembert's Principle
 • 7.4 Mass-Moment of Inertia • Chapter 8 Introduction to Dynamics of Vibration • 8.1 Introduction • 8.2 Free Vibration of an SDOF System • 8.3 Consideration of Mass of the Spring Element • 8.4 Damped Free Vibration of Single Degree of Freedom System • 8.5 Viscous Damping • 8.6 Forced Vibration of Single Degree of Freedom System • 8.7 Forced Vibration • Solved Examples • Practice Problems • Index

9788126570935 | ₹ 719



Engineering Mechanics Statics and Dynamics, 9ed, An Indian Adaptation | IM | e | k

Meriam

About the Author

Dr. James L. Meriam has contributed to the field of engineering mechanics as one of the premier engineering educators during the second half of the twentieth century. He had early industrial experience with Pratt and Whitney Aircraft and the General Electric Company. During the Second World War, he served in the U.S.

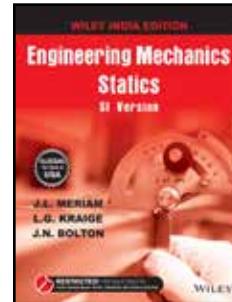
Coast Guard. He was a member of the faculty of the University of California-Berkeley, Dean of Engineering at Duke University, a faculty member at the California Polytechnic State University, and visiting professor at the University of California-Santa Barbara.

Table of Contents

- Foreword • Preface to the Adapted Edition • Preface • Acknowledgments • Part I Statics • 1 Introduction to Statics • 2 Force Systems • 2.1 Introduction • 2.2 Force • 2.3 Rectangular Components • 2.4 Moment • 2.5 Couple • 2.6 Resultants • 2.7 Rectangular Components • 2.8 Moment and Couple • 2.9 Resultants • 2.10 Chapter Review • 3 Equilibrium • 3.1 Introduction • 3.2 System Isolation and the Free-Body Diagram • 3.3 Equilibrium Conditions • 3.4 Equilibrium Conditions • 3.5 Chapter Review • 4 Structures • 4.1 Introduction • 4.2 Plane Trusses • 4.3 Method of Joints • 4.4 Graphical Method • 4.5 Method of Sections • 4.6 Space Trusses • 4.7 Frames and Machines • 4.8 Chapter Review • 5 Distributed Forces: Center of Mass, Centroid, and Moment of Inertia • 5.1 Introduction • 5.2 Center of Mass • 5.3 Centroids of Lines, Areas, and Volumes • 5.4 Composite Bodies and Figures; Approximations • 5.5 Theorems of Pappus • 5.6 Area Moments of Inertia • 5.7 Mass Moments of Inertia • 5.8 Beams—External Effects • 5.9 Beams—Internal Effects • 5.10 Chapter Review • 6 Friction • 6.1 Introduction • 6.2 Types of Friction • 6.3 Dry Friction • 6.4 Wedges • 6.5 Screws • 6.6 Journal Bearings • 6.7 Thrust Bearings; Disk Friction • 6.8 Flexible Belts • 6.9 Rolling Resistance • 6.10 Chapter Review • 7 Virtual Work • 7.1 Introduction • 7.2 Work • 7.3 Equilibrium • 7.4 Potential Energy and Stability • 7.5 Chapter Review • Part II Dynamics • Part IIA: Dynamics of Particles • 8 Introduction to Dynamics • 8.1 History and Modern Applications • 8.2 Solving Problems in Dynamics • 8.3 Chapter Review • 9 Kinematics of Particles • 9.1 Introduction • 9.2 Rectilinear Motion • 9.3 Plane Curvilinear Motion • 9.4 Rectangular Coordinates (x-y) • 9.5 Normal and Tangential Coordinates (n-t) • 9.6 Polar Coordinates (r-θ) • 9.7 Space Curvilinear Motion • 9.8 Relative Motion (Translating Axes) • 9.9 Constrained Motion of Connected Particles • 9.10 Chapter Review • 10 Kinetics of Particles • 10.1 Introduction • 10.2 Newton's Second Law • 10.3 Equation of Motion and Solution of Problems • 10.4 Rectilinear Motion • 10.5 Curvilinear Motion • 10.6 Work and Kinetic Energy • 10.7 Potential Energy • 10.8 Introduction • 10.9 Linear Impulse and Linear Momentum • 10.10 Angular Impulse and Angular Momentum • 10.11 Introduction • 10.12 Impact • 10.13 Central-Force Motion • 10.14 Relative Motion • 10.15 Chapter Review • 11 Kinetics of Systems of Particles • 11.1 Introduction • 11.2 Generalized Newton's Second Law • 11.3 Work-Energy • 11.4 Impulse-Momentum • 11.5 Conservation of Energy and Momentum • 11.6 Steady Mass Flow • 11.7 Variable Mass • 11.8 Chapter Review • Part IIB: Dynamics of Rigid Bodies • 12 Plane Kinematics of Rigid Bodies • 12.1 Introduction • 12.2 Rotation • 12.3 Absolute Motion • 12.4 Relative Velocity • 12.5 Instantaneous Center of Zero Velocity • 12.6 Relative Acceleration • 12.7 Motion Relative to Rotating Axes • 12.8 Chapter Review • 13 Plane Kinetics of Rigid Bodies • 13.1 Introduction • 13.2 General Equations of Motion • 13.3 Translation • 13.4 Fixed-Axis Rotation • 13.5 General Plane Motion • 13.6 Work-Energy Relations • 13.7 Acceleration from Work-Energy; Virtual Work • 13.8 Impulse-Momentum Equations • 13.9 Chapter Review • 14 Introduction to Three-Dimensional Dynamics of Rigid Bodies • 14.1 Introduction • 14.2 Translation • 14.3

Fixed-Axis Rotation • 14.4 Parallel-Plane Motion • 14.5 Rotation about a Fixed Point • 14.6 General Motion • 14.7 Angular Momentum • 14.8 Kinetic Energy • 14.9 Momentum and Energy Equations of Motion • 14.10 Parallel-Plane Motion • 14.11 Gyroscopic Motion: Steady Precession • 14.12 Chapter Review • 15 Vibration and Time Response • 15.1 Introduction • 15.2 Free Vibration of Particles • 15.3 Forced Vibration of Particles • 15.4 Vibration of Rigid Bodies • 15.5 Energy Methods • 15.6 Chapter Review • Appendix A Introduction to Analytical Mechanics • Appendix B Selected Topics of Mathematics • Appendix C Useful Tables • Index • Problem Answers

9789354248566 | ₹ 1319



Engineering Mechanics: Statics, SI Version | IM | e

Meriam

About the Author

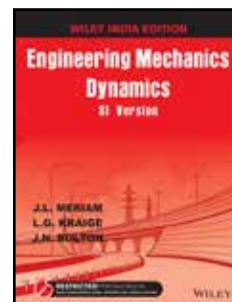
Dr. James L. Meriam has contributed to the field of engineering mechanics as one of the premier engineering educators during the second half of the twentieth century. He had early industrial experience with Pratt and Whitney Aircraft and the General Electric Company. During the Second World War, he served in the U.S. Coast Guard. He was a member of the faculty of the

University of California-Berkeley, Dean of Engineering at Duke University, a faculty member at the California Polytechnic State University, and visiting professor at the University of California-Santa Barbara.

Description

These exciting books use interesting, realistic illustrations to enhance reader comprehension. Also include a large number of worked examples that provide a good balance between initial, confidence building problems and more advanced level problems. Fundamental principles for solving problems are emphasized throughout.

9788126564033 | ₹ 1079



Engineering Mechanics: Dynamics, SI Version | IM | e

Meriam

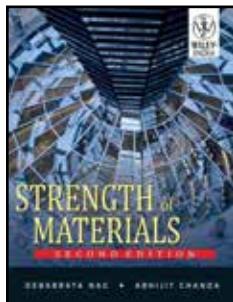
About the Author

Glenn Kraige is Professor in the Department of Engineering Science and Mechanics at Virginia Tech. He is a fellow member of the American Society for Engineering Education,

Description

Known for its accuracy, clarity, and dependability, Meriam, Kraige, and Bolton's Engineering Mechanics: Dynamics, 8th Edition SI Version has provided a solid foundation of mechanics principles to students for more than 60 years. Now in its eighth edition, the text continues to help students develop their problem-solving skills with an extensive variety of engaging problems related to engineering design. In addition to new homework problems, the text also includes a number of helpful sample problems. Students benefit from realistic applications that motivate their desire to learn and develop their skills.

9788126565375 | ₹ 1069



Strength of Materials, 2ed, w/cd | e | k

Nag

About the Author

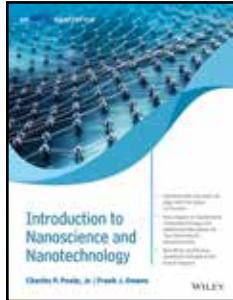
Dr. Debabrata Nag, a graduate in Mechanical Engineering from Jadavpur University, is presently designated as the Reader in the Department of Mechanical Engineering in Applied Mechanics specialisation of his alma mater. He has over 7 years of teaching experience both in Undergraduate and Postgraduate levels and over 12 years of industrial experience in finite element

stress analysis of industrial piping systems. Credited with a number of research papers in various International journals, his research interest includes areas of numerical modeling of non-Newtonian fluids, biological fluids, mathematical theories of mechanical vibration, theory of elasticity and dynamics of engineering systems. Dr. Nag has also co-authored the book "Fundamentals of Engineering Mechanics", published by Scholar Books, Kolkata with Dr. Abhijit Chanda.

Table of Contents

- Part A Elementary Strength of Materials • Stress and Strain • Torsion • Thin-Walled Pressure Vessels • Biaxial Stresses • Shear Force and Bending Moment of Beams • Stresses in Beams • Deflection of Beams • Buckling of Columns • Part B Advanced Strength of Materials • Analysis of Stress and Strain • Energy Principles • Theories of Failure • Combined Loadings • Unsymmetric Bending of Beam • Shear Stresses in Thin-walled beams • Axisymmetric Problems in Strength of Materials • Curved Beam Theory • Leaf Springs • Beams of Composite Materials • Statically Indeterminate Beams - Continuous Beams • Model Question Paper 1 • Model Question Paper 2 • Model Question Paper 3 • Model Question Paper 4 • Appendix A • A.1 Area Moment of Inertia • A.2 Product Area Moment of Inertia • A.3 Parallel-Axis Theorem • Appendix B • B.1 Deflection and Elastic Equations of Some Common Beams • B.2 Area, Centroid and Area Moment of Inertia for Some Common Sections • Appendix C • C.1 Symbols and Units • C.2 System of Units • C.3 Area under Parabola • Appendix D • D.1 Pure Bending • Appendix E • Bibliography • Index

9788126534876 | ₹ 909



Introduction to Nanoscience and Nanotechnology, An Indian Adaptation | e | k

Poole

About the Author

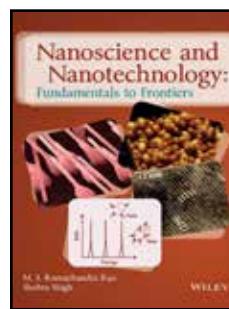
Charles P. Poole Jr., PhD, is a professor emeritus in the Department of Physics and Astronomy at the University of South Carolina is a member of the USC nanotechnology center.

Table of Contents

- 1 Introduction • 1.1 History of Nanoscience and Nanotechnology • 1.2 Definition and Classification of Nanomaterials • 1.3 Present and Future Perspectives of Nanomaterials and Nanotechnology • 2 Introduction to Solid State Physics • 2.1 Structure • 2.2 Energy Bands • 2.3 Localized Particles • 3 Methods of Measuring Properties • 3.1 Introduction • 3.2 Structure Analysis • 3.3 Microscopic Techniques • 3.4 Spectroscopic Techniques • 4 Properties and Synthesis of Nanoparticles • 4.1 Introduction • 4.2 Metal Nanoclusters and Nanoparticles • 4.3 Semiconducting Nanoparticles • 4.4 Rare Gas and Molecular Clusters • 4.5 Methods of Synthesis • 4.6 Conclusion • 5 Carbon-Based Nanostructures • 5.1 Introduction • 5.2 Carbon Molecules • 5.3 Carbon Clusters • 5.4 Carbon Nanotubes • 5.5 Applications of Carbon Nanotubes • 6 Nanostructured Materials • 6.1 Solid Disordered Nanostructures • 6.2 Nanostructured Crystals • 7 Nanostructured Ferromagnetism • 7.1 Basics of Ferromagnetism • 7.2 Effect of Bulk Nanostructuring of Magnetic Properties • 7.3 Dynamics of Nanomagnets • 7.4 Nanopore Containment of Magnetic Particles • 7.5 Nanocarbon Ferromagnets • 7.6 Giant and Colossal Magnetoresistance • 7.7 Ferrofluids • 8 Optical and Vibrational Spectroscopy • 8.1 Introduction • 8.2 Infrared Frequency Range • 8.3 Luminescence • 9 Quantum Wells, Wires, and Dots • 9.1 Introduction • 9.2 Preparation of Quantum

Nanostructures • 9.3 Size and Dimensionality Effects • 9.4 Excitons • 9.5 Single-Electron Tunneling • 9.6 Applications • 9.7 Superconductivity • 10 Self-Assembly and Catalysis • 10.1 Self-Assembly • 10.2 Catalysis • 11 Organic Compounds and Polymers • 11.1 Introduction • 11.2 Forming and Characterizing Polymers • 11.3 Nanocrystals • 11.4 Polymers • 11.5 Supramolecular Structures • 12 Biological Materials • 12.1 Introduction • 12.2 Biological Building Blocks • 12.3 Nucleic Acids • 12.4 Biological Nanostructures • 13 Nanomachines and Nanodevices • 13.1 Microelectromechanical Systems (MEMS) • 13.2 Nanoelectromechanical Systems (NEMS) • 13.3 Molecular and Supramolecular Switches • 14 Applications of Nanotechnology • 14.1 Nanotechnology for Environmental Engineering • 14.2 Nanotechnology for Textile Industry • 14.3 Nanotechnology in Agriculture and Food • 14.4 Nanotechnology Applications for Air and Soil • 14.5 Nanotechnology in Industry, Defence, and Security • 14.6 Water Demands for Nanotechnology • 14.7 Therapeutics and Regenerative Medicine • 14.8 Nanotechnology and the Energy Challenge • Summary • Keywords • Multiple-Choice Questions • Review Questions • Further Reading • Appendices • A Two-Dimensional Nanostructures • A.1 Introduction • A.2 Examples of 2D nanostructures • A.3 Synthesis of 2D Nanostructures • A.4 Applications of 2D Nanostructures • B Formulas for Dimensionality • B.1 Introduction • B.2 Delocalization • B.3 Partial Confinement • C Tabulations of Semiconducting Material Properties • D Answers to Multiple-Choice Questions • Index

9789354240201 | ₹ 1009



Nanoscience and Nanotechnology: Fundamentals of Frontiers | e | k

Rao

About the Author

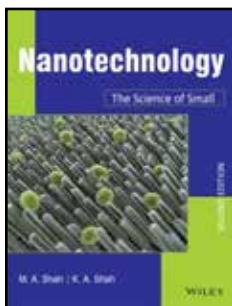
Dr. M.S. Ramachandra Rao is a professor in the Department of Physics and head of the "Nanostructured Thin Films and Advanced Materials" group at IIT Madras. His research activities are primarily focused on Physics and applications of nanostructures and nanomaterial.

Table of Contents

- 1. The Science behind Nanotechnology • 1.1 History of Nanoscience • 1.2 Definition of Nanometer, Nanomaterial, and Nanotechnology • 1.3 Classification of Nanomaterial • 1.4 Nanotechnology from the Perspective of Medieval Period • 2. Concepts of Solid-State Physics Relevant to Low-Dimensional Systems • 2.1 Introduction • 2.2 Crystal Symmetries, Crystal Directions, and Crystal Planes • 2.3 Band Structure • 2.4 Classification of Solid-State Materials • 2.5 Bulk Properties of Materials • 2.6 Magnetic Materials • 2.7 Effect of Size Reduction on Bulk Properties • 2.8 Optoelectronic Property of Bulk and Nanostructures • 2.9 Electronic Structure of Nanomaterial and the Fermi Surface • 2.10 Luminescence from Nanoparticles • 2.11 Raman Spectroscopy of Nanoparticles • 2.12 Thermodynamics of Nanomaterial: Change in Melting Point • 3. Quantum Mechanics of Low-Dimensional Systems and Its Application to Nanoscience • 3.1 Introduction • 3.2 Energy Considerations: Bound States and Density of States • 3.3 Quantum Confinement • 3.4 Super lattices • 3.5 Band Offsets • 3.6 Quantum Transport in Nano clusters /Quantum Dots • 4. Basic Aspects of Synthesis of Nanomaterial and Device Fabrication • 4.1 Introduction • 4.2 Synthesis of Bulk Polycrystalline Samples • 4.3 Growth of Single Crystals • 4.4 Synthesis Techniques for the Preparation of Nanoparticles • 4.5 Requirements for Realizing Semiconductor Nanostructures • 4.6 Some Specialized Growth Techniques for Nanostructures • 4.7 Electrostatic-Induced Growth • 4.8 Thermally Annealed Quantum Wells • 4.9 Semiconductor Nano crystals • 5. Different Types of Nanostructures • 5.1 Introduction • 5.2 Shapes and Structures of Nanomaterial • 5.3 Quantum Dots • 5.4 Semiconductor Nanoparticles • 6. Diffusion Kinetics • 6.1 Introduction • 6.2 Thermodynamics of Diffusion • 6.3 Grain Boundary Effect • 6.4 Effect of Defects on Diffusion • 7. Nanostructured Thin Films and Nano composites • 7.1 Introduction • 7.2 Micro- and Nano scale Thin-Film Fabrication Techniques • 7.3 Optical, Electrical, and Magnetic Properties of Nanostructured • Thin Films • 7.4 Nano composites • 7.5 Physical and Optical Properties • 7.6 Metal/Dielectric-Organic Nano composites • 8. Nano scale Characterization Techniques • 8.1 Introduction • 8.2 X-Ray Diffraction and Scherer Method • 8.3 Scanning Electron Microscopy • 8.4 Transmission Electron Microscopy • 8.5 Stoichiometry Study by Energy-Dispersive X-Ray Analysis • 8.6 Scanning Probe Microscopy • 8.7 Atomic Force Microscopy • 8.8 Piezoresponse

Microscopy • 8.9 X-Ray Photoelectron Spectroscopy • 8.10 XANES and XAFS • 8.11 Angle-Resolved Photoemission Spectroscopy • 8.12 Diffuse Reflectance Spectra • 8.13 Photoluminescence Spectra • 8.14 Raman Spectroscopy • 8.15 DC Magnetization • 8.16 Electrical Resistivity Measurements • 8.17 Theory of Linear Four-Probe Method • 9. Recent Advances in Nanotechnology • 9.1 Introduction • 9.2 Designing Molecules for Nano electronics • 9.3 Advances of Nanotechnology in Materials Science • 10. New Trends in Nanoscience and Applications of Nanotechnology in Various Fields • 10.1 Introduction • 10.2 Applications in Material Science • 10.3 Applications in Biology and Medicine • 10.4 Applications in Surface Science • 10.5 Applications in Energy and Environment • 10.6 Applications of Nanostructured Thin Films • 10.7 Applications of Quantum Dots • 10.8 Carbon Nanotechnology • 10.9 Applications of Magnetic Nanoparticles • Appendix A - Useful Lab Experiments • Appendix B - Useful Tables • Index

9788126542017 | ₹ 859



Nanotechnology: The Science of Small, 2ed | e | k

Shah

About the Author

Dr. M. A. Shah embarked upon new research programmes, pioneered the synthesis of broad range of nanomaterials, established the World Bank Funded Research Centre (Special Centre for Nanosciences) and laid the foundation to learn the new science – nanotechnology – in the early 2000s. In 2009, Dr. Shah moved to the Middle East on deputation for a short period of two

years and published the book Principles of Nanoscience & Nanotechnology with Dr. T. Ahmad, an eminent Chemist.

Table of Contents

- Preface • About the Authors • Chapter 1 Overview of Carbon Materials • 1.1 Introduction • 1.2 Carbon – The Versatile Element in the Nanoworld • 1.3 Diamond • 1.4 Graphite • 1.5 Fullerenes • 1.6 Nanometer: How Big or Small • 1.7 Carbon Nanotubes • 1.8 Properties of Carbon Nanotubes • 1.9 Growth of Carbon Nanotubes • 1.10 Graphene • Chapter 2 Fundamentals of Nanoscience • 2.1 Introduction • 2.2 Scientific Revolutions • 2.3 Basic Science behind Nanotechnology • 2.4 Properties at Nanoscale • 2.5 Quantum Confinement in Nanomaterials • 2.6 Rationale behind Dowsizing of Materials • 2.7 Significance of Size and Shape • 2.8 Solved Examples • Chapter 3 Techniques for Synthesis of Nanomaterials • 3.1 Introduction • 3.2 Methods for Synthesis of Nanomaterials • 3.3 Top-Down Fabrication Methods • 3.4 Bottom-up Fabrication Methods • Chapter 4 Nanomaterials Characterization Techniques • 4.1 Introduction • 4.2 Scanning Electron Microscope (SEM) • 4.3 Transmission Electron Microscope (TEM) • 4.4 Scanning Tunneling Microscope (STM) • 4.5 Atomic Force Microscope (AFM) • 4.6 X-Ray Diffraction (XRD) • 4.7 Raman Spectroscopy • Chapter 5 Prime Materials in Nanotechnology • 5.1 Introduction • 5.2 Nanomaterials: Natural and Man-made • 5.3 Semiconductor Nanomaterials • 5.4 Ceramic Nanomaterials • 5.5 Polymers • 5.6 Composites • 5.7 Metal Nanoparticles • 5.8 Biomaterials • Chapter 6 Nanotechnology Applications and Recent Breakthroughs • 6.1 Introduction • 6.2 Significant Impact of Nanotechnology and Nanomaterials • 6.3 Medicine and Healthcare Applications • 6.4 Biological and Biochemical Applications (Nanobiotechnology) • 6.5 Energy Applications • 6.6 Electronic Applications (Nanoelectronics) • 6.7 Computing Applications (Nanocomputers) • 6.8 Chemical Applications (Nanochemistry) • 6.9 Optical Applications (Nanophotonics) • 6.10 Agriculture and Food Applications • 6.11 Recent Major Breakthroughs in Nanotechnology • Chapter 7 Nanotechnology Initiatives and Future Prospectives • 7.1 Introduction • 7.2 Nanotechnology and the World's Attention • 7.3 India's Nanotechnology Initiatives • 7.4 Nanotechnology Solutions for Various Problems • 7.5 Future Prospective in Nanotechnology • 7.6 Nanotechnology and Speculations • Summary • Keywords • Review Questions • Further Readings • Useful Experiments • Useful Experiments • Appendix • Index

978812657997 | ₹ 709

MECHANICAL ENGINEERING

Basic Mechanical Engineering | e | k

Agrawal

About the Author

Basant Agrawal is a Lecturer in the Department of Mechanical Engineering at SGSITS Indore and presently pursuing a Ph.D. from IIT Delhi. With over ten years of teaching experience, his areas of interests include thermodynamics and heat engines, heat transfer, refrigeration systems, I.C. engines, steam turbines, etc. He has published 29 research papers in various international / national journals and conferences. With a B.E. and M.Tech. from MANIT Bhopal, he is a gold medalist in M.Tech. from Rajiv Gandhi Technical University, Bhopal.

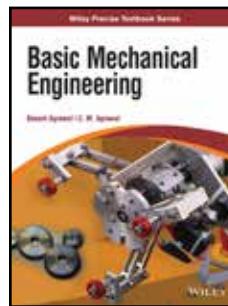


Table of Contents

- Chapter 1: Engineering Materials • Chapter 2: Properties of Materials • Chapter 3: Testing of Materials • Chapter 4: Mechanical Measurements • Chapter 5: Metrology • Chapter 6: Machine Tools • Chapter 7: Fluid Mechanics • Chapter 8: Fluid Machineries • Chapter 9: Laws of Thermodynamics • Chapter 10: Properties of Steam • Chapter 11: Steam Boilers • Chapter 12: Refrigeration Systems • Chapter 13: Steam Engines • Chapter 14: Air Standard Cycles • Chapter 15: Internal Combustion Engines • Annexure I: Steam Tables • Annexure II: Boiler Mountings and Accessories • A.1 Boiler Mountings • A.2 Accessories • Points to Remember • Key Terms • Review Questions • Model Question Papers • Test Paper - 1 • Test Paper - 2

9788126518784 | ₹ 669



Micro and Smart Systems: As per AICTE

Ananthasuresh

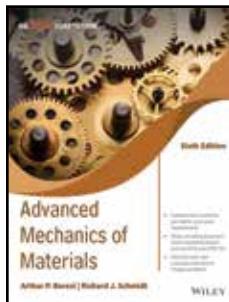
Table of Contents

- 1 Introduction • 1.1 Why Miniaturization? • 1.2 Microsystems versus MEMS • 1.3 Why Microfabrication? • 1.4 Smart Materials, Structures and Systems • 1.5 Integrated Microsystems • 1.6 Applications of Smart Materials and Microsystems • 1.7 Summary • 2 Micro Sensors, Actuators, Systems and Smart Materials: An Overview • 2.1 Silicon Capacitive Accelerometer • 2.2 Piezoresistive Pressure Sensor • 2.3 Conductometric Gas Sensor • 2.4 An Electrostatic Comb-Drive • 2.5 A Magnetic Microrelay • 2.6 Portable Blood Analyzer • 2.7 Piezoelectric Inkjet Print Head • 2.8 Micromirror Array for Video Projection • 2.9 Smart Materials and Systems • 2.10 Summary • 3 Micromachining Technologies • 3.1 Silicon as a Material for Micromachining • 3.2 Thin-Film Deposition • 3.3 Lithography • 3.4 Etching • 3.5 Silicon Micromachining • 3.6 Specialized Materials for Microsystems • 3.7 Advanced Processes for Microfabrication • 3.8 Summary • 4. Modeling of Solids in Microsystems • 4.1 The Simplest Deformable Element: A Bar • 4.2 Transversely Deformable Element: A beam • 4.3 Energy Methods for Elastic Bodies • 4.4 Examples and Problems • 4.5 Heterogeneous Layered Beams • 4.6 Bimorph Effect • 4.7 Residual Stresses and Stress Gradients • 4.8 Poisson Effect and the Anticlastic Curvature of Beams • 4.9 Torsion of Beams and Shear Stresses • 4.10 Dealing with Large Displacements • 4.11 In-Plane Stresses • 4.12 Summary • 5 Finite Element Method • 5.1 Need for Numerical Methods for Solution of Equations • 5.2 Variational Principles • 5.3 Weak Form of the Governing Differential Equation • 5.4 Finite Element Method • 5.5 Numerical Examples • 5.6 Finite Element Model for Structures with Piezoelectric Sensors and Actuators • 5.7 Analysis of a Piezoelectric Bimorph Cantilever Beam • 5.8 Summary • 6 Modeling of Coupled Electromechanical Systems • 6.1 Electrostatics • 6.2 Coupled Electromechanics: Statics • 6.3 Coupled Electromechanics: Stability and Pull-In Phenomenon • 6.4 Coupled Electromechanics: Dynamics • 6.5 Squeezed Film Effects in Electromechanics • 6.6 Summary • 7 Electronics Circuits and Control for Micro and Smart Systems • 7.1 Semiconductor Devices • 7.2 Electronics Amplifiers • 7.3 Practical Signal Conditioning Circuits for Microsystems • 7.4 Circuits for Conditioning Sensed Signals • 7.5 Introduction to Control Theory • 7.6 Implementation of Controllers • 7.7 Summary

Prices are subject to change without prior notice.

- 8 Integration of Micro and Smart Systems • 8.1 Integration of Microsystems and Microelectronics • 8.2 Microsystems Packaging • 8.3 Case Studies of Integrated Microsystems • 8.4 Case Study of a Smart Structure in Vibration Control • 8.5 Summary •
- 9 Scaling Effects in Microsystems • 9.1 Scaling in the Mechanical Domain • 9.2 Scaling in the Electrostatic Domain • 9.3 Scaling in the Magnetic Domain • 9.4 Scaling in the Thermal Domain • 9.5 Scaling in Diffusion • 9.6 Scaling in Fluids • 9.7 Scaling Effects in the Optical Domain • 9.8 Scaling in Biochemical Phenomena • 9.9 Summary • • Further Reading • Exercises • Glossary • Index • About the Authors

9788126520701 | ₹ 1009



Advanced Mechanics of Materials, 6ed, An Indian Adaptation | IM | e | k

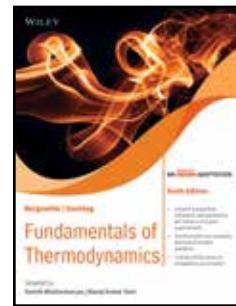
Boresi

Table of Contents

- Chapter 1: Introduction • 1.1 Review of Elementary Mechanics of Materials • 1.2 Methods of Analysis • 1.3 Stress–Strain Relations • 1.4 Failure and Limits on Design • • Chapter 2: Theories of Stress and Strain • 2.1 Definition of Stress at a Point • 2.2 Stress Notation • 2.3 Symmetry of the Stress Array and Stress on an Arbitrarily Oriented Plane • 2.4 Transformation of Stress, Principal Stresses, and Other Properties
- 2.5 Differential Equations of Motion of a Deformable Body • 2.6 Deformation of a Deformable Body • 2.7 Strain Theory, Transformation of Strain, and Principal Strains
- 2.8 Small-Displacement Theory • 2.9 Strain Measurement and Strain Rosettes • • Chapter 3: Linear Stress–Strain–Temperature Relations • 3.1 First Law of Thermodynamics, Internal–Energy Density, and Complementary Internal–Energy Density • 3.2 Hooke's Law: Isotropic Elasticity • 3.3 Hooke's Law: Anisotropic Elasticity • 3.4 Equations of Thermo elasticity for Isotropic Materials • 3.5 Hooke's Law: Orthotropic Materials • • Chapter 4: Applications of Energy Methods • 4.1 Principle of Stationary Potential Energy • 4.2 Castiglione's Theorem on Deflections • 4.3 Castiglione's Theorem on Deflections for Linear Load–Deflection Relations • 4.4 Deflections of Statically Determinate Structures • 4.5 Statically Indeterminate Structures • • Chapter 5: Torsion • 5.1 Torsion of a Prismatic Bar of Circular Cross Section • 5.2 Saint–Venant's Semiinverse Method • 5.3 Linear Elastic Solution • 5.4 The Prandtl Elastic–Membrane (Soap–Film) Analogy • 5.5 Narrow Rectangular Cross Section • 5.6 Torsion of Rectangular Cross Section Members • 5.7 Hollow Thin–Wall Torsion Members and Multiply Connected Cross Sections • 5.8 Thin–Wall Torsion Members with Restrained Ends • 5.9 Fully Plastic Torsion: General Cross Sections • • Chapter 6: Bending of Straight Beams • 6.1 Fundamentals of Beam Bending • 6.2 Bending Stresses in Beams Subjected to Nonsymmetrical Bending • 6.3 Deflections of Straight Beams Subjected to Nonsymmetrical Bending • 6.4 Effect of Inclined Loads • 6.5 Fully Plastic Load for Nonsymmetrical Bending • • Chapter 7: Shear Center for Thin–Wall Beam Cross Sections • 7.1 Approximations for Shear in Thin–Wall Beam Cross Sections • 7.2 Shear Flow in Thin–Wall Beam Cross Sections • 7.3 Shear Center for a Channel Section • 7.4 Shear Center of Composite Beams Formed from Stringers and Thin Webs • 7.5 Shear Center of Box Beams • • Chapter 8: Curved Beams • 8.1 Introduction • 8.2 Circumferential Stresses in a Curved Beam • 8.3 Radial Stresses in Curved Beams • 8.4 Correction of Circumferential Stresses in Curved Beams Having I, T, or Similar Cross Sections • 8.5 Deflections of Curved Beams • 8.6 Statically Indeterminate Curved Beams: Closed Ring Subjected to a Concentrated Load • 8.7 Fully Plastic Loads for Curved Beams • • Chapter 9: Beams on Elastic Foundations • 9.1 General Theory • 9.2 Infinite Beam Subjected to a Concentrated Load: Boundary Conditions • 9.3 Infinite Beam Subjected to a Distributed Load Segment • 9.4 Semi-infinite Beam Subjected to Loads at Its End • 9.5 Semi-infinite Beam with Concentrated Load Near Its End • 9.6 Short Beams • 9.7 Thin–Wall Circular Cylinders • • Chapter 10: The Thick–Wall Cylinder • 10.1 Basic Relations • 10.2 Stress Components at Sections Far from Ends for a Cylinder with Closed Ends • 10.3 Stress Components and Radial Displacement for Constant Temperature Cylinder • 10.4 Criteria of Failure • 10.5 Fully Plastic Pressure and Autofrettage • • Chapter 11: Elastic and Inelastic Stability of Columns • 11.1 Introduction to the Concept of Column Buckling • 11.2 Deflection Response of Columns to Compressive Loads • 11.3 The Euler Formula for Columns with Pinned Ends • 11.4 Euler Buckling of Columns with Linearly Elastic End Constraints • 11.5 Local Buckling of Columns • • Chapter 12: Flat Plates • 12.1 Introduction • 12.2

- Stress Resultants in a Flat Plate • 12.3 Kinematics: Strain–Displacement Relations for Plates • 12.4 Equilibrium Equations for Small–Displacement Theory of Flat Plates • 12.5 Stress–Strain–Temperature Relations for Isotropic Elastic Plates • 12.6 Strain Energy of a Plate • 12.7 Boundary Conditions for Plates • 12.8 Solution of Rectangular Plate Problems • 12.9 Solution of Circular Plate Problems • • Chapter 13: Stress Concentrations • 13.1 Nature of a Stress Concentration Problem and the Stress Concentration Factor • 13.2 Stress Concentration Factors: Theory of Elasticity • 13.3 Stress Concentration Factors: Combined Loads • 13.4 Stress Concentration Factors: Experimental Techniques • 13.5 Effective Stress Concentration Factors • 13.6 Effective Stress Concentration Factors: Inelastic Strains • • Chapter 14: Contact Stresses • 14.1 Introduction • 14.2 The Problem of Determining Contact Stresses • 14.3 Geometry of the Contact Surface • 14.4 Notation and Meaning of Terms • 14.5 Expressions for Principal Stresses • 14.6 Method of Computing Contact Stresses • 14.7 Deflection of Bodies in Point Contact • 14.8 Stress for Two Bodies in Line Contact: Loads Normal to Contact Area • 14.9 Stresses for Two Bodies in Line Contact: Loads Normal and Tangent to Contact Area • • Problems • References • Multiple Choice Questions • Appendix A Average Mechanical Properties of Selected Materials • Appendix B Second Moment (Moment of Inertia) of a Plane Area • Appendix C Properties of Steel Cross Sections • Author Index • Subject Index

9788194726395 | ₹ 949



Fundamentals of Thermodynamics, 10ed, An Indian Adaptation | IM | e | k

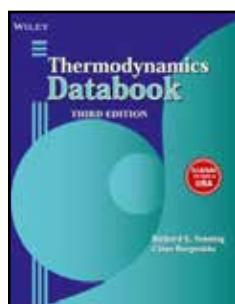
Borgnakke, Bhattacharyya, Soni

Table of Contents

- Symbols • 1 Introduction and Preliminaries • 1.1 A Thermodynamic System and the Control Volume • 1.2 Macroscopic Versus Microscopic Points of View • 1.3 Properties and State of a Substance • 1.4 Processes and Cycles • 1.5 Units for Mass, Length, Time, and Force • 1.6 Specific Volume and Density • 1.7 Pressure • 1.8 Energy • 1.9 Equality of Temperature • 1.10 The Zeroth Law of Thermodynamics • 1.11 Temperature Scales • 1.12 Engineering Applications • • 2 Properties of a Pure Substance • 2.1 The Pure Substance • 2.2 The Phase Boundaries • 2.3 The P–v–T Surface • 2.4 Tables of Thermodynamic Properties • 2.5 The Two-Phase States • 2.6 The Liquid and Solid States • 2.7 The Superheated Vapor States • 2.8 The Ideal Gas States • 2.9 The Compressibility Factor • 2.10 Equations of State • 2.11 Engineering Applications • • 3 Energy Equation and First Law of Thermodynamics • 3.1 Definition of Work • 3.2 Work Done at the Moving Boundary of a Simple Compressible System • 3.3 Other Systems that Involve Work • 3.4 Concluding Remarks Regarding Work • 3.5 Definition of Heat • 3.6 Heat Transfer Modes • 3.7 Comparison of Heat and Work • 3.8 The First Law of Thermodynamics for a Control Mass • 3.9 Internal Energy—a Thermodynamic Property • 3.10 Problem Analysis and Solution Technique • 3.11 The Thermodynamic Property Enthalpy • 3.12 The Constant-Volume and Constant-Pressure Specific Heats • 3.13 The Internal Energy, Enthalpy, and Specific Heat of Ideal Gases • 3.14 Nonuniform Distribution of States and Mass • 3.15 The Transient Heat Transfer Process • 3.16 The First Law as a Rate equation • 3.17 Engineering Applications • • 4 Energy Analysis for a Control Volume • 4.1 Conservation of Mass and the Control Volume • 4.2 The Energy Equation for a Control Volume • 4.3 The Steady-State Process • 4.4 Examples of Steady-State Processes • 4.5 Multiple-Flow Devices • 4.6 The Transient Flow Process • 4.7 Engineering Applications • • 5 The Second Law of Thermodynamics • 5.1 Heat Engines, Refrigerators, and Heat Pump • 5.2 The Second Law of Thermodynamics • 5.3 The Reversible Process • 5.4 Factors that Render Processes Irreversible • 5.5 The Carnot Cycle • 5.6 Two Propositions Regarding the Efficiency of a Carnot Cycle • 5.7 The Thermodynamic Temperature Scale • 5.8 The Ideal Gas Temperature Scale • 5.9 Ideal Versus Real Machines • 5.10 The Inequality of Clausius • 5.11 Engineering Applications • • 6 Entropy • 6.1 Entropy—a Property of a System • 6.2 The Entropy of a Pure Substance • 6.3 Entropy Change in Reversible Processes • 6.4 The Thermodynamic Property Relation • 6.5 Entropy Change of a Solid or Liquid • 6.6 Entropy Change of an Ideal Gas • 6.7 The Reversible Polytropic Process for an Ideal Gas • 6.8 Entropy Change of a Control Mass During an Irreversible Process • 6.9 Entropy Balance Equation for a Closed System • 6.10 Principle of the Increase of Entropy • 6.11 Entropy Balance Equation in a Rate Form • 6.12 Some General Comments about Entropy and Chaos • • 7

Entropy Analysis for a Control Volume • 7.1 The Entropy Balance Equation for a Control Volume • 7.2 The Steady-State Process and the Transient Process • 7.3 The Steady-State Single-Flow Process • 7.4 Principle of the Increase of Entropy • 7.5 Engineering Applications; Energy Conservation and Device Efficiency • • 8 Exergy • 8.1 Reversible Work, and Irreversibility • 8.2 Exergy • 8.3 Exergy Balance Equation • 8.4 The Second-Law Efficiency • 8.5 Engineering Applications • • 9 Gas Power and Refrigeration Systems • 9.1 Introduction to Power Systems • 9.2 Air-Standard Power Cycles • 9.3 The Stirling Cycle and the Ericsson Cycle • 9.4 Reciprocating Engine Power Cycles • 9.5 The Otto Cycle • 9.6 The Diesel Cycle • 9.7 The Dual Cycle • 9.8 The Atkinson and Miller Cycles • 9.9 The Brayton Cycle • 9.10 The Simple Gas-Turbine Cycle with a Regenerator • 9.11 Gas-Turbine Power Cycle Configurations • 9.12 The Air-Standard Cycle for Jet Propulsion • 9.13 Introduction to Refrigeration Systems • 9.14 The Air-Standard Refrigeration Cycle • • 10 Vapor Power and Refrigeration Systems • 10.1 The Simple Rankine Cycle • 10.2 Effect of Pressure and Temperature on the Rankine Cycle • 10.3 The Reheat Cycle • 10.4 The Regenerative Cycle and Feedwater Heaters • 10.5 Deviation of Actual Cycles from Ideal Cycles • 10.6 Combined Heat and Power: Other Configurations • 10.7 The Vapor-Compression Refrigeration Cycle • 10.8 Working Fluids for Vapor-Compression Refrigeration Systems • 10.9 Deviation of the Actual Vapor-Compression Refrigeration Cycle from the Ideal Cycle • 10.10 Refrigeration Cycle Configurations • 10.11 The Absorption Refrigeration Cycle • 10.12 Exergy Analysis of Cycles • 10.13 Combined-Cycle Power and Refrigeration Systems • • 11 Gas Mixtures • 11.1 General Considerations and Mixtures of Ideal Gases • 11.2 A Simplified Model of a Mixture Involving Gases and a Vapor • 11.3 The Energy Equation Applied to Gas–Vapor Mixtures • 11.4 The Adiabatic Saturation Process • 11.5 Engineering Applications—Wet-Bulb and Dry-Bulb Temperatures and the Psychrometric Chart • • 12 Thermodynamic Relations • 12.1 The Clapeyron Equation • 12.2 Mathematical Relations for a Homogeneous Phase • 12.3 The Maxwell Relations • 12.4 Thermodynamic Relations Involving Enthalpy, Internal Energy, and Entropy • 12.5 Volume Expansivity and Isothermal and Adiabatic Compressibility • 12.6 Real-Gas Behavior and Equations of State • 12.7 The Generalized Chart for Changes of Enthalpy at Constant Temperature • 12.8 The Generalized Chart for Changes of Entropy at Constant Temperature • 12.9 The Property Relation for Mixtures • 12.10 Pseudopure Substance Models for Real Gas Mixtures • 12.11 Engineering Applications • • 13 Chemical Reactions • 13.1 Fuels • 13.2 The Combustion Process • 13.3 Enthalpy of Formation • 13.4 Energy Analysis of Reacting Systems • 13.5 Enthalpy and Internal Energy of Combustion; Heating Value • 13.6 Adiabatic Flame Temperature • 13.7 The Third Law of Thermodynamics and Absolute Entropy • 13.8 Second-Law Analysis of Reacting Systems • 13.9 Fuel Cells • 13.10 Engineering Applications • • 14 Introduction to Phase and Chemical Equilibrium • 14.1 Requirements for Equilibrium • 14.2 Equilibrium Between Two Phases of a Pure Substance • 14.3 Metastable Equilibrium • 14.4 Chemical Equilibrium • 14.5 Simultaneous Reactions • 14.6 Coal Gasification • 14.7 Ionization • 14.8 Engineering Applications • • 15 Compressible Flow • 15.1 Stagnation Properties • 15.2 The Momentum Equation for a Control Volume • 15.3 Adiabatic, One-Dimensional, Steady-State Flow of an Incompressible Fluid through a Nozzle • 15.4 Velocity of Sound in an Ideal Gas • 15.5 Reversible, Adiabatic, One-Dimensional Flow of an Ideal Gas through a Nozzle • 15.6 Mass-Flow Rate of an Ideal Gas through an Isentropic Nozzle • 15.7 Normal Shock in an Ideal Gas Flowing through a Nozzle • 15.8 Nozzle and Diffuser Coefficients • • Summary • Problems • Appendix A SI Units: Single-State Properties • Appendix B SI Units: Thermodynamic Tables • Appendix C Ideal Gas Specific Heat • C.1 Monatomic Gases (Inert Gases Ar, He, Ne, Xe, Kr; Also N, O, H, Cl, F, ...) • C.2 Diatomic and Linear Polyatomic Gases (N₂, O₂, CO, OH, ..., CO₂, N₂O, ...) • C.3 Nonlinear Polyatomic Molecules (H₂O, NH₃, CH₄, C₂H₆, ...) • Appendix D Equations of State • Appendix E Figures • Appendix F Multiple-Choice Questions • Index

9789354642210 | ₹ 1139



Thermodynamics Databook, 3ed

Borgnakke, Sonntag

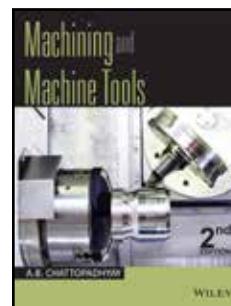
About the Author

Richard E. Sonntag is a Professor of mechanical engineering at the University of Michigan and served as the department chair for eleven years. Claus Borgnakke is an Associate Professor at the University of Michigan where he received the Excellence in Teaching Award as well as other awards and recognitions including the Ralph E. Teetor.

Table of Contents

• A Single-State Properties • Table A.1 Conversion Factors • Table A.2 Critical Constants • Table A.3 Properties of Selected Solids at 25°C • Table A.4 Properties of Some Liquids at 25°C • Table A.5 Properties of Various Ideal Gases at 25°C, 100 kPa (SI Units) • Table A.6 Constant-Pressure Specific Heats of Various Ideal Gases • Table A7.1 Ideal-Gas Properties of Air, Standard Entropy at 0.1-MPa (1-Bar) Pressure • Table A7.2 The Isentropic Relative Pressure and Relative Volume Functions • Table A.8 Ideal-Gas Properties of Various Substances, Entropies at 0.1-MPa (1-Bar) Pressure, Mass Basis • Table A.9 Ideal-Gas Properties of Various Substances (SI Units), Entropies at 0.1-MPa (1-Bar) Pressure, Mole Basis • Table A.10 Enthalpy of Formation and Absolute Entropy of Various Substances at 25°C, 100 kPa Pressure • Table A.11 Logarithms to the Base e of the Equilibrium Constant K • • B Thermodynamic Tables • Table B.1 Thermodynamic Properties of Water • Table B.2 Thermodynamic Properties of Ammonia • Table B.3 Thermodynamic Properties of Carbon Dioxide • Table B.4 Thermodynamic Properties of R-410A • Table B.5 Thermodynamic Properties of R-134a • Table B.6 Thermodynamic Properties of Nitrogen • Table B.7 Thermodynamic Properties of Methane • • C Ideal-Gas Specific Heat • C.1 MONATOMIC GASES (INERT GASES AR, HE, NE, XE, KR; ALSO N, O, H, CL, F, ...) • C.2 DIATOMIC AND LINEAR POLYATOMIC GASES(N₂, O₂, CO, OH, ..., CO₂, N₂O, ...) • C.3 NONLINEAR POLYATOMIC MOLECULES (H₂O, NH₃, CH₄, C₂H₆, ...) • • D Equations Of State • Table D.1 Equations of State • Table D.2 The Lee–Kesler Equation of State • Table D.3 Saturated Liquid–Vapor Compressibilities, Lee–Kesler Simple Fluid • Table D.4 Acentric Factor for Some Substances • • • E Figures • Figure E.1 Temperature–Entropy Diagram for Water • Figure E.2 Pressure–Enthalpy Diagram for Ammonia • Figure E.3 Pressure–Enthalpy Diagram for Oxygen • Figure E.4 Psychrometric Chart • • • F Additional Thermodynamic Tables • Table F.1 Thermodynamic Properties of R-12 • Table F.2 Thermodynamic Properties of R-22

9788126589203 | ₹ 349



Machining and Machine Tools, 2ed, w/cd | e | k

Chattopadhyay

About the Author

Dr. A. B. Chattopadhyay has a vast teaching experience spanning nearly half a century, most of which he has spent in teaching and research at the prestigious IIT Kharagpur, of which he was a Professor as well as an Emeritus Professor. He has guided more than 150 academic projects including 20 PhDs and has published more than 150 national and international papers. He has designed and authored NPTEL web and video courses Manufacturing Processes-II. He has been selection board member for various universities, department head at IIT Kharagpur and a paper setter and examiner for 8 institutions.

Table of Contents

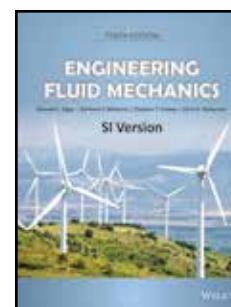
• Preface to the Second Edition • Preface to the First Edition • About the Author • • Part A – Machining • 1 Introduction to Machining • 1.1 Introduction • 1.2 Engineering Manufacturing • 1.3 Machining • 1.4 Need or Benefits of Learning 'Theory of Machining' • 1.5 Major Aspects and Topics to be Studied under Machining • 1.6 Solved Problems • • 2 Geometry of Cutting Tools • 2.1 Introduction • 2.2 Geometry of Single-Point Turning Tools • 2.3 Geometry of Multiple-Point Cutting Tools • 2.4 Conversion of Tool Angles • 2.5 Solved Problems • • 3 Mechanism of Machining • 3.1 Introduction • 3.2 Purpose of Studying Mechanism of Chip Formation in Machining • 3.3 Mechanism of Chip Formation in Machining • 3.4 Geometry and Characteristics of Continuous Chip Formation • 3.5 Chip Formation in Drilling • 3.6 Chip Formation Mechanism in Milling • 3.7 Solved Problems • • 4 Mechanics of Machining • 4.1 Introduction • 4.2 Generation of Cutting Forces and the Effects of the Cutting Forces in Machining • 4.3 Cutting Force Analysis and Estimation • 4.4 Analysis and Estimation of Forces under Oblique Cutting • 4.5 Mechanics and Estimation of Drilling and Milling Forces • 4.6 Measurement of Cutting Forces • 4.7 Design Considerations for Tool-Force Dynamometers • 4.8 Construction of Typical Tool-Force Dynamometers and Their Functioning • 4.9 Solved Problems • • 5 Heat Generation and Cutting Temperature in Machining • 5.1 Introduction • 5.2 Location and Causes of Heat Generation in Machining • 5.3 Effects of Cutting Temperature on Job and Tool • 5.4 Determination of Cutting Temperature • 5.5 Control of Cutting Temperature and Application of Cutting Fluid • 5.6 Solved Problems

Prices are subject to change without prior notice.

- 6 Failure, Life and Materials of Cutting Tools • 6.1 Introduction • 6.2 Major Causes and Modes of Failure of Cutting Tools • 6.3 Wear of Cutting Tools • 6.4 Tool Life • 6.5 Cutting Tool Materials • 6.6 Solved Problems • • 7 Estimation of Machining Time • 7.1 Introduction • 7.2 Significance of Machining Time and Purposes of Its Evaluation • 7.3 Major Factors that Govern Machining Time • 7.4 Methods of Estimation of Machining Time • 7.5 Solved Problems • • 8 Machinability, Some Critical Problems and Remedial Measures • 8.1 Introduction • 8.2 Machinability • 8.3 Machining Problems of Some Critical Materials and Remedial Approaches • 8.4 Control of Chips and Chip-Breaking • 8.5 Some Special Techniques of Improving Machinability • 8.6 Surface Quality of Machined Components • • 9 Grinding: Fast Machining and Finishing by Bonded Abrasives • 9.1 Introduction • 9.2 Basic Principles, Methods and Applications of Grinding • 9.3 Grinding Requirements • 9.4 Grinding Wheels • 9.5 Mechanism and Mechanics of Grinding • 9.6 Grindability and Its Improvement • 9.7 Advanced Technology of Grinding • 9.8 Some Special Techniques for Improving Grinding Performance • 9.9 Super-Finishing Processes • 9.10 Solved Problems • • 10 Economy and Eco-Friendliness in Machining • 10.1 Introduction • 10.2 Economy and Optimization of Machining • 10.3 Optimization of Process Schedule and Machining Parameters for Machining Economy • 10.4 Environmental Problems in Machining and Grinding and Remedial Measures • 10.5 Solved Problems • • Part B – Machine Tools • 11 Introduction to Machine Tools • 11.1 Introduction • 11.2 Definition and Role of Machine Tool • 11.3 Major Components of Machine Tools and Their Functions • 11.4 General Configuration of Common Machine Tools and Their Uses • 11.5 Major Aspects of Machine Tools • • 12 Functional Principles of Machine Tools • 12.1 Introduction • 12.2 Basic Functions of Machine Tools • 12.3 Generatrix, Directrix and Tool-Work Motions for Various Machining Work • • 13 Machine Tool Power Drives • 13.1 Introduction • 13.2 Power Sources Used in Machine Tools • 13.3 Estimation of Power Requirement for Machine Tool Drives • 13.4 Hydraulic Drives in Machine Tools • 13.5 Solved Problems • • 14 Role and Forms of Kinematic Structure in Machine Tools • 14.1 Introduction • 14.2 Role and General Constituents of the Kinematic Structure of Machine Tools • 14.3 Different Forms of Machine Tool Kinematic Structures • 14.4 Mechanisms Commonly Used in Machine Tool Kinematic Systems • 14.5 Solved Problems • • 15 Methods of Changing Speed and Feed in Machine Tools • 15.1 Introduction • 15.2 Need of Large Number of Speeds and Feeds in Machine Tools • 15.3 Methods of Changing Speed and Feed in Machine Tools • • 16 Design of Speed Gear Box of Machine Tools • 16.1 Introduction • 16.2 Procedural Steps in Design of SGB • 16.3 Layout of Spindle Speeds in Machine Tools • 16.4 Selection of Gear Layout and Ray Diagram for SGB • 16.5 Determination of Dimensions of the Gears and Shafts of SGB • 16.6 Solved Problems • • 17 Design Principle of Machine Tools Structural Bodies • 17.1 Introduction • 17.2 Requirements for Design of Machine Tool Structural Body • 17.3 Design of Lathe Bed • 17.4 Design of Lathe Beds from Pre-Set Process Capability • • 18 Automation in Machine Tools • 18.1 Introduction • 18.2 Role of Automation in Machine Tools • 18.3 Advent of Automation in Manufacturing Industries • 18.4 Type of Automation in Machine Tools • • 19 Classification and Specification of Machine Tools • 19.1 Introduction • 19.2 Advent of Various Machine Tools: History and Reasons • 19.3 Classification of Machine Tools • 19.4 Purpose of Machine Tool Specification • 19.5 Methods of Specification of Conventional Machine Tools • • 20 Conventional Machine Tools – Their Features and Functioning • 20.1 Introduction • 20.2 General Classification of Machine Tools • 20.3 Characteristic Features of Different Machine Tools and Their Functioning • • 21 Kinematic Systems of Conventional Machine Tools • 21.1 Introduction • 21.2 Role of Kinematic Systems in Machine Tools • 21.3 Kinematic Systems of General-Purpose Conventional Machine Tools • 21.4 Kinematic System of Gear Teeth Generating Machine Tools • 21.5 Kinematic Systems and Working Principle of Hydraulically Driven Machine Tools • 21.6 Design of Kinematic System for Special-Purpose Machine Tool • 21.7 Solved Problems • • 22 Machining Applications of Conventional Machine Tools • 22.1 Introduction • 22.2 General Applications of the Conventional Machine Tools • 22.3 Special Applications of Conventional Machine Tools Using Various Attachments • • 23 Methods of Mounting Blanks and Cutting Tools in Machine Tools • 23.1 Introduction • 23.2 Mounting Blanks and Cutting Tools in Machine Tools • 23.3 General Methods of Mounting Blanks and Cutting Tools in Different Machine Tools • • 24 Design and Application of Jigs and Fixtures for Aiding Machining • 24.1 Introduction • 24.2 Purpose of Using Fixtures and Jigs in Machine Shops • 24.3 Considerations While Designing Fixtures and Jigs • 24.4 Principles and Methods of Design of Fixtures and Jigs • 24.5 Functions and Design Aspects of Bushes Used in Jigs • 24.6 Design of Jigs and Fixtures for Specific Machining Requirements • • 25 Computer Numerical Controlled Machine Tools • 25.1 Introduction • 25.2 Basic Principles and Applications • 25.3 Construction and Operation of CNC Machine Tools and Machining Centres • • 26 Foundation, Inspection and Testing of Machine Tools • 26.1 Introduction

- 26.2 Purpose of Machine Tool Foundation: Its Design Principle and Construction • 26.3 Inspection and Testing of Machine Tools • 26.4 Solved Problems • • Summary • Multiple Choice Questions • Review Questions • Problems • Index

9788126564743 | ₹ 959



Engineering Fluid Mechanics, 10ed, SI Version | IM | e

Elger

Table of Contents

- Preface • Chapter 1 Building a Solid Foundation • 1.1 Defining Engineering Fluid Mechanics • 1.2 Describing Liquids and Gases • 1.3 Idealizing Matter • 1.4 Dimensions and Units • 1.5 Carrying and Canceling Units • 1.6 Applying the Ideal Gas Law (IGL) • 1.7 The Wales-Woods Model • 1.8 Checking for Dimensional Homogeneity (DH) • 1.9 Summarizing Key Knowledge
- Chapter 2 Fluid Properties • 2.1 Defining the System • 2.2 Characterizing Mass and Weight • 2.3 Modeling Fluids as Constant Density • 2.4 Finding Fluid Properties • 2.5 Describing Viscous Effects • 2.6 Applying the Viscosity Equation • 2.7 Characterizing Viscosity • 2.8 Characterizing Surface Tension • 2.9 Predicting Boiling Using Vapor Pressure • 2.10 Characterizing Thermal Energy in Flowing Gases • 2.11 Summarizing Key Knowledge • Chapter 3 Fluid Statics • 3.1 Describing Pressure • 3.2 Calculating Pressure Changes Associated with Elevation Changes • 3.3 Measuring Pressure • 3.4 Predicting Forces on Plane Surfaces (Panels) • 3.5 Calculating Forces on Curved Surfaces • 3.6 Calculating Buoyant Forces • 3.7 Predicting Stability of Immersed and Floating Bodies • 3.8 Summarizing Key Knowledge • Chapter 4 The Bernoulli Equation and Pressure Variation • 4.1 Describing Streamlines, Streaklines and Pathlines • 4.2 Characterizing Velocity of a Flowing Fluid • 4.3 Describing Flow • 4.4 Acceleration • 4.5 Applying Euler's Equation to Understand Pressure Variation • 4.6 Applying the Bernoulli Equation along a Streamline • 4.7 Measuring Velocity and Pressure • 4.8 Characterizing Rotational Motion of a Flowing Fluid • 4.9 The Bernoulli Equation for Irrotational Flow • 4.10 Describing the Pressure Field for Flow over a Circular Cylinder • 4.11 Calculating the Pressure Field for a Rotating Flow • 4.12 Summarizing Key Knowledge • • Chapter 5 Control Volume Approach and Continuity Equation • 5.1 Characterizing the Rate of Flow • 5.2 The Control Volume Approach • 5.3 Continuity Equation (Theory) • 5.4 Continuity Equation (Application) • 5.5 Predicting Cavitation • 5.6 Summarizing Key Knowledge • Chapter 6 Momentum Equation • 6.1 Understanding Newton's Second Law of Motion • 6.2 The Linear Momentum Equation: Theory • 6.3 Linear Momentum Equation: Application • 6.4 The Linear Momentum Equation for a Stationary Control Volume • 6.5 Examples of the Linear Momentum Equation (Moving Objects) • 6.6 The Angular Momentum Equation • 6.7 Summarizing Key Knowledge • Chapter 7 The Energy Equation • 7.1 Energy Concepts • 7.2 Conservation of Energy • 7.3 The Energy Equation • 7.4 The Power Equation • 7.5 Mechanical Efficiency • 7.6 Contrasting the Bernoulli Equation and the Energy Equation • 7.7 Transitions • 7.8 Hydraulic and Energy Grade Lines • 7.9 Summarizing Key Knowledge • Chapter 8 Dimensional Analysis and Similitude • 8.1 Need for Dimensional Analysis • 8.2 Buckingham II Theorem • 8.3 Dimensional Analysis • 8.4 Common p-Groups • 8.5 Similitude • 8.6 Model Studies for Flows without Free-Surface Effects • 8.7 Model-Prototype Performance • 8.8 Approximate Similitude at High Reynolds Numbers • 8.9 Free-Surface Model Studies • 8.10 Summarizing Key Knowledge • Chapter 9 Predicting Shear Force • 9.1 Uniform Laminar Flow • 9.2 Qualitative Description of the Boundary Layer • 9.3 Laminar Boundary Layer • 9.4 Boundary Layer Transition • 9.5 Turbulent Boundary Layer • 9.6 Pressure Gradient Effects of Boundary Layers • 9.7 Summarizing Key Knowledge • Chapter 10 Flow in Conduits • 10.1 Classifying Flow • 10.2 Specifying Pipe Sizes • 10.3 Pipe Head Loss • 10.4 Stress Distributions in Pipe Flow • 10.5 Laminar Flow in a Round Tube • 10.6 Turbulent Flow and the Moody Diagram • 10.7 Strategy for Solving Problems • 10.8 Combined Head Loss • 10.9 Nonround Conduits • 10.10 Pumps and Systems of Pipes • 10.11 Key Knowledge • Chapter 11 Drag and Lift • 11.1 Relating Lift and Drag to Stress Distributions • 11.2 Calculating Drag Force • 11.3 Drag of Axisymmetric and 3-D Bodies • 11.4 Terminal Velocity • 11.5 Vortex Shedding • 11.6 Reducing Drag by Streamlining • 11.7 Drag in Compressible Flow • 11.8 Theory of Lift • 11.9 Lift and Drag on Airfoils • 11.10 Lift and Drag on Road Vehicles • 11.11 Summarizing Key Knowledge • Chapter 12 Compressible Flow • 12.1 Wave Propagation



in Compressible Fluids • 12.2 Mach Number Relationships • 12.3 Normal Shock Waves • 12.4 Isentropic Compressible Flow Through a Duct with Varying Area • 12.5 Summarizing Key Knowledge • • Chapter 13 Flow Measurements • 13.1 Measuring Velocity and Pressure • 13.2 Measuring Flow Rate (Discharge) • 13.3 Measurement in Compressible Flow • 13.4 Accuracy of Measurements • 13.5 Summarizing Key Knowledge • Chapter 14 Turbomachinery • 14.1 Propellers • 14.2 Axial-Flow Pumps • 14.3 Radial-Flow Machines • 14.4 Specific Speed • 14.5 Suction Limitations of Pumps • 14.6 Viscous Effects • 14.7 Centrifugal Compressors • 14.8 Turbines • 14.9 Summarizing Key Knowledge • Chapter 15 Flow in Open Channels • 15.1 Description of Open-Channel Flow • 15.2 Energy Equation for Steady Open-Channel Flow • 15.3 Steady Uniform Flow • 15.4 Steady Non uniform Flow • 15.5 Rapidly Varied Flow • 15.6 Hydraulic Jump • 15.7 Gradually Varied Flow • 15.8 Summarizing Key Knowledge • Chapter 16 Modeling of Fluid Dynamics Problems • 16.1 Models in Fluid Mechanics • 16.2 Foundations for Learning Partial Differential Equations (PDEs) • 16.3 The Continuity Equation • 16.4 The Navier-Stokes Equation • 16.5 Computational Fluid Dynamics (CFD) • 16.6 Examples of CFD • 16.7 A Path for Moving Forward • 16.8 Summarizing Key Knowledge • Appendix • Answers • Index

9788126564491 | ₹ 1179



Successful Product Design and Management Toolkit | e | k

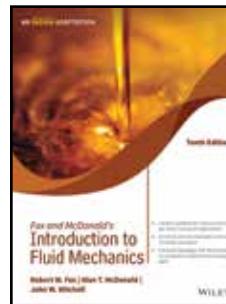
Fradin

Table of Contents

- 1. Full Title • Copyright • Praises for the book • Foreword • Preface • The Agile Product Management Life Cycle Framework • Product Management Competencies • Your Learning Tools • Your Learning Roadmap • Table of Contents 2 • Module 1 • Foundations in the Successful Management of Products • • Session 1.1: What Must Products Have to Succeed? • Session 1.2: History of the Management of Products • Session 1.3: • What Distinguishes Products and Services • Session 1.4: Business Model and Canvas • Session 1.5: Product Management Lifecycle and Framework • Session 1.6: Product Management Competencies • Highlight 1 • Successful Management of Products in Startups • • Session 1.7: • What Makes a Customer-Centric Organizational Structure • Session 1.8: • The Role of Values and Vision • • Session 1.9: • Understanding the Customer Journey • Session 1.10: • The Changing Business Environment Impacting Successful Product Management • • Session 1.11: • Systems and Tools for Product Management • • Highlight 2: • Careers in the Successful Management of Products • 3. • Module 2: Product Market Strategy and Product Planning • Session 2.1: • Building a Product Market Strategy • • Session 2.2: • The Value of Do • Session 2.3: • How to Define a Do • Session 2.4: • Information Gathering: Market Research • Session 2.5: • Going to Development: Process and Innovation • • Session 2.6: • Discover New Markets and Market Sizing • • Session 2.7: • Value Proposition • Highlight 1 • Writing Product Description • Session 2.8: • Describing Personas • Session 2.9: • Market Adoption Cycles • Session 2.10: • Market Segmentation • Session 2.11: • Total Available (Addressable) Market (TAM) and Target Markets • Session 2.12: • Competitive Environment • • Highlight 2: • Penetrating Existing and New Markets • • Session 2.13: • Product Positioning • Session 2.14: • Product Roadmaps • Session 2.15: • Product Portfolio • Highlight 3 • Performing SWOT Analysis • Session 2.16: • Channel Partners and Affiliates • Highlight 4 • Preparing for Sales Training • Session 2.17: • Pricing Strategy • Session 2.18: • Sales Forecasting • Session 2.19: • Budgeting, Expense Control and ROI • • Session 2.20: • Intellectual Property and Protection of Ideas • • Highlight 5: • Metrics, Analysis and Reporting • • Highlight 6: • Developing a Product Market Strategy Plan • • Answers • Module 2 • 3. • Module 3: Product Market Strategy and Product Planning • Session 3.1: • Product Roadmaps • Session 3.2: • Understanding Market Differences • Session 3.3 • Marketing Strategies and the 11 Ps • • Session 3.4: • Marketing and Generating Leads Online • • Session 3.5 • The Media Mix • Session 3.6: • Messaging and Content • Session 3.7: • Packaging, Bundling and Promotions • • Session 3.8: • Marketing Communications • Session 3.9: • Managing Budgets, Schedules and Metrics • 4. • Module 4: Business Skills for Product Managers • • Session 4.1: • Persuasive Communication • • Session 4.2: • Impactful Presentations • • Session 4.3: • Expanding Networks • • Session 4.4: • Negotiation and Mediation • • Session 4.5 • Program Management • • Session 4.6: • Basic Data Analysis • Answers

Module 4.5. • Module 5: User Experience and User Interface • • Session 5.1: • User Experience • Session 5.2: • User Interface 6. • Module 6: Product Engineering • Session 6.1: • Prioritizing Features: Kano Analysis • • Session 6.2: • Product Research And Development • • Session 6.3 • Agile Product Development Methodologies • • Session 6.4: • Agile Roles and Scrum Methodology • • Session 6.5 • Agile Development Planning • • Session 6.6: • Agile Development Key Metrics • • Session 6.7: • Testing in Agile Product Development • • Session 6.8: • Importance of Product Testing • • Session 6.9: • Managing Beta Programs • 7. • Module 7: Product Support and Documentation • • Session 7.1: • Product Support • Session 7.2: • Importance of Documentation • Answers Module 7 • 10 Revealing Interview Questions from Product Management Executives • Acknowledgements

9788126564996 | ₹ 1065



Fox and McDonald's Introduction to Fluid Mechanics, 10ed, An Indian Adaptation | IM | e | k

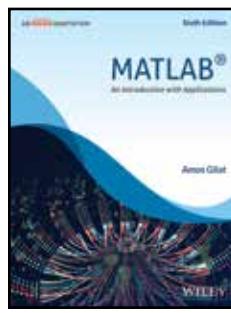
Fox

Table of Contents

- Preface to the Adapted Edition • Preface • Chapter 1 Introduction • 1.1 Introduction to Fluid Mechanics • 1.2 Basic Equations • 1.3 Methods of Analysis • 1.4 Dimensions and Units • 1.5 Analysis of Experimental Error • 1.6 Summary • Chapter 2 Fundamental Concepts • 2.1 Fluid as a Continuum • 2.2 Velocity Field • 2.3 Stress Field • 2.4 Viscosity • 2.5 Surface Tension • 2.6 Description and Classification of Fluid Motions • 2.7 Summary and Useful Equations • Chapter 3 Fluid Statics • 3.1 The Basic Equation of Fluid Statics • 3.2 The Standard Atmosphere • 3.3 Pressure Variation in a Static Fluid • 3.4 Hydrostatic Force on Submerged Surfaces • 3.5 Buoyancy and Stability • 3.6 Fluids in Rigid-Body Motion • 3.7 Summary and Useful Equations • Chapter 4 Basic Equations in Integral Form for a Control Volume • 4.1 Basic Laws for a System • 4.2 Relation of System Derivatives to the Control Volume Formulation • 4.3 Conservation of Mass • 4.4 Momentum Equation for Inertial Control Volume • 4.5 Momentum Equation for Control Volume with Rectilinear Acceleration • 4.6 Momentum Equation for Control Volume with Arbitrary Acceleration • 4.7 The Angular-Momentum Principle • 4.8 The First and Second Laws of Thermodynamics • 4.9 Summary and Useful Equations • Chapter 5 Introduction to Differential Analysis of Fluid Motion • 5.1 Conservation of Mass • 5.2 Stream Function for Two-Dimensional Incompressible Flow • 5.3 Motion of a Fluid Particle (Kinematics) • 5.4 Momentum Equation • 5.5 Summary and Useful Equations • Chapter 6 Incompressible Inviscid Flow • 6.1 Momentum Equation for Frictionless Flow: Euler's Equation • 6.2 Bernoulli Equation: Integration of Euler's Equation Along a Streamline for • Steady Flow • 6.3 The Bernoulli Equation Interpreted as an Energy Equation • 6.4 Energy Grade Line and Hydraulic Grade Line • 6.5 Unsteady Bernoulli Equation: Integration of Euler's Equation Along a Streamline • 6.6 Irrational Flow • 6.7 Summary and Useful Equations • Chapter 7 Dimensional Analysis and Similitude • 7.1 Nondimensionalizing the Basic Differential Equations • 7.2 Buckingham Pi Theorem • 7.3 Significant Dimensionless Groups in Fluid Mechanics • 7.4 Flow Similarity and Model Studies • 7.5 Summary and Useful Equations • Chapter 8 Internal Incompressible Viscous Flow • 8.1 Internal Flow Characteristics • PART A Fully Developed Laminar Flow • 8.2 Fully Developed Laminar Flow between Infinite Parallel Plates • 8.3 Fully Developed Laminar Flow in a Pipe • • PART B Flow in Pipes and Ducts • 8.4 Shear Stress Distribution in Fully Developed Pipe Flow • 8.5 Turbulent Velocity Profiles in Fully Developed Pipe Flow • 8.6 Energy Considerations in Pipe Flow • 8.7 Calculation of Head Loss • 8.8 Solution of Pipe Flow Problems • PART C Flow Measurement • 8.9 Flow Measurement and Flow Restriction • 8.10 Restriction Flow Meters for Internal Flows • 8.11 Summary and Useful Equations • Chapter 9 External Incompressible Viscous Flow • PART A Boundary Layers • 9.1 The Boundary Layer Concept • 9.2 Laminar Flat Plate Boundary Layer: Exact Solution • 9.3 Momentum Integral Equation • 9.4 Use of the Momentum Integral Equation for Flow with Zero Pressure Gradient • 9.5 Pressure Gradients in Boundary Layer Flow • PART B Fluid Flow About Immersed Bodies • 9.6 Drag • 9.7 Lift • 9.8 Summary and Useful Equations • • Chapter 10 Fluid Machinery • 10.1 Introduction and Classification of Fluid Machines • 10.2 Turbomachinery Analysis • 10.3 Pumps, Fans, and Blowers • 10.4 Positive Displacement Pumps • 10.5 Hydraulic Turbines • 10.6 Propellers and Wind Turbines • 10.7 Compressible Flow Turbomachines

- 10.8 Summary and Useful Equations • Chapter 11 Flow in Open Channels • 11.1 Basic Concepts and Definitions • 11.2 Energy Equation for Open-Channel Flows • 11.3 Localized Effect of Area Change (Frictionless Flow) • 11.4 The Hydraulic Jump • 11.5 Steady Uniform Flow • 11.6 Flow with Gradually Varying Depth • 11.7 Discharge Measurement Using Weirs • 11.8 Summary and Useful Equations • Chapter 12 Introduction to Compressible Flow • 12.1 Review of Thermodynamics • 12.2 Propagation of Sound Waves • 12.3 Reference State: Local Isentropic Stagnation Properties • 12.4 Critical Conditions • 12.5 Basic Equations for One-Dimensional Compressible Flow • 12.6 Isentropic Flow of an Ideal Gas: Area Variation • 12.7 Normal Shocks • 12.8 Supersonic Channel Flow with Shocks • 12.9 Summary and Useful Equations • Appendix A Fluid Property Data A-1 • A.1 Specific Gravity • A.2 Surface Tension • A.3 The Physical Nature of Viscosity • A.4 Lubricating Oils • A.5 Properties of Common Gases, Air, and Water • Appendix B Selected Performance Curves for Pumps and Fans • B.1 Introduction • B.2 Pump Selection • B.3 Fan Selection • Appendix C Flow Functions for Computation of Compressible Flow • C.1 Isentropic Flow • C.2 Normal Shock • Appendix D Analysis of Experimental Uncertainty • D.1 Introduction • D.2 Types of Error • D.3 Estimation of Uncertainty • D.4 Applications to Data • D.5 Summary • References • Appendix E Introduction to Computational Fluid Dynamics • E.1 Introduction to Computational Fluid Dynamics • E.2 Finite Difference Approach to CFD • Index

9789354641077 | ₹ 1179



MATLAB: An Introduction with Applications, 6ed, An Indian Adaptation | IM

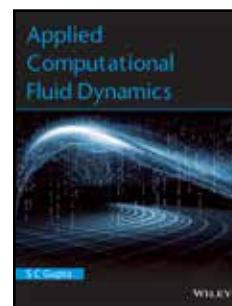
Gilat

Table of Contents

- Preface to the U.S. Edition • Preface to the Adapted Edition • Introduction • Introduction • The Purpose of This Book • Topics Covered • The Framework of a Typical Chapter • Software and Hardware • The Order of Topics in the Book • Chapter 1 Starting with MATLAB
 - 1.1 Installing MATLAB • 1.2 System Requirements for Different Operating Platforms • 1.3 Starting MATLAB, MATLAB Windows • 1.4 Working in the Command Window • 1.5 Arithmetic Operations with Scalars • 1.6 Display Formats
 - 1.7 Elementary Math Built-in Functions • 1.8 Defining Scalar Variables • 1.9 Useful Commands for Managing Variables • 1.10 Script Files • 1.11 Examples of MATLAB Applications • Chapter 2 Creating Arrays • 2.1 Creating a One-Dimensional Array (Vector) • 2.2 Creating a Two-Dimensional Array (Matrix) • 2.3 Notes About Variables in MATLAB • 2.4 The Transpose Operator • 2.5 Array Addressing • 2.6 Using a Colon: In Addressing Arrays • 2.7 Adding Elements to Existing Variables • 2.8 Deleting Elements
 - 2.9 Built-in Functions for Handling Arrays • 2.10 Strings and Strings as Variables • Chapter 3 Mathematical Operations with Arrays • 3.1 Addition and Subtraction • 3.2 Array Multiplication • 3.3 Array Division • 3.4 Element-by-Element Operations • 3.5 Using Arrays in MATLAB Built-in Math Functions • 3.6 Built-in Functions for Analyzing Arrays • 3.7 Generation of Random Numbers • 3.8 Examples of MATLAB Applications • Chapter 4 Using Script Files and Managing Data • 4.1 The MATLAB Workspace and the Workspace Window • 4.2 Input to a Script File • 4.3 Output Commands • 4.4 The save and load Commands • 4.5 Importing and Exporting Data • 4.6 Examples of MATLAB Applications • Chapter 5 Two-Dimensional Plots • 5.1 The plot Command • 5.2 The fplot Command • 5.3 Plotting Multiple Graphs in the Same Plot • 5.4 Formatting a Plot • 5.5 Plots with Logarithmic Axes • 5.6 Plots with Error Bars • 5.7 Plots with Special Graphics
 - 5.8 Histograms • 5.9 Polar Plots • 5.10 Putting Multiple Plots on the Same Page • 5.11 Multiple Figure Windows • 5.12 Plotting Using the Plots Toolbar • 5.13 Examples of MATLAB Applications • Chapter 6 Programming in MATLAB • 6.1 Relational and Logical Operators • 6.2 Conditional Statements • 6.3 The switch-case Statement • 6.4 Loops • 6.5 Nested Loops and Nested Conditional Statements • 6.6 The break and continue Commands • 6.7 Examples of MATLAB Applications • Chapter 7 User-Defined Functions and Function Files • 7.1 Creating a Function File • 7.2 Structure of a Function File • 7.3 Local and Global Variables • 7.4 Saving a Function File • 7.5 Using a User-Defined Function • 7.6 Examples of Simple User-Defined Functions • 7.7 Comparison between Script Files and Function Files • 7.8 Anonymous Functions • 7.9 Function Functions • 7.10 Subfunctions • 7.11 Nested Functions • 7.12 Examples of MATLAB Applications • Chapter 8 Polynomials, Curve Fitting, and Interpolation • 8.1 Polynomials • 8.2 Curve Fitting •

- 8.2.1 Curve Fitting with Polynomials; The polyfit Function • 8.2.2 Curve Fitting with Functions Other than Polynomials • 8.3 Interpolation • 8.4 The Basic Fitting Interface • 8.5 Examples of MATLAB Applications • Chapter 9 Applications in Numerical Analysis • 9.1 Solving an Equation with One Variable • 9.2 Finding a Minimum or a Maximum of a Function • 9.3 Numerical Integration • 9.4 Ordinary Differential Equations • 9.5 Examples of MATLAB Applications • Chapter 10 Three-Dimensional Plots • 10.1 Line Plots • 10.2 Mesh and Surface Plots • 10.3 Plots with Special Graphics • 10.4 The view Command • 10.5 Examples of MATLAB Applications • Chapter 11 Symbolic Math • 11.1 Symbolic Objects and Symbolic Expressions • 11.2 Changing the Form of an Existing Symbolic Expression • 11.3 Solving Algebraic Equations • 11.4 Differentiation • 11.5 Integration • 11.6 Solving an Ordinary Differential Equation • 11.7 Plotting Symbolic Expressions • 11.8 Numerical Calculations with Symbolic Expressions • 11.9 Computing Partial Derivatives • 11.10 Examples of MATLAB Applications • Chapter 12 Simulink • 12.1 Introduction • 12.2 Simulink Environment Fundamentals • 12.3 Model-Based Design with Simulink • 12.4 Simulink-Supported Hardware • 12.5 Examples • Chapter 13 Machine Learning (Available Online at Wiley.com) • Appendix: Summary of Characters, Commands, and Functions • Index

9789357462174 | ₹ 899



Applied Computational Fluid Dynamics | e | k

Gupta

About the Author

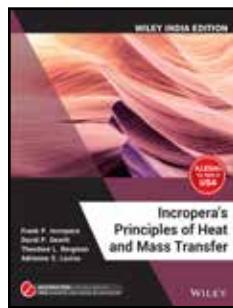
Prof. S C Gupta is presently teaching at MVJ College of Engineering, Bangalore. He Graduated in Aeronautical Engineering from Punjab Engineering College, Chandigarh in the year 1969 with Distinction of Hons and a Gold Medal and subsequently obtained M.Tech from Indian Institute of Technology, Kanpur in the Year 1971. He has over 47 years of experience in the field of Aeronautics, mainly at R&D sector and teaching at postgraduate level. He worked for several years with Defence Research and Development Organisation (DRDO) from where he retired as Air Commodore.

Table of Contents

- Chapter 1 Introduction • 1.1 Insight into Power of Computational Fluid Dynamics • 1.2 Advantages of CFD • 1.3 Typical Major Goals of Computational Numeric in Aerospace • 1.4 Error Sources in CFD Codes and in Wind Tunnel Data • 1.5 Requirement of Computing Power for CFD • 1.6 CFD Applications • 1.7 CFD Ideas to Understand • 1.8 Models of Flow • 1.9 Substantial Derivative (Time Rate of Change Following a Moving Fluid Element) • 1.10 Divergence of Velocity ($\nabla \cdot \mathbf{V}$) • 1.11 Compressibility • 1.12 Viscosity • 1.13 Governing Equations of Flow • 1.14 All Equations Are One: Some Manipulations • 1.15 Integral Versus Differential Form of Equations • 1.16 Comments on the Governing Equations • 1.17 Physical Boundary Conditions • 1.18 Forms of Governing Equations Particularly Suited for CFD Work • 1.19 Shock Fitting and Shock Capturing • • Chapter 2 Mathematical Behavior of Partial Differential Equations and Its Impact on Computational Fluid Dynamics • 2.1 Introduction • 2.2 Method to Determine Classification of Partial Differential Equations • 2.3 Classification of PDEs: Impact on Physical and Computational Fluid Dynamics • 2.4 Essence of Discretization • 2.5 Difference Equation • 2.6 Explicit and Implicit Approach • 2.7 Errors and Stability Analysis • 2.8 Stability Regions of Standard Time-Stepping Techniques • 2.9 System of Second-Order PDEs • 2.10 Canonicalization of PDEs • • Chapter 3 Solution Methods of Finite-Difference Equations • 3.1 Introduction • 3.2 Time Marching • 3.3 Space Marching • 3.4 Relaxation Technique • 3.5 Alternating Direction Implicit (ADI) Method • 3.6 Successive Over-Relaxation/Under-Relaxation • 3.7 Lax-Wendroff Method • 3.8 Upwind Schemes • 3.9 Midpoint Leapfrog • 3.10 Shock Capturing • 3.11 Numerical Viscosity • 3.12 Artificial Viscosity • 3.13 Conservative Smoothing • 3.14 Unsteady Problem-Explicit versus Implicit Scheme • • Chapter 4 Grid Generation • 4.1 Introduction • 4.2 Structured Grid Generation • 4.3 Surface Grid Generation • 4.4 Multiblock Grid Generation • 4.5 Unstructured Grid Generation • 4.6 Multigrid Methods: Cycling Strategies • • Chapter 5 Adaptive Grid Methods and Appropriate Transformation • 5.1 Introduction • 5.2 Adaptive Grids • 5.3 Structured Grid Adaptive Methods • 5.4 Unstructured Adaptive Grid Methods • 5.5 General Transformation of the Equations • 5.6 Matrices and Jacobians • 5.7 Generic form of the Governing Flow Equations in Strong • 5.8 Parallel Processing • • Chapter

6 Finite Volume Methods • 6.1 General Conservation Laws • 6.2 Spatial Discretization
 – Structured Finite Volume Scheme • 6.3 Temporal Discretization – Structured Finite Volume Scheme • 6.4 Boundary Conditions • 6.5 Case Studies • 6.6 High-Resolution Schemes • • Chapter 7 Computational Fluid Dynamics: Some Applications • 7.1 Numerical Dissipation and Dispersion • 7.2 Approximate Factorization • 7.3 Flux Vector Splitting • 7.4 Computational Solution for the Laminar Boundary Layer • 7.5 Application to Turbulence • 7.6 Computational Solution for Turbulent Boundary Layer • 7.7 Thermal • 7.8 Multi-Objective Shape Optimization • 7.9 Inverse Design • 7.10 Similarity Laws • 7.11 Method of Characteristics • 7.12 Fluid Structure Interaction • • Appendix 7.1 • Appendix 7.2 Design Exercise: To Design Three-Dimensional Aerofoil Shapes for Maximum Endurance for Jet-Powered Plane • References • Index

9788126577538 | ₹ 779



Incropera's Principles of Heat and Mass Transfer, Wiley India Edition | IM | e

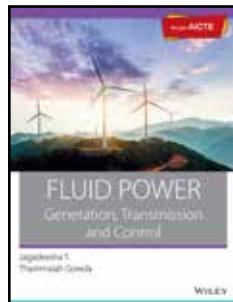
Incropera

Table of Contents

- 1 Introduction • 2 Introduction to Conduction • 3 One-Dimensional, Steady-State Conduction • 4 Two-Dimensional, Steady-State Conduction • 5 Transient Conduction • 6 Introduction to Convection • 7 External Flow • 8 Internal Flow • 9 Free Convection • 10 Boiling and Condensation • 11 Heat Exchangers • 12 Radiation:

Processes and Properties • 13 Radiation Exchange Between Surfaces • 14 Diffusion Mass Transfer • Appendix A Thermophysical Properties of Matter • Appendix B Mathematical Relations and Functions • Appendix C Thermal Conditions Associated with Uniform Energy Generation in One-Dimensional, Steady-State Systems • Appendix D The Gauss-Seidel Method • Appendix E The Convection Transfer Equations • Appendix F Boundary Layer Equations for Turbulent Flow • Appendix G An Integral Laminar Boundary Layer Solution for • Parallel Flow over a Flat Plate • Index

9788126578245 | ₹ 1179



Fluid Power: Generation, Transmission and Control: As per AICTE | e

Jagadeesha T.

About the Author

Jagadeesha T. is currently working as an Assistant Professor in the Department of Mechanical and Production Engineering at National Institute of Technology (NIT), Calicut (Kerala). He is the recipient of the prestigious JRD Tata Scholarship and SMA (Government of Singapore) Scholarship. He has 20 years

of experience in the industry, teaching, academic research, consultation, and has excellently completed many projects with reputed organizations. He has worked with TATA Engineering Locomotive Company (India), TVS Suzuki (India), IBM Pvt. Ltd (Singapore), ASM (Singapore), and Applied Materials (Singapore and United States), APP Systems and Services (Singapore), ST Microelectronics (Singapore), Chartered Semiconductor Manufacturing (Singapore), and Sitronics (Singapore).

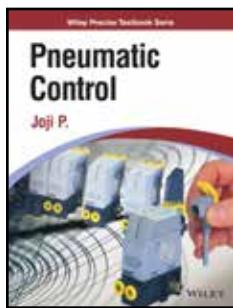
Table of Contents

- Preface • Acknowledgements • About the Authors • Nomenclature • 1 Introduction to Fluid Power • 1.1 Introduction • 1.2 Fluid Power and Its Scope • 1.3 Classification of Fluid Power Systems • 1.4 Hydrostatic and Hydrodynamic Systems • 1.5 History of Fluid Power • 1.6 Advantages of a Fluid Power System • 1.7 Disadvantages of a Fluid Power System • 1.8 Basic Components of a Hydraulic System • 1.9 Basic Components of a Pneumatic System • 1.10 Comparison between Hydraulic and Pneumatic Systems • 1.11 Comparison of Different Power Systems • 1.12 Future of Fluid Power Industry in India • 2 Properties of Fluid • 2.1 Introduction • 2.2 Solids and Fluids • 2.3 Density, Specific Weight, Specific Volume and Specific Gravity • 2.4 Pressure • 2.5 Compressible

and Incompressible Fluids • 2.6 Bulk Modulus (Volume Modulus of Elasticity) • 2.7 Reynolds Number • 2.8 Types of Fluid Flow • 2.9 Ideal Fluid • 2.10 Viscosity • 2.11 Viscosity Index • 3 Fluids for Hydraulic Systems • 3.1 Introduction • 3.2 Functions of Hydraulic Fluids • 3.3 Additives in Hydraulic Fluids • 3.4 Types of Hydraulic Fluids • 3.5 Factors Influencing the Selection of a Fluid • 4 Governing Principles and Laws • 4.1 Introduction • 4.2 Brief Review of Mechanics • 4.3 Pascal's Law • 4.4 Conservation of Energy • 4.5 The Continuity Equation • 4.6 Bernoulli's Equation from Newton's Law • 4.7 Bernoulli's Equation from Energy Consideration • 4.8 The Energy Equation • 4.9 Elements of Hydraulic Systems and the Corresponding Bernoulli's Equation • 4.10 Torricelli's Theorem • 4.11 Siphon • 5 Distribution of Fluid Power • 5.1 Introduction • 5.2 Choice of Distribution • 5.3 Conductor Sizing • 5.4 Burst Pressure and Working Pressure • 5.5 Steel Pipes • 5.6 Screwed Connections • 5.7 Steel Tubing • 5.8 Compression Joints • 5.9 Plastic Conductors • 5.10 Flexible Hoses • 5.11 Rotary Couplings • 5.12 Quick Disconnect Couplings • 6 Energy Losses in Hydraulic Systems • 6.1 Introduction • 6.2 Laminar and Turbulent Flows • 6.3 Reynolds Number • 6.4 Darcy-Weisbach Equation • 6.5 Frictional Losses in Laminar Flow • 6.6 Frictional Losses in Turbulent Flow • 6.7 Frictional Losses in Valves and Fittings • 6.8 Equivalent Length Technique • 7 Hydraulic Pumps • 7.1 Introduction • 7.2 Classification of Pumps • 7.3 Pumping Theory • 7.4 Gear Pumps • 7.5 Lobe Pumps • 7.6 Screw Pumps • 7.7 Vane Pumps • 7.8 Piston Pumps • 7.9 Comparison of Hydraulic Pumps • 7.10 Pump Performance • 7.11 Pump Performance Curve • 7.12 Pump Noise • 7.13 Pump Cavitation • 7.14 Pump Selection • 8 Hydraulic Actuators • 8.1 Introduction • 8.2 Types of Hydraulic Cylinders • 8.3 Standard Metric Cylinders • 8.4 Cylinder Force, Velocity and Power • 8.5 Acceleration and Deceleration of Cylinder Loads • 8.6 Various Methods of Applying Linear Motion Using Hydraulic Cylinders • 8.7 First-, Second- and Third-Class Lever Systems • 8.8 Cylinder Cushions • 8.9 Cylinder Mountings and Strength Calculations • 8.10 Design of Cylinder Barrel • 9 Hydraulic Motors • 9.1 Introduction • 9.2 Applications • 9.3 Comparison between a Hydraulic Motor and an Electric Motor • 9.4 Classification of Hydraulic Motors • 9.5 Gear Motors • 9.6 Vane Motors • 9.7 Piston Motors • 9.8 Semi-Rotary Actuators • 9.9 Chain and Sprocket Semi-Rotary Actuator • 9.10 Rack and Pinion Rotary Actuator • 9.11 Hydraulic Motor: Theoretical Torque, Power and Flow Rate • 9.12 Performance of Hydraulic Motors • 9.13 Performance Curves for a Variable Displacement Motor • 10 Hydrostatic Transmission • 10.1 Introduction • 10.2 Advantages of a Hydrostatic Transmission • 10.3 Components of a Hydrostatic Transmission System • 10.4 Analysis of a Hydrostatic System • 10.4.1 Pump Characteristics • 10.4.2 Motor Characteristics • 10.4.3 Variable-Capacity Pump/Fixed-Capacity Motor Unit • 10.4.4 Fixed-Capacity Pump/Variable-Capacity Motor Unit • 10.4.5 Variable-Capacity Pump/Variable-Capacity Motor Unit • 11 Directional Control Valves • 11.1 Introduction • 11.2 Directional Control Valves • 11.2.1 Classification of DCVs Based on Fluid Path • 11.2.2 Classification of DCVs Based on Design Characteristics • 11.2.3 Classification of DCVs Based on the Control Method • 11.2.4 Classification of DCVs Based on the Construction of Internal Moving Parts • 11.3 Actuating Devices • 11.4 Check Valve • 11.5 Pilot-Operated Check Valve • 11.6 Shuttle Valve • 11.7 Two-Way Direction Control Valves • 11.8 Three-Way Direction Control Valves • 11.9 Four-Way Direction Control Valves • 11.10 Solenoid-Actuated Valve • 11.11 Pilot-Operated Direction Control Valves • 11.12 Piston Overlap • 11.13 Miscellaneous Industrial Circuits • 11.14 Direction Control Valve Mounting • 11.15 DCV Specifications • 11.16 Material for DCVs • 12 Pressure-Control Valves • 12.1 Introduction • 12.2 Pressure-Relief Valves • 12.3 Pressure-Reducing Valve • 12.4 Unloading Valves • 12.5 Counterbalance Valve • 12.6 Source of Pilot Pressure in Counterbalance Valves • 12.7 Pressure Sequence Valve • 12.8 Cartridge Valves • 13 Flow-Control Valves • 13.1 Introduction • 13.2 Speed-Controlling Circuits • 14 Hydraulic Circuit Design and Analysis • 14.1 Introduction • 14.2 Control of a Single-Acting Hydraulic Cylinder • 14.3 Control of a Double-Acting Hydraulic Cylinder • 14.4 Regenerative Cylinder Circuit • 14.5 Pump-Unloading Circuit • 14.6 Double-Pump Hydraulic System • 14.7 Counterbalance Valve Application • 14.8 Hydraulic Cylinder Sequencing Circuits • 14.9 Automatic Cylinder Reciprocating System • 14.10 Locked Cylinder Using Pilot Check Valves • 14.11 Cylinder Synchronizing Circuits • 14.12 Speed Control of a Hydraulic Cylinder • 14.13 Fail-Safe Circuits • 14.14 Circuit for Fast Approach and Slow Die Closing • 14.15 Rapid Traverse and Feed, Alternate Circuit • 15 Flow and Force Analysis of Valves • 15.1 Introduction • 15.2 Four-Way Spool Valves • 15.3 Three-Way Spool Valves • 15.4 Flapper Nozzle Valve • 15.5 Special-Purpose Valves • 15.6 Pressure-Compensated Flow-Control Valve • 16 Dynamic Analysis of Fluid Systems • 16.1 Introduction • 16.2 First-Order Systems • 16.3 First-Order Fluid System • 16.4 First-Order Electrical System • 16.5 First-Order Fluid Hydraulic Servomechanism • 16.6 Graphical Representations • 16.7 Harmonic Response Locus • 16.8 Logarithmic Plots • 17 Proportional Control Valves • 17.1 Introduction • 17.2 History of Proportional Control Valves • 17.3 Proportional Solenoids • 17.4 Design Considerations of Proportional Control Valves • 17.5 Response Speed and Dynamic Characteristics • 17.6 Some

Applications of Proportional Control Valves • 17.7 Analysis of Proportional Valves • 18 Servo Valves • 18.1 Introduction • 18.2 History of Electro Hydraulic Servomechanisms • 18.3 Electrohydraulic Servomechanism Concepts • 18.4 Servo Valves • 19 Accumulators • 19.1 Introduction • 19.2 Accumulator Selection • 19.3 Applications of Accumulators • 20 Accessories Used in Fluid Power Systems • 20.1 Introduction • 20.2 Functions of Seals • 20.3 Durometer Hardness Tester • 20.4 Reservoirs • 20.5 Fluid Conditioners • 20.6 Filters and Strainers • 20.7 Heat Exchangers • 21 Maintenance of Fluid Power Systems • 21.1 Introduction • 21.2 The Importance of Cleanliness • 21.3 Importance of Oil and Filter Changes • 21.4 Problems Caused by Gases in Hydraulic Fluids • 21.5 Troubleshooting Guides • 21.6 General Safety Rules for Electricity and Electronics • 21.7 Maintaining and Disposing of Fluids • Summary • Objective-Type Questions • Fill in the Blanks • State True or False • Review Questions • Answers • Appendix A • Appendix B • Appendix C • Appendix D • Appendix E • Glossary • Frequently Asked Questions • Index

9788126509478 | ₹ 939



Pneumatic Controls | e | k

Agrawal

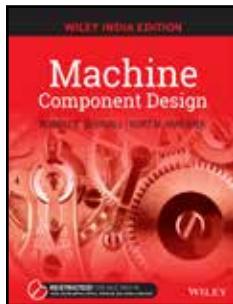
About the Author

Joji P has 12 years' experience in teaching and training students from engineering colleges and polytechnics and professionals and technicians from industries in the area of pneumatic, electro-pneumatic controls and PLCs. Starting as Graduate Trainee in Mazagoan Dock Ltd, Bombay in 1985, he rose to the post of Deputy Director of Training, Foremen Training Institute, Bangalore. Presently, Joji is holding the same post. He got his B. Tech from the Calicut University and MCA from the Indira Gandhi National Open University. The organizations Joji served include Dalal Consultants, Bombay; J.M. Institute of Technology, Chitradurga, Karnataka; and Chief Quality Assurance Establishment (Warship Eqpt), Bangalore. Joji has also attended various training programmes including "Industrial Pneumatics" at Manipal Institute of Technology, Manipal (1996), "Programmable Controllers Siemens Step 7" at Elektro-Ausbildungszentrum, Aalen, Germany (2000) and "Advanced Pneumatics" at Festo Controls, Bangalore (2002).

Table of Contents

• Industrial Prime Movers • Introduction to Pneumatics • Compressed Air Generation and Contamination Control • Pneumatic Actuators • Pneumatic Valves and Control Circuits • Multiple-Actuator Circuits • Electro-Pneumatics • Interfacing with PLC • Pneumatic Application Concepts • Maintenance, Troubleshooting, and Safety • Appendix 1 Graphical Symbols for Pneumatic Components as per ISO 1219 • Appendix 2 Graphical Symbols for Electrical Components • Appendix 3 General Information on Pneumatic Actuators • Appendix 4 Conversion Tables • Appendix 5 Comparative Study of SIEMENS and Allen Bradley PLCs • Appendix 6 Comparative Study Of Pure Pneumatic, Electro-Pneumatic and PLC-Based Controls • Appendix 7 Designation of Pneumatic System Components by Alphabets • Bibliography • Index

9788126515424 | ₹ 769



Machine Component Design | e

Juvinal

Table of Contents

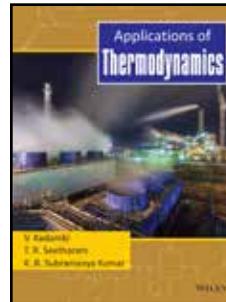
• Part 1 Fundamentals • Chapter 1: Mechanical Engineering design in Broad Perspective • 1.1 An Overview of the Subject • 1.2 Safety Considerations • 1.3 Ecological Considerations • 1.4 Societal Considerations, • 1.5 Overall Design Considerations • 1.6 Systems of Units • 1.7 Methodology for Solving Machine Component Problems • 1.8 Work and Energy • 1.9 Power • 1.10 Conservation of Energy • Chapter 2: Load Analysis • 2.1 Introduction • 2.2 Equilibrium Equations and Free-Body Diagrams • 2.3 Beam Loading • 2.4 Locating Critical Sections-Force Flow Concept • 2.5 Load Division Between Redundant Supports • 2.6 Force Flow Concept Applied to Redundant Ductile Structures • Chapter 3: Materials • 3.1 Introduction • 3.2 The Static Tensile Test-“Engineering”

Stress-Strain Relationships • 3.3 Implications of the “Engineering” Stress-Strain Curve • 3.4 The Static Tensile Test-“True” Stress-Strain Relationships • 3.5 Energy-Absorbing Capacity • 3.6 Estimating Strength Properties from Penetration Hardness Tests • 3.7 Use of “Handbook” Data for Material Strength Properties • 3.8 Machinability • 3.9 Cast Iron • 3.10 Steel • 3.11 Nonferrous Alloys • 3.12 Plastics, and Composites • 3.13 Material Selection Charts • 3.14 Engineering Material Selection Process • Chapter 4: Static Body Stresses • 4.1 Introduction • 4.2 Axial Loading • 4.3 Direct Shear Loading • 4.4 Torsional Loading • 4.5 Pure Bending Loading, Straight Beams • 4.6 Pure Bending Loading, Curved Beams • 4.7 Transverse Shear Loading in Beams • 4.8 Induced Stresses, Mohr Circle Representation • 4.9 Combined Stresses-Mohr Circle Representation • 4.10 Stress Equations Related to Mohr’s Circle • 4.11 Three-Dimensional Stresses • 4.12 Stress Concentration Factor, K_t • 4.13 Importance of Stress Concentration • 4.14 Residual Stresses Caused by Yielding-Axial Loading • 4.15 Residual Stresses Caused by Yielding-Bending and Torsional Loading • 4.16 Thermal Stresses • 4.17 Importance of Residual Stresses • Chapter 5: Elastic Strain, Deflection and Stability • 5.1 Introduction • 5.2 Strain Definition, Measurement and Mohr Circle Representation • 5.3 Analysis of Strain-Equangular Rosettes • 5.4 Analysis of Strain-Rectangular Rosettes • 5.5 Elastic Stress-Strain Relationships and Three-Dimensional Mohr Circles • 5.6 Deflection and Spring Rate-Simple Cases • 5.7 Beam Deflection • 5.8 Determining Elastic Deflections by Castiglano’s Method • 5.9 Redundant Reactions by Castiglano’s Method • 5.10 Euler Column Buckling-Elastic Instability • 5.11 Effective Column Length for Various End Conditions • 5.12 Column Design Equations-J. B. Johnson Parabola • 5.13 Eccentric Column Loading-the Secant Formula • 5.14 Equivalent Column Stresses • 5.15 Other Types of Buckling • 5.16 Finite Element Analysis • Chapter 6: Failure Theories, Safety Factors and Reliability • 6.1 Introduction • 6.2 Types of Failure • 6.3 Fracture Mechanics-Basic Concepts • 6.4 Fracture Mechanics-Applications • 6.5 The “Theory” of Static Failure Theories • 6.6 Maximum-Normal-Stress Theory 6.7 Maximum-Shear-Stress Theory 6.8 Maximum-Distortion-Energy Theory (Maximum- Octahedral-Shear-Stress Theory • 6.9 Modified Mohr Theory • 6.10 Selection and Use of Failure Theories • 6.11 Safety Factors-Concept and Definition • 6.12 Safety Factors-Selection of a Numerical Value • 6.13 Reliability • 6.14 Normal Distributions • 6.15 Interference Theory of Reliability Prediction • Chapter 7: Impact • 7.1 Introduction • 7.2 Stress and Deflection Caused by Linear and Bending Impact • 7.3 Stress and Deflection Caused by Torsional Impact • 7.4 Effect of Stress Raisers on Impact Strength • Chapter 8: Fatigue • 8.1 Introduction 8.2 Basic Concepts 8.3 Standard Fatigue Strengths () for Rotating Bending 8.4 Fatigue Strengths for Reversed Bending and Reversed Axial Loading 8.5 Fatigue Strength for Reversed Torsional Loading 8.6 Fatigue Strength for Reversed Biaxial Loading 8.7 Influence of Surface and Size on Fatigue Strength 8.8 Summary of Estimated Fatigue Strengths for Completely Reversed Loading 8.9 Effect of Mean Stress on Fatigue Strength 8.10 Effect of Stress Concentration with Completely Reversed Fatigue Loading 8.11 Effect of Stress Concentration with Mean Plus Alternating Loads • 8.12 Fatigue Life Prediction with Randomly Varying Loads • 8.13 Effect of Surface Treatments on the Fatigue Strength of a Part • 8.14 Mechanical Surface Treatments-Shot Peening and Others • 8.15 Thermal and Chemical Surface-Hardening Treatments (Induction Hardening, Carburizing and Others) • 8.16 Fatigue Crack Growth • 8.17 General Approach for Fatigue Design • Chapter 9: Surface Damage • 9.1 Introduction • 9.2 Corrosion: Fundamentals • 9.3 Corrosion: Electrode and Electrolyte Heterogeneity • 9.4 Design for Corrosion Control • 9.5 Corrosion Plus Static Stress • 9.6 Corrosion Plus Cyclic Stress • 9.7 Cavitation Damage • 9.8 Types of Wear • 9.9 Adhesive Wear • 9.10 Abrasive Wear • 9.11 Fretting • 9.12 Analytical Approach to Wear • 9.13 Curved-Surface Contact Stresses • 9.14 Surface Fatigue Failures • 9.15 Closure • Part 2 Applications • Chapter 10: Threaded Fasteners and Power Screws • 10.1 Introduction • 10.2 Thread Forms, Terminology and Standards • 10.3 Power Screws • 10.4 Static Screw Stresses • 10.5 Threaded Fastener Types • 10.6 Fastener Materials and Methods of Manufacture • 10.7 Bolt Tightening and Initial Tension • 10.8 Thread Loosening and Thread Locking • 10.9 Bolt Tension with External Joint-Separating Force • 10.10 Bolt (or Screw) Selection for Static Loading • 10.11 Bolt (or Screw) Selection for Fatigue Loading: Fundamentals • 10.12 Bolt (or Screw) Selection for Fatigue Loading: Using Special Test Data • 10.13 Increasing Bolted-Joint Fatigue Strength Chapter 11: Rivets, Welding and Bonding • 11.1 Introduction • 11.2 Rivets • 11.3 Welding Processes • 11.4 Welded Joints Subjected to Static Axial and Direct Shear Loading • 11.5 Welded Joints Subjected to Static Torsional and Bending Loading • 11.6 Fatigue Considerations in Welded Joints • 11.7 Braze and Soldering • 11.8 Adhesives • Chapter 12: Springs • 12.1 Introduction 12.2 Torsion Bar Springs 12.3 Coil Spring Stress and Deflection Equations 12.4 Stress and Strength Analysis for Helical Compression Springs-Static Loading • 12.5 End Designs of Helical Compression Springs • 12.6 Buckling Analysis of Helical Compression Springs • 12.7 Design Procedure for Helical Compression Springs-Static Loading • 12.8 Design of

Helical Compression Springs for Fatigue Loading • 12.9 Helical Extension Springs • 12.10 Beam Springs (Including Leaf Springs) • 12.11 Torsion Springs • 12.12 Miscellaneous Springs • Chapter 13: Lubrication and Sliding Bearings • 13.1 Types of Lubricants • 13.2 Types of Sliding Bearings • 13.3 Types of Lubrication • 13.4 Basic Concepts of Hydrodynamic Lubrication • 13.5 Viscosity • 13.6 Temperature and Pressure Effects on Viscosity • 13.7 Petroff's Equation for Bearing Friction • 13.8 Hydrodynamic Lubrication Theory • 13.9 Design Charts for Hydrodynamic Bearings • 13.10 Lubricant Supply • 13.11 Heat Dissipation and Equilibrium Oil Film Temperature • 13.12 Bearing Materials • 13.13 Hydrodynamic Bearing Design • 13.14 Boundary and Mixed-Film Lubrication • 13.15 Thrust Bearings • 13.16 Elastohydrodynamic Lubrication • Chapter 14: Rolling-Element Bearings • 14.1 Comparison of Alternative Means for Supporting Rotating Shafts • 14.2 History of Rolling-Element Bearings • 14.3 Rolling-Element Bearing Types • 14.4 Design of Rolling-Element Bearings • 14.5 Fitting of Rolling-Element Bearings • 14.6 "Catalogue Information" for Rolling-Element Bearings • 14.7 Bearing Selection • 14.8 Mounting Bearings to Provide Properly for Thrust Load • Chapter 15: Spur Gears • 15.1 Introduction and History • 15.2 Geometry and Nomenclature • 15.3 Interference and Contact Ratio • 15.4 Gear Force Analysis • 15.5 Gear-Tooth Strength • 15.6 Basic Analysis of Gear-Tooth-Bending Stress (Lewis Equation) • 15.7 Refined Analysis of Gear-Tooth-Bending Strength: Basic Concepts • 15.8 Refined Analysis of Gear-Tooth-Bending Strength: Recommended Procedure • 15.9 Gear-Tooth Surface Durability-Basic Concepts • 15.10 Gear-Tooth Surface Fatigue Analysis-Recommended Procedure • 15.11 Spur Gear Design Procedures • 15.12 Gear Materials • 15.13 Gear Trains • Chapter 16: Helical, Bevel and Worm Gears • 16.1 Introduction • 16.2 Helical-Gear Geometry and Nomenclature • 16.3 Helical-Gear Force Analysis • 16.4 Helical-Gear-Tooth-Bending and Surface Fatigue Strengths • 16.5 Crossed Helical Gears • 16.6 Bevel Gear Geometry and Nomenclature • 16.7 Bevel Gear Force Analysis • 16.8 Bevel-Gear-Tooth-Bending and Surface Fatigue Strengths • 16.9 Bevel Gear Trains; Differential Gears • 16.10 Worm Gear Geometry and Nomenclature • 16.11 Worm Gear Force and Efficiency Analysis • 16.12 Worm-Gear-Bending and Surface Fatigue Strengths • 16.13 Worm Gear Thermal Capacity • Chapter 17: Shafts and Associated Parts • 17.1 Introduction • 17.2 Provision for Shaft Bearings • 17.3 Mounting Parts onto Rotating Shafts • 17.4 Rotating-Shaft Dynamics • 17.5 Overall Shaft Design • 17.6 Keys, Pins and Splines • 17.7 Couplings and Universal Joints • Chapter 18: Clutches and Brakes • 18.1 Introduction • 18.2 Disk Clutches • 18.3 Disk Brakes • 18.4 Energy Absorption and Cooling • 18.5 Cone Clutches and Brakes • 18.6 Short-Shoe Drum Brakes • 18.7 Eternal Long-Shoe Drum Brakes • 18.8 Internal Long-Shoe Drum Brakes • 18.9 Band Brakes • Chapter 19: Miscellaneous Machine Components • 19.1 Introduction • 19.2 Flat Belts • 19.3 V-Belts • 19.4 Toothed Belts • 19.5 Roller Chains • 19.6 Inverted-Tooth Chains • 19.7 History of Hydrodynamic Drives • 19.8 Fluid Couplings • 19.9 Hydrodynamic Torque Converters • Appendix A: Units • A-1a Conversion Factors for British Gravitational, English and SI Units • A-1b Conversion Factor Equalities Listed by Physical Quantity • A-2a Standard SI Prefixes • A-2b SI Units and Symbols • A-3 Suggested SI Prefixes for Stress Calculations • A-4 Suggested SI Prefixes for Linear-Deflection Calculations • A-5 Suggested SI Prefixes for Angular-Deflection Calculations • Appendix B: Properties of Sections and Solids • B-1a Properties of Sections B-1b Dimensions and Properties of Steel Pipe and Tubing Sections B-2 Mass and Mass Moments of Inertia of Homogeneous Solids • Appendix C: Material Properties and Uses • C-1 Physical Properties of Common Metals • C-2 Tensile Properties of Some Metals • C-3a Typical Mechanical Properties and Uses of Gray Cast Iron • C-3b Mechanical Properties and Typical Uses of Malleable Cast Iron • C-3c Average Mechanical Properties and Typical Uses of Ductile (Nodular) Iron • C-4a Mechanical Properties of Selected Carbon and Alloy Steels • C-4b Typical Uses of Plain Carbon Steels • C-5a Properties of Some Water-Quenched and Tempered Steels • C-5b Properties of Some Oil-Quenched and Tempered Carbon Steels • C-5c Properties of Some Oil-Quenched and Tempered Alloy Steels • C-6 Effect of Mass on Strength Properties of Steel • C-7 Mechanical Properties of Some Carburizing Steels • C-8 Mechanical Properties of Some Wrought Stainless Steels • C-9 Mechanical Properties of Some Iron-Based Superalloys • C-10 Mechanical Properties, Characteristics, and Typical Uses of Some Wrought Aluminum Alloys • C-11 Tensile Properties, Characteristics, and Typical Uses of Some Cast-Aluminum Alloys • C-12 Temper Designations for Aluminum and Magnesium Alloys • C-13 Mechanical Properties of Some Copper Alloys • C-14 Mechanical Properties of Some Magnesium Alloys • C-15 Mechanical Properties of Some Nickel Alloys • C-16 Mechanical Properties of Some Wrought-Titanium Alloys • C-17 Mechanical Properties of Some Zinc Casting Alloys • C-18a Representative Mechanical Properties of Some Common Plastics • C-18b Properties of Some Common Glass-Reinforced and Unreinforced Thermoplastic Resins • C-18c Typical Applications of Common Plastics • C-19 Material Classes and Selected Members of Each Class • C-20

Designer's Subset of Engineering Materials • C-21 Processing Methods Used Most Frequently with Different Materials • C-22 Joinability of Materials • C-23 Materials for Machine Components • C-24 Relations Between Failure Modes and Material Properties • Appendix D: Shear, Moment and Deflection Equations for Beams • D-1 Cantilever Beams • D-2 Simply Supported Beams • D-3 Beams with Fixed Ends • Appendix E: Fits and Tolerances • E-1 Fits and Tolerances for Holes and Shafts • E-2 Standard Tolerance for Holes and Shafts • E-3 Tolerance Grades Produced from Machining Processes • Appendix F: MIL-HDBK-5J, Department of Defense Handbook: Metallic Materials and Elements for Aerospace Vehicle Structures • Appendix G: Force Equilibrium: A Vectorial Approach • Appendix H: Normal Distributions • Appendix I: SN-Formula Appendix J: Gear Terminology and Contact-Ratio Analysis

9788126559732 | ₹ 1289



Applications of Thermodynamics |

IM | e | k

Kadambi

About the Author

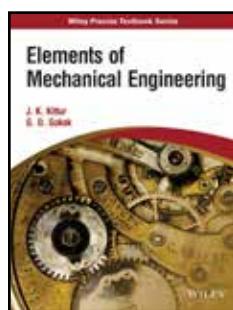
V. Kadambi, Former Professor of Mechanical Engineering, IIT Kanpur, Uttar Pradesh, Former Visiting Professor of Mechanical Engineering, IIT Gandhinagar, Gujarat

Table of Contents

• Preface • Acknowledgments • Symbols • Chapter 1 Review of Basic Thermodynamics • 1.1 Introductory Concepts and Definitions • 1.2 Work and Heat • 1.3 First Law of Thermodynamics (Law of Conservation of Energy) • 1.4 Second Law of Thermodynamics • 1.5 Entropy • 1.6 Pure Substances • 1.7 Ideal Gases • Chapter 2 Reciprocating Gas Compressors • 2.1 Introduction • 2.2 Classification of Compressors • 2.3 Working Principle of a Reciprocating Compressor • 2.4 Classification of Reciprocating Compressors • 2.5 Expression for Work Done in a Single-Stage Compressor without Clearance • 2.6 Work Done in a Single-Stage Compressor • 2.7 Volumetric Efficiency of a Reciprocating Compressor • 2.8 Actual-Diagram for a Single-Stage Compressor • 2.9 Performance Parameters for Reciprocating Compressors • 2.10 Disadvantages of Single-Stage Compressors (Need for Multistage Compressors) • 2.11 Work Done in a Second-Stage Compressor with Intercooling in between the Stages • 2.12 Intermediate Pressure for Minimum Work of Compression • 2.13 Optimum Intermediate Pressure for a Two-Stage Actual Compressor • Chapter 3 Vapor Power Cycle • 3.1 Introduction • 3.2 Carnot Vapor Power Cycle and Its Limitations • 3.3 The Rankine Cycle (Ideal Simple Vapor Power Cycle) • 3.4 Effects of Pressure and Temperature on the Performance of the Rankine Cycle • 3.5 Reheat Cycle • 3.6 Regenerative Vapor Power Cycle • 3.7 Reheat-Regenerative Cycle • 3.8 Deviations of Practical Cycles from Ideal Cycle • 3.9 Characteristics of an Ideal Working Fluid for Vapor Power Cycles • 3.10 Alternative Working Fluids for Rankine Cycle • 3.11 Binary Vapor Cycle • 3.12 Cogeneration Plant • 3.13 Efficiencies of a Steam Power Plant • 3.14 Organic Rankine Cycle • 3.15 Supercritical Rankine Power Cycle • Chapter 4 Gas Power Cycles • 4.1 Introduction • 4.2 Analysis of Power Cycles • 4.3 Carnot Gas Power Cycle • 4.4 Air Standard Cycles • 4.5 Air Standard Otto Cycle • 4.6 Air Standard Diesel Cycle • 4.7 Dual-Combustion Cycle or Semi-Diesel Cycle or Limited Pressure Cycle • 4.8 Comparison between Otto, Diesel and Dual Combustion Cycles • 4.9 Stirling Cycle • 4.10 Atkinson Cycle • 4.11 The Brayton Cycle • 4.12 Brayton Cycle with Regenerator (Exhaust Heat Exchanger) • 4.13 Gas Turbine Cycle with Multi-Stage Expansion (Reheat Cycle) • 4.14 Gas Turbine Cycle with Multi-Stage Compression and Intercooling • 4.15 Practical Gas Turbine Cycles • 4.16 Gas Turbine Cycle for Jet Propulsion • 4.17 Combined Brayton-Rankine Cycle • 4.18 Brayton Cycle with Supercritical Carbon Dioxide • Chapter 5 Refrigeration Cycles • 5.1 Introduction • 5.2 Capacity and Coefficient of Performance of a Refrigerator • 5.3 Refrigeration Cycles • 5.4 Gas Refrigeration Cycles • 5.5 Mechanical Vapor Compression Refrigeration Cycle • 5.6 Common Refrigerants • 5.7 Absorption Refrigeration Systems • 5.8 Steam-Jet Refrigeration System • Chapter 6 Air-Conditioning • 6.1 Introduction • 6.2 Thermodynamics of Air-Water Vapor Mixture • 6.3 Psychrometric Chart • 6.4 Air-Conditioning Processes (Psychrometric Processes) • 6.5 The Condition Line • 6.6 Apparatus Dew Point • 6.7 Bypass Factor • 6.8 Cooling Towers • Chapter 7 Internal Combustion Engines • 7.1 Introduction • 7.2 Working of a Reciprocating IC Engine • 7.3 Classification of Reciprocating IC Engines • 7.4 Measurements and Testing of IC Engines • Chapter 8 Thermodynamics of Compressible Flow • 8.1 Introduction • 8.2

Sonic Velocity and Mach Number • 8.3 Sonic Velocity for a Gaseous Medium • 8.4 Static and Stagnation States of a Fluid • 8.5 Effect of Area Variation on Pressure and Velocity for One-Dimensional Isentropic Flow through a Passage • 8.6 Choking in Isentropic Flow and Critical Properties • 8.7 Pressure Distribution and Choking in a Nozzle • 8.8 Supersaturated Flow of Steam • • Chapter 9 Thermodynamics of Reacting Mixtures • 9.1 Introduction • 9.2 Basic Chemistry • 9.3 Fuels • 9.4 Combustion Equations • 9.5 Combustion with Air • 9.6 Analysis of the Products of Combustion (Orsat Analysis) • 9.7 Enthalpy of Formation • 9.8 First Law Analysis of Combustion and Enthalpy of Combustion • 9.9 Adiabatic Flame Temperature • 9.10 Entropy Change for a Combustion Process • 9.11 Second Law Analysis of a Combustion Process • • Chapter 10 Availability Analysis of Thermodynamic Systems • 10.1 Introduction • 10.2 Reversible Work • 10.3 Reversible Work in a Non-Flow Process (Closed System) • 10.4 Useful Work • 10.5 Reversible Work in a Flow Process • 10.6 Reversible Work for a Steady Flow Process • 10.7 Availability • 10.8 Availability for a Flow Stream (Open System) • 10.9 Irreversibility or Availability Destruction • 10.10 Second Law Efficiency • 10.11 Diffusion Availability • 10.12 Availability Analysis for Combustion Processes • • Multiple-Choice Questions • Theory Questions • Exercises • • Appendix • • Index

9788126571246 | ₹ 749



Elements of Mechanical Engineering | e | k

Kittur

About the Author

Dr. Jayant K. Kittur is presently working as Professor with Department of Industrial and Production Engineering, KLS Gogte Institute of Technology, Belagavi.

Table of Contents

- Foreword • Preface • Module I • Chapter 1 Energy Resources • Chapter 2 Steam Formation and Properties of Steam • Chapter 3 Steam Boilers • • Module II Turbines and IC Engines and Pumps • Chapter 4 Steam Turbines • Chapter 5 Gas Turbines • Chapter 6 Hydraulic Turbines • Chapter 7 Internal Combustion Engines • • Module III Machine Tools, Robotics and Automation • Chapter 8 Machine Tool Operations • Chapter 9 Robotics • Chapter 10 Automation • Chapter 11 NC and CNC Machines • • Module IV Engineering Materials and Joining Processes • Chapter 12 Ferrous and Non-Ferrous Metals • Chapter 13 Composites • Chapter 14 Welding, Brazing and Soldering • Module V Refrigeration, Air Conditioning • Chapter 15 Refrigeration and Air Conditioning • Appendix • Bibliography • Model Question Paper • Model Question Paper

9788126553037 | ₹ 639



Quality Control | e | k

Kulkarni

About the Author

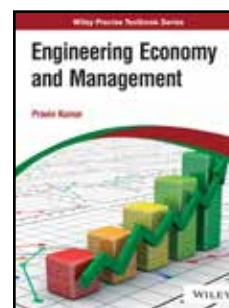
Vinay A. Kulkarni is a lecturer, and teaches at the Department of Production Engineering, D.Y. Patil College of Engineering, Pune. He was awarded a gold medal for completing his M.Tech. in Production Engineering (with specialization in Production Management). Besides publishing several technical research papers in national and international journals, he has presented at several national and international conferences. He is a member of various professional bodies and has worked as a resource person at Indian Institute of Production Engineers, Pune.

Table of Contents

- Quality Concepts • Quality Milestones • Juran's Trilogy • Cost of Quality and Value of Quality • Total Quality Management • Statistical Quality Control and Acceptance

Sampling • Taguchi's Quality Engineering • Six Sigma • Reliability, Availability and Maintainability • Quality Culture: A Global Paradigm Shift

9788126519071 | ₹ 859



Engineering Economy and Management | e | k

Kumar

About the Author

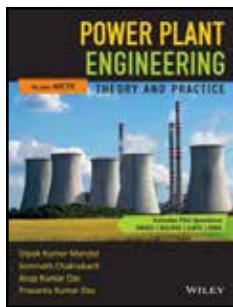
Pravin Kumar is working as an Associate Professor in the Department of Mechanical Engineering, Delhi Technological University, Delhi. He obtained his PhD in Supply Chain Management from IIT Delhi and M. Tech. in Industrial Management from IIT (BHU) Varanasi. He has more than 19 years of teaching and research experience. His research area is supply chain and operations management. He has published more than 50 research papers in international journals.

Table of Contents

- Preface • About the Author • Chapter 1 Introduction to Engineering Economics • 1.1 Introduction • 1.2 Concept of Efficiency • 1.3 Theory of Demand • 1.4 Elasticity of Demand • 1.5 Supply and Law of Supply • 1.6 Indifference Curves • 1.7 Budget Line • 1.8 Welfare Analysis • • Chapter 2 Managerial Economics • 2.1 Introduction • 2.2 Scope of Managerial Economics • 2.3 Techniques of Managerial Economics • 2.4 Applications of Managerial Economics • • Chapter 3 Money, National Income, and Goods and Services Tax • 3.1 Money • 3.2 National Income • 3.3 Goods and Services Tax • • Chapter 4 Poverty, Unemployment, and Inflation • 4.1 Scarcity • 4.2 Poverty • 4.3 Unemployment • 4.4 Inflation • • Chapter 5 Banking Systems • 5.1 Introduction to Banking Systems • 5.2 Types of Banks • 5.3 Quantitative Instruments for Credit Control • 5.4 Types of Banking • • Chapter 6 Market Structures • 6.1 Introduction • 6.2 Perfect Competition • 6.3 Monopoly • 6.4 Monopolistic Competition • 6.5 Oligopoly • 6.6 Duopoly • 6.7 Monopsony • 6.8 Monopoly and Monopsony: A Comparison • • Chapter 7 Marketing Management • 7.1 Introduction • 7.2 Marketing Mix • 7.3 Market Segmentation • 7.4 Exchange and Transactions • 7.5 Marketing Research • 7.6 Scope of Marketing • 7.7 Product Life Cycle • 7.8 Demand Forecasting • • Chapter 8 Concepts in Management • 8.1 Introduction • 8.2 Characteristics of Management • 8.3 Scope of Management • 8.4 Classical School of Management • 8.5 Functions of Management • 8.6 Levels of Management • 8.7 Skills of Management • 8.8 Managerial Roles • 8.9 Administration and Management • • Chapter 9 Human Resource Management • 9.1 Human Resource Management • 9.2 Human Resource Planning • 9.3 Recruitment and Selection • 9.4 Job Design • 9.5 Merit Rating • • Chapter 10 Corporate Social Responsibility and Business Ethics • 10.1 Corporate Social Responsibility • 10.2 Types of Corporate Social Responsibilities • 10.3 Ethics • • Chapter 11 Production and Operations Management • 11.1 Production and Operations Management • 11.2 Objectives of Production Management • 11.3 Production Systems • 11.4 Facility Location • 11.5 Plant Layout • • Chapter 12 Demand Forecasting and Cost Estimation • 12.1 Introduction • 12.2 Forecasting Horizons • 12.3 Steps to Forecasting • 12.4 Forecasting Methods • 12.5 Seasonal Adjustments • 12.6 Forecasting Performance Measures • 12.7 Cost Estimation • 12.8 Elements of Cost • 12.9 Computation of Material Variances • 12.10 Break-Even Analysis • • Chapter 13 Time Value of Money • 13.1 Introduction • 13.2 Simple Interest • 13.3 Compound Interest • 13.4 Present Worth Analysis • 13.5 Future Worth Analysis • 13.6 Annual Cash Flow Analysis • 13.7 Rate of Return Analysis • 13.8 Arithmetic Gradient • 13.9 Geometric Gradient • 13.10 Continuous Compounding • 13.11 Normal and Effective Interest Rate • 13.12 Perpetual Payment • • Chapter 14 Project Evaluation • 14.1 Introduction • 14.2 Determining Minimum Attractive Rate of Return • 14.3 Payback (Payout) Period Method • 14.4 Benefit-Cost Ratio • • Chapter 15 Comparison Among Alternatives • 15.1 Introduction • 15.2 Basis for Comparison of Alternatives • 15.3 Study Period • 15.4 Useful Lives of Alternatives Are Equal to the Study Period • 15.5 Useful Lives of Alternatives Are Unequal • 15.6 B-C Ratio Method for Comparison of Alternatives • • Chapter 16 Depreciation and Taxes • 16.1 Introduction • 16.2 Some Important Terms Used in Depreciation • 16.3 Classical Depreciation Methods • 16.4 Modified Accelerated Cost Recovery System • 16.5 Taxes • • Chapter 17 Replacement Analysis • 17.1 Introduction • 17.2 Reasons for Replacement Analysis • 17.3 Lives of Assets • 17.4 Determining the Economic Life of a Challenger • 17.5 Determining the Economic Life of a Defender • 17.6 After-Tax Replacement Studies

- Chapter 18 Concept of Financial Statement • 18.1 Introduction • 18.2 Sources of Company Information • 18.3 Sources of International Economic Data • 18.4 Financial Analysis • 18.5 Financial Statement • 18.6 Trading Account • 18.7 Profit and Loss Account
- 18.8 Balance Sheet Requirements • 18.9 Distinction between Profit and Loss Account and Balance Sheet • • Chapter 19 Financial Ratios • 19.1 Introduction • 19.2 Types of Financial Ratios • 19.3 Advantages and Limitations of Ratio Analysis • • Chapter 20 Capital Budgeting • 20.1 Introduction • 20.2 Capital Financing and Allocation Functions
- 20.3 Sources of Capital Funds • 20.4 Capital Asset Pricing Model • 20.5 Weighted Average Cost of Capital • 20.6 Leasing Decisions • 20.7 Capital Allocation • • Chapter 21 Decision Making • 21.1 Introduction • 21.2 Types of Decision-Making Environments • 21.3 Decision Tree Analysis • 21.4 Multiple Criteria Decision Making • • Summary • Points to Remember • Multiple-Choice Questions • State whether True/False • Fill in the Blanks • Review Questions • Exercises • Appendix A • Statistical Tables and Procedures • Appendix B End-of-Period Compound Interest Tables • Appendix C Answers to Objective Type Questions • Bibliography • Index

9788126579921 | ₹ 859



Power Plant Engineering: Theory and Practice | e | k

Mandal

About the Author

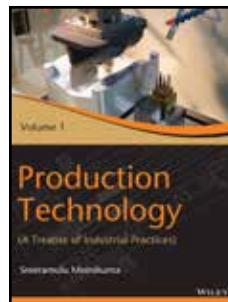
Dipak Kumar Mandal, Associate Professor, Department of Mechanical Engineering, College of Engineering & Management, Kolaghat, West Bengal, India

Table of Contents

- Chapter 1 Thermodynamic Vapour Power Cycles • 1.1 Introduction • 1.2 Carnot Vapour Power Cycle • 1.3 Rankine Cycle • 1.4 Steam Rate and Heat Rate
- 1.5 Comparisons between Rankine and Carnot Cycles • 1.6 Mean Temperature of Heat Addition • 1.7 Irreversibility in Rankine Cycle • 1.8 Binary Vapour Cycle • 1.9 Cogeneration • 1.10 Different Efficiency Terms used in a Steam Power Plant • • Chapter 2 Practical Power Plant Cycle • 2.1 Introduction • 2.2 Reheating Cycle • 2.3 Regeneration (Internal Heating) • 2.4 Regenerative Feed Water Heating • 2.5 Types of Feed Water Heater • 2.6 Practical High-Pressure Heater and Low-Pressure Heater • 2.7 Deaerator
- 2.8 Combined Reheating and Regeneration Cycle • 2.9 HP-LP Bypass System • 2.10 Possible Methodologies for Improving the Steam Turbine Cycle Performance • 2.11 Combined Cycle Plants • • Chapter 3 Fuel and Combustion • 3.1 Introduction • 3.2 Coal • 3.3 Spontaneous Combustion • 3.4 Fuel Oil • 3.5 Natural Gas as Fuel • 3.6 Emulsions as Fuel • 3.7 Industrial Waste as Fuel • 3.8 Coal Gasification • 3.9 Combustion Reactions and Air-Fuel Ratio • 3.10 Combustion Equation • 3.11 Heating Value of Fuel
- 3.12 Thermodynamic View of a Steam Generator • 3.13 Mass Balance across a Steam Generator • 3.14 Energy Balance across a Steam Generator • 3.15 Heat of Combustion
- 3.16 Theoretical Flame Temperature • • Chapter 4 Steam Generator, Feed Cycle, Air and Flue Gas Path • 4.1 Introduction • 4.2 Types of Boiling • 4.3 Classification of Boiler • 4.3.1 Fire Tube Boiler • 4.3.2 Water Tube Boiler • 4.4 Difference between Fire Tube and Water Tube Boiler • 4.5 Circulation • 4.6 Once Through Boiler • 4.7 Boiler Mountings and Accessories • 4.8 Feed Water Flow Path • 4.9 Flue Gas Path • 4.10 Fuel Flow Path • 4.11 Coal Mills • 4.12 Pulverised Fuel-Fired Boilers • 4.13 Furnace Safeguard Supervisory System • 4.14 Causes of Boiler Tripping • 4.15 Ash Collection • 4.16 Ash Handling System • 4.17 Fluidised Bed Combustion • 4.18 Different Fans in Boiler House • 4.19 Water/Steam/Air/Flue Gas Path • 4.20 Supercritical Boiler • 4.21 Abnormal Operating Conditions of Boiler • • Chapter 5 Boiler Performance and Draught Systems • 5.1 Introduction • 5.2 Equivalent Evaporation and Boiler Efficiency • 5.3 Heat Balance in a Boiler • 5.4 Efficiencies of Relevant Components of Boiler • 5.5 Thermal Process Losses in a Power Plant • 5.6 Draught/Draft • 5.7 Natural Draught • 5.8 Determination of Height, Diameter of Chimney and Condition for Maximum Discharge • 5.9 Artificial Draught (by Fan) • 5.10 Control of Fan Output • 5.11 Efficiency of a Chimney • 5.12 Calculation of Power Required to Drive ID/FD Fan • 5.13 Abnormal Operating Conditions of Draught • • Chapter 6 Steam Nozzles • 6.1 Introduction • 6.2 Theory of Steam Nozzles • 6.3 Steady Flow Energy Equation • 6.4 Mass Flow and Heat Drop through Nozzle • 6.5 Expansion of Steam through Nozzle with Friction, Nozzle Efficiency • 6.6 Expansion of Steam through Nozzle • 6.7 Critical Pressure Ratio and its Physical Explanation • 6.8 Subsonic and Supersonic Velocity • 6.9 Velocity of Pressure Pulse in a Fluid • 6.10 Supersaturated or

- Metastable Flow and Wilson Line • 6.11 Nozzles Operating in the Off Design Pressure Ratio • • Chapter 7 Steam Turbine • 7.1 Introduction • 7.2 Classification of Steam Turbines • 7.3 Impulse Turbine • 7.4 Velocity Diagram for an Impulse Turbine • 7.5 Condition for Maximum Efficiency of an Impulse Turbine • 7.6 Compounding of Impulse Turbine (Multistaging) • 7.7 Velocity Diagram of a Velocity-Compounded Turbine • 7.8 Reaction Turbine • 7.9 Height of Blades for Reaction Turbine • 7.10 Reheat Factor • 7.11 Comparison between Impulse Turbine and Reaction Turbine • 7.12 Governing of Steam Turbine • 7.13 Losses in the Steam Turbine • 7.14 Main Components of Steam Turbines • 7.15 Barring Gear or Turning Gear • 7.16 Jacking Oil Pump • 7.17 Metallurgical Aspects of Turbine • 7.18 Factors of Turbine Performance and Sizing • 7.19 Limitations of the Higher Efficiency of Turbine • 7.20 Critical Speed • 7.21 Causes of Turbine Trip • 7.22 General Description of a 210 MW (LMW) Steam Turbine • 7.23 Abnormal-Operating Conditions of Turbine • • Chapter 8 Condenser, Circulating Water Systems and Water Treatment • 8.1 Introduction • 8.2 Condenser • 8.3 Cooling Tower • 8.4 Auxiliary Cooling Water System • 8.5 Water Treatment in Pretreatment Plant • 8.6 Feedwater Treatment • 8.7 Sodium Slippage • 8.8 Abnormal Operating Conditions • • Chapter 9 Turbogenerator • 9.1 Introduction • 9.2 Generator Cooling Systems • 9.3 Generator Sealing System • 9.4 Causes of Generator Tripping • 9.5 Abnormal Operating Conditions of Generator • • Chapter 10 Mechanical Control System • 10.1 Introduction • 10.2 Drum Level Control System • 10.3 Superheater Steam Temperature Control System • 10.4 HP-LP Bypass Control System • 10.5 Hotwell Level Control System • 10.6 Deaerator Level Control System • 10.7 Heater Drip Level Control System • 10.8 Draught Control System • 10.9 Combustion Control System • 10.10 Furnace Safeguard Supervisory System • • Chapter 11 Basic Nuclear Power Generation • 11.1 Introduction • 11.2 Nuclear Physics • 11.3 Types of Nuclear Reaction • 11.4 Fission Chain Reaction • 11.5 Types of Nuclear Materials • 11.6 Difference between Nuclear Fission and Fusion • 11.7 Nuclear Reactor • 11.8 Classification of Reactors • 11.9 Types of Nuclear Reactor • 11.10 Difference between Boiling Water Reactor and Pressurized Water Reactor • 11.11 Advantages and Disadvantages of Nuclear Power Plant • • Chapter 12 Basic Diesel Engine and Gas Turbine • 12.1 Introduction • 12.2 Main Features of Gas Turbine Plant • • Chapter 13 Basic Hydro-Electric (Hydel) • 13.1 Introduction • 13.2 Selection of Site for Hydroelectric Power Plant • 13.3 Evaporation, Precipitation and Runoff • 13.4 Hydrograph and Flow Duration Curve • 13.5 Mass Curve • 13.6 Essential Parts of a Hydroelectrical Power Plant • 13.7 Classification of Hydroelectric Power Plant • 13.8 Comparison between Base Load and Peak Load Power Plant • 13.9 Types of Turbine • 13.10 Pelton Wheel • 13.11 Francis Turbine • 13.12 Propeller and Kaplan Turbine • 13.13 Deriaz Turbines • 13.14 Comparisons of Pelton Wheel, Francis Turbine and Kaplan Turbine • 13.15 Governing of Steam Turbine • 13.16 Advantages and Disadvantages of Hydroelectric Power Plant • 13.17 Generators Used in Hydroelectric Power Plant • • Chapter 14 Nonconventional Energy Systems • 14.1 Introduction • 14.2 Wind Energy • 14.3 Tidal Energy • 14.4 Solar Thermal Energy • 14.5 Solar Photo Voltaic Energy • 14.6 Geothermal Energy • 14.7 Biogas Energy • 14.8 Fuel Cell Energy Systems • 14.9 Advantages and Disadvantages of Nonconventional Energy Systems • • Chapter 15 Power Plant and Its Economics • 15.1 Introduction • 15.2 Different Terms • 15.3 Load Curve • 15.4 Load Duration Curve • 15.5 Location of Power Plants • 15.6 Power Plant Economics • 15.7 Different Methods to Calculate Depreciation Cost • 15.8 Effect of Load Factor on Cost/kWh • 15.9 Performance and Operating Characteristics of Power Plant • • Summary • Multiple-Choice Questions • Review Questions • Exercises • Answers • • Index

9788126579754 | ₹ 859



Production Technology: A Treatise of Industrial Practices, Vol 1 | IM | e | k

Moinikunta

About the Author

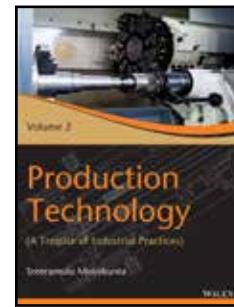
Mr. Sreramulu Moinikunta started with Scientific Engineering House Pvt. Ltd, a Hungary-Collaborated Optical Instruments Manufacturing company. He has experience in process technology, manufacturing, surface treatments, assembly and testing of optical instruments with a precision touch. He worked in Hindustan Aeronautics Ltd., Koraput, Orissa, a MIG engine-manufacturing company and had a

crucial role in delivering the first MIG engine by manufacturing afterburner flaps in the absence of a profile rolling machine. The MIG engine was dedicated to the nation on time.

Table of Contents

- Foreword • Preface • About the Author • Acknowledgments • • Chapter 1: Casting Process • 1.1 Introduction • 1.2 History • 1.3 Definition of Casting Terms • 1.4 Classification of Casting Process • 1.5 Steps Involved in Casting Process • 1.6 Molding Equipment or Machinery • 1.7 Mold Materials • 1.8 Sand Testing • • Chapter 2: Gating Systems • 2.1 Introduction • 2.2 Pouring Basin • 2.3 Sprue • 2.4 Pouring Time • 2.5 Runner and Gates • 2.6 Design of Riser • 2.7 Methods of Riser Calculations • 2.8 Filling System Design • 2.9 Yield • • Chapter 3: Special Casting Processes • 3.1 Introduction • 3.2 Expendable Castings • 3.3 Permanent Mold Castings • • Chapter 4: Metal Melting Furnaces • 4.1 Introduction • 4.2 Salient Features of Furnace Design or Components of Furnace • 4.3 Application of Furnaces in High Temperature Industries • 4.4 Types of Furnaces • 4.5 Crucible Melting • 4.6 Cupola Furnace • 4.7 Pit Furnace • 4.8 Reverberatory Furnace • 4.9 Induction Furnace • 4.10 Electrical Arc Furnace • 4.11 Electrical Resistance Furnace • 4.12 Tilting Rotary Furnace (Bessemer Converter) • • Chapter 5: Melting, Pouring, and Casting Quality • 5.1 Heating and Pouring • 5.2 Pouring of Molten Metal • 5.3 Solidification of Metals • 5.4 Causes and Remedies of Casting Defects • 5.5 Quality Considerations in Casting Design • 5.6 Parameters of Cost-Effective Design • 5.7 Quality Tests of Castings • 5.8 Criteria for Selection of Casting Process • 5.9 Cleaning or Fettling of Castings • • Chapter 6: Lean Six Sigma • 6.1 Introduction • 6.2 Lean Manufacturing • 6.3 How Does Lean Work? • 6.4 Lean Principles • 6.5 Time-Tested Tools for Lean Production • 6.6 Lean Progression Model • 6.7 Six Sigma • 6.8 Six Sigma Methodologies Applied in Product Lifecycle • 6.9 Quality Management Tools • 6.10 Six Sigma Implementation Roles • 6.11 What Is Lean Six Sigma? • 6.12 Design for Six Sigma (DFSS) • 6.13 Training for Lean Six Sigma • • Chapter 7: Theory of Metal Forming • 7.1 Introduction • 7.2 Classification of Forming Processes • 7.3 Classification by Stresses • 7.4 Theory of Metal Forming • 7.5 Cold Metal Forming • 7.6 Main Laws of Plastic Deformation • 7.7 Warm Working • 7.8 Hot Metal Forming • 7.9 Recovery, Recrystallization, and Grain Growth • • Chapter 8: Bulk Metal-Forming Processes • 8.1 Introduction • 8.2 Description of Metal-Forming Processes • 8.3 Characteristics of Forging • 8.4 Indenting or Coining • 8.5 Metal Spinning • • Chapter 9: Sheet Metal-Forming Processes • 9.1 Introduction • 9.2 Conventional Sheet Forming Processes • 9.3 Shearing Operation • 9.4 Special or Advanced Sheet Metal-Forming Processes • 9.5 High Velocity Forming (HVF) or High Energy Rate Forming • 9.6 Characteristics of Sheet Metal-Forming Processes • 9.7 Presses • 9.8 Press Tools • 9.9 Construction of Press Tool • 9.10 Sheet Metal Test Methods • 9.11 Metal-Forming Defects • • Chapter 10: Welding Processes • 10.1 Introduction • 10.2 Arc Welding • 10.3 Welding Symbols • 10.4 Resistance Welding • 10.5 Butt Welding • 10.6 Electrodes • 10.7 Fluxes • 10.8 Weld Defects and Weld Testing • 10.9 AC and DC Arc Welding • • Chapter 11: Advanced Welding Technologies • 11.1 Introduction • 11.2 Categories of Welding Technologies • 11.3 Advanced Welding Technologies • 11.4 Pressure Welding • • Chapter 12: Gas Welding and Cutting • 12.1 Introduction • 12.2 Oxy-Fuel Equipment • 12.3 Fuels • 12.4 Types of Flames • 12.5 Gas Welding • 12.6 Gas Cutting • 12.7 Safety Precautions • 12.8 Brazing and Soldering • 12.9 Gas Pressure Welding • 12.10 Methods of Gas Butt Welding • • Chapter 13: Powder Metallurgy • 13.1 Introduction • 13.2 Criterion to Select Powder Metallurgy Process • 13.3 Powder Metallurgy Process • 13.4 Techniques of PM Processes • 13.5 Powder Production Technologies • 13.6 Powder Compaction • 13.7 Sintering • 13.8 Secondary or Finishing Operations • 13.9 Advantages and Limitations • 13.10 Applications of Powder Metallurgy • • • Chapter 14: 3D Printing • 14.1 Introduction • 14.2 Types of Additive Manufacturing Processes • 14.3 Direct Metal Laser Sintering (DMLS) • 14.4 Applications of 3D Printing • 14.5 Future • 14.6 Utilization • 14.7 Materials Used in 3D Printing • • Chapter 15: Plastic Processes • 15.1 Introduction • 15.2 Classification of Plastics • 15.3 Plastic Chemical Compounds • 15.4 Polymers • 15.5 Ingredients of Molding Compound • 15.6 Processing and Fabrication of Plastics • 15.7 Processing of Plastics • 15.8 Lamination and Reinforcement • 15.9 Secondary Processing or Finishing of Plastics • • Summary • Review Questions • Objective-Type Questions • Short Answer Questions • Long Answer Questions • Gate Model Questions • Answers • • References • Index

9788126571253 | ₹ 639



Production Technology : A Treatise of Industrial Practice, Vol 2 | e | k

Moinikunta

About the Author

Mr. Sreeramu Moinikunta worked in Hindustan Aeronautics Ltd., Koraput, Orissa, a MIG engine-manufacturing company and had a crucial role in delivering the first MIG engine by manufacturing afterburner flaps in the absence of a profile rolling machine. The MIG engine was dedicated to the nation on time.

Table of Contents

- Foreword • Preface • About the Author • Acknowledgments • • Chapter 1: Theory of Metal Cutting • 1.1 Introduction • 1.2 Theory of Metal Cutting • 1.3 Mechanics of Chip Formation • 1.4 Built-Up Edge Formation (BUE) • 1.5 Chip Breakers • 1.6 Orthogonal Metal Cutting • 1.7 Merchant's Circle Diagram and its Use • 1.8 Temperature in Metal Cutting • • Chapter 2: Cutting Tool Technology • 2.1 Introduction • 2.2 Cutting Tool Materials • 2.3 Tool Wear • 2.4 Mechanics of Cutting Tool Wear/Types of Tool Wears • 2.5 Geometry of Tool Wear • 2.6 Tool Life • 2.7 Machinability • 2.8 Cutting Conditions • 2.9 Cutting Fluids • 2.10 Designing and Manufacturing of Cutting Tools • • Chapter 3: Machining Processes and Machine Tools • 3.1 Introduction • 3.2 Turning Process • 3.3 Turning Machines • 3.4 Milling Process • 3.5 Drilling and Boring • 3.6 Drilling and Boring Machines • 3.7 Planing • 3.8 Planing Machine • 3.9 Slotting • 3.10 Broaching • 3.11 Gear Cutting • • Chapter 4: Abrasive Machining Processes • 4.1 Introduction • 4.2 Characteristics of Grinding Wheels • 4.3 Types of Grinding Wheels • 4.4 Types of Grinding Operations • 4.5 Types of Grinding Machines • 4.6 Abrasive Wheel Bonds and Cutting Speeds • 4.7 Grinding Wheel Wear • 4.8 Dressing and Truing • • Chapter 5: Superfinishing Processes • 5.1 Introduction • 5.2 Honing Process • 5.3 Lapping Methods • 5.4 Superfinishing Process • 5.5 Polishing • 5.6 Buffing • 5.7 Burnishing • • Chapter 6: Unconventional Machining Processes • 6.1 Introduction • 6.2 Characteristics of UCM Processes • 6.3 Chemical Machining • 6.4 Photochemical Machining • 6.5 Electrochemical Machining • 6.6 Electrochemical Grinding • 6.7 Electrical Discharge Machining • 6.8 Wire-Cut EDM • 6.9 Electron Beam Machining • 6.10 Plasma Arc Machining • 6.11 Laser Beam Machining • 6.12 Ultrasonic Machining • 6.13 Abrasive Jet Machining • 6.14 Water Jet Machining • 6.15 Abrasive Water Jet Machining • • Chapter 7: Engineering Materials • 7.1 Introduction • 7.2 Steels • 7.3 Cast Iron • 7.4 Non-Ferrous Materials • 7.5 Non-Metallic Engineering Materials • • Chapter 8: Phase Transformations • 8.1 Introduction • 8.2 Phase Transformations • 8.3 Terminology • 8.4 Iron-Carbon Phase Diagram • 8.5 Some Conclusions • 8.6 Phase Transformations: Kinetics • 8.7 Isothermal Transformation (T_{TT}) Diagrams • • Chapter 9: Heat Treatment Processes • 9.1 Introduction • 9.2 Types of Heat Treatment Processes • 9.3 Objective-Based Categorization of Heat Treatment Processes • 9.4 Annealing Processes • 9.5 Hardening • 9.6 Induction Hardening • 9.7 Carburizing • 9.8 Case Hardening • 9.9 Flame Hardening • 9.10 Plasma Nitriding • 9.11 Tempering • • Chapter 10: Surface Treatments • 10.1 Introduction • 10.2 Main Classification • 10.3 Treatments Covering Surfaces • 10.4 Treatment Altering the Surfaces • • Chapter 11: Design for Manufacturing • 11.1 Introduction • 11.2 Design Practices • 11.3 Projections • 11.4 Dimensioning • 11.5 Geometrical Accuracies • 11.6 Introduction to Computer-Aided Design and Drafting (CADD) • 11.7 Design Analysis • • Chapter 12: Limits, Fits, and Tolerances • 12.1 Introduction • 12.2 Limits, Fits, and Tolerances • 12.4 Fundamental Deviation (Allowance) • 12.5 Process Allowance • 12.6 Size Designations in Tolerancing • 12.7 Fits • 12.8 Symbols Used in Fits and Tolerances • 12.9 Preferred Fits • 12.10 Machining Process Capability and its Grades • 12.11 Tolerance and Capability Studies • 12.12 Process Control Charts • • Chapter 13: Surface Finish • Learning Objectives • 13.1 Introduction • 13.2 Components of Surface Texture • 13.3 Main Components of Surface Deviations • 13.4 Measuring Parameters As Per DIN EN ISO 4287-1998 • 13.5 Surface Finish Measurements • 13.6 Manufacturing Process Capability and Achievable Surface Finish • • Chapter 14: Process Planning and CAPP_335 • 14.1 Introduction • 14.2 Basic Functions of Process Planner • 14.3 Manufacturing Process Planning • 14.4 Review and Control Process • 14.5 Introduction to Computer-Aided Process Planning (CAPP) • • Chapter 15: Jigs and Fixtures • 15.1 Introduction • 15.2 Principles of Location • 15.3 Principles of Guiding Elements • 15.4 Drill Jigs • 15.5 Fixtures • 15.6 Power Clamping Systems • 15.7 Modular Fixturing System • • Chapter 16: CNC Machine Tools • 16.1 Introduction • 16.2 What is Numerical Control Machine? • 16.3 What is CNC Machine? • 16.4 Introduction to DNC • 16.5 Basic Principles of CNC Machines • 16.6 CNC Machine Advantages Over



Nc Machine • 16.7 How CNC Machine Works • 16.8 Application of CNC Machines • 16.9 CNC Machines • 16.10 Special Attachments on CNC Machine Tools • 16.11 CNC Programming • 16.12 Computer-Aided Design and Computer-Aided Manufacturing • 16.13 Modular Tooling Systems • 16.14 Tool Pre-Setting • Chapter 17: Standardization • 17.1 Introduction • 17.2 Design Standards • 17.3 M-Material Standards • 17.4 Tooling • Review Questions • Objective-Type Question • Short Answer Questions • Long Answering Questions • GATE Model Questions • Answers • References • Index

9788126571260 | ₹ 689



Engineering Mechanics Statics and Dynamics, 9ed, An Indian Adaptation | IM | e | k

Meriam

About the Author

Dr. James L. Meriam has contributed to the field of engineering mechanics as one of the premier engineering educators during the second half of the twentieth century. He had early industrial experience with Pratt and Whitney Aircraft and the General Electric Company. During the Second World War, he served in the U.S.

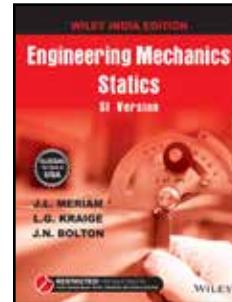
Coast Guard. He was a member of the faculty of the University of California-Berkeley, Dean of Engineering at Duke University, a faculty member at the California Polytechnic State University, and visiting professor at the University of California-Santa Barbara.

Table of Contents

- Foreword • Preface to the Adapted Edition • Preface • Acknowledgments • Part I Statics • 1 Introduction to Statics • 2 Force Systems • 2.1 Introduction • 2.2 Force • 2.3 Rectangular Components • 2.4 Moment • 2.5 Couple • 2.6 Resultants • 2.7 Rectangular Components • 2.8 Moment and Couple • 2.9 Resultants • 2.10 Chapter Review • 3 Equilibrium • 3.1 Introduction • 3.2 System Isolation and the Free-Body Diagram • 3.3 Equilibrium Conditions • 3.4 Equilibrium Conditions • 3.5 Chapter Review • 4 Structures • 4.1 Introduction • 4.2 Plane Trusses • 4.3 Method of Joints • 4.4 Graphical Method • 4.5 Method of Sections • 4.6 Space Trusses • 4.7 Frames and Machines • 4.8 Chapter Review • 5 Distributed Forces: Center of Mass, Centroid, and Moment of Inertia • 5.1 Introduction • 5.2 Center of Mass • 5.3 Centroids of Lines, Areas, and Volumes • 5.4 Composite Bodies and Figures; Approximations • 5.5 Theorems of Pappus • 5.6 Area Moments of Inertia • 5.7 Mass Moments of Inertia • 5.8 Beams—External Effects • 5.9 Beams—Internal Effects • 5.10 Chapter Review • 6 Friction • 6.1 Introduction • 6.2 Types of Friction • 6.3 Dry Friction • 6.4 Wedges • 6.5 Screws • 6.6 Journal Bearings • 6.7 Thrust Bearings; Disk Friction • 6.8 Flexible Belts • 6.9 Rolling Resistance • 6.10 Chapter Review • 7 Virtual Work • 7.1 Introduction • 7.2 Work • 7.3 Equilibrium • 7.4 Potential Energy and Stability • 7.5 Chapter Review • Part II Dynamics • Part IIA: Dynamics of Particles • 8 Introduction to Dynamics • 8.1 History and Modern Applications • 8.2 Solving Problems in Dynamics • 8.3 Chapter Review • 9 Kinematics of Particles • 9.1 Introduction • 9.2 Rectilinear Motion • 9.3 Plane Curvilinear Motion • 9.4 Rectangular Coordinates (x-y) • 9.5 Normal and Tangential Coordinates (n-t) • 9.6 Polar Coordinates (r-θ) • 9.7 Space Curvilinear Motion • 9.8 Relative Motion (Translating Axes) • 9.9 Constrained Motion of Connected Particles • 9.10 Chapter Review • 10 Kinetics of Particles • 10.1 Introduction • 10.2 Newton's Second Law • 10.3 Equation of Motion and Solution of Problems • 10.4 Rectilinear Motion • 10.5 Curvilinear Motion • 10.6 Work and Kinetic Energy • 10.7 Potential Energy • 10.8 Introduction • 10.9 Linear Impulse and Linear Momentum • 10.10 Angular Impulse and Angular Momentum • 10.11 Introduction • 10.12 Impact • 10.13 Central-Force Motion • 10.14 Relative Motion • 10.15 Chapter Review • 11 Kinetics of Systems of Particles • 11.1 Introduction • 11.2 Generalized Newton's Second Law • 11.3 Work-Energy • 11.4 Impulse-Momentum • 11.5 Conservation of Energy and Momentum • 11.6 Steady Mass Flow • 11.7 Variable Mass • 11.8 Chapter Review • Part IIB: Dynamics of Rigid Bodies • 12 Plane Kinematics of Rigid Bodies • 12.1 Introduction • 12.2 Rotation • 12.3 Absolute Motion • 12.4 Relative Velocity • 12.5 Instantaneous Center of Zero Velocity • 12.6 Relative Acceleration • 12.7 Motion Relative to Rotating Axes • 12.8 Chapter Review • 13 Plane Kinetics of Rigid Bodies • 13.1 Introduction • 13.2 General Equations of Motion • 13.3 Translation • 13.4 Fixed-Axis Rotation • 13.5 General Plane Motion • 13.6 Work-Energy Relations • 13.7 Acceleration from Work-Energy; Virtual Work • 13.8 Impulse-Momentum Equations • 13.9 Chapter Review • 14 Introduction to Three-Dimensional Dynamics of Rigid Bodies • 14.1 Introduction • 14.2 Translation • 14.3

Fixed-Axis Rotation • 14.4 Parallel-Plane Motion • 14.5 Rotation about a Fixed Point • 14.6 General Motion • 14.7 Angular Momentum • 14.8 Kinetic Energy • 14.9 Momentum and Energy Equations of Motion • 14.10 Parallel-Plane Motion • 14.11 Gyroscopic Motion: Steady Precession • 14.12 Chapter Review • 15 Vibration and Time Response • 15.1 Introduction • 15.2 Free Vibration of Particles • 15.3 Forced Vibration of Particles • 15.4 Vibration of Rigid Bodies • 15.5 Energy Methods • 15.6 Chapter Review • Appendix A Introduction to Analytical Mechanics • Appendix B Selected Topics of Mathematics • Appendix C Useful Tables • Index • Problem Answers

9789354248566 | ₹ 1319



Engineering Mechanics: Statics, SI Version | IM | e

Meriam

About the Author

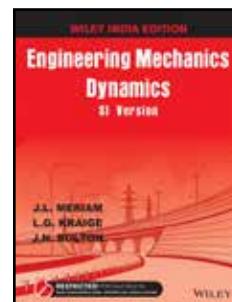
Dr. James L. Meriam has contributed to the field of engineering mechanics as one of the premier engineering educators during the second half of the twentieth century. He had early industrial experience with Pratt and Whitney Aircraft and the General Electric Company. During the Second World War, he served in the U.S.

Coast Guard. He was a member of the faculty of the University of California-Berkeley, Dean of Engineering at Duke University, a faculty member at the California Polytechnic State University, and visiting professor at the University of California-Santa Barbara.

Description

These exciting books use interesting, realistic illustrations to enhance reader comprehension. Also include a large number of worked examples that provide a good balance between initial, confidence building problems and more advanced level problems. Fundamental principles for solving problems are emphasized throughout.

9788126564033 | ₹ 1079



Engineering Mechanics: Dynamics, SI Version | e

Meriam

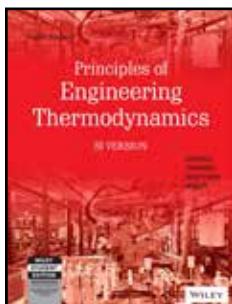
About the Author

Glenn Kraige is Professor in the Department of Engineering Science and Mechanics at Virginia Tech. He is a fellow member of the American Society for Engineering Education,

Description

Known for its accuracy, clarity, and dependability, Meriam, Kraige, and Bolton's Engineering Mechanics: Dynamics, 8th Edition SI Version has provided a solid foundation of mechanics principles to students for more than 60 years. Now in its eighth edition, the text continues to help students develop their problem-solving skills with an extensive variety of engaging problems related to engineering design. In addition to new homework problems, the text also includes a number of helpful sample problems. Students benefit from realistic applications that motivate their desire to learn and develop their skills.

9788126565375 | ₹ 1069



Principles of Engineering Thermodynamics, SI Version, 8ed | IM | e

Moran

About the Author

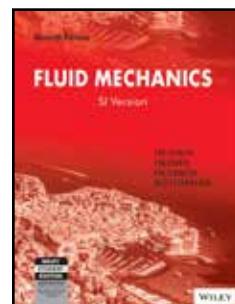
Dr. Michael J. Moran, is Professor of Mechanical Engineering at the Ohio State University. He is a specialist in engineering thermodynamics and thermoconomics. He also works in the area of thermal design and optimization.

Table of Contents

- 1 Getting Started: Introductory Concepts and Definitions • 1.1 Using Thermodynamics
- 1.2 Defining Systems • 1.3 Describing Systems and Their Behavior • 1.4 Measuring Mass, Length, Time and Force • 1.5 Specific Volume • 1.6 Pressure • 1.7 Temperature • 1.8 Engineering Design and Analysis • 1.9 Methodology for Solving Thermodynamics Problems
- 2 Energy and the First Law of Thermodynamics • 2.1 Reviewing Mechanical Concepts of Energy • 2.2 Broadening our Understanding of Work • 2.3 Broadening our Understanding of Energy • 2.4 Energy Transfer by Heat • 2.5 Energy Accounting: Energy Balance for Closed Systems • 2.6 Energy Analysis of Cycles • 2.7 Energy Storage • 3 Evaluating Properties • 3.1 Getting Started • 3.2 $p - \delta \text{d}T$ Relation • 3.3 Studying Phase Change • 3.4 Retrieving Thermodynamic Properties • 3.5 Evaluating Pressure, Specific Volume and Temperature • 3.6 Evaluating Specific Internal Energy and Enthalpy • 3.7 Evaluating Properties using Computer Software • 3.8 Applying the Energy Balance Using Property Tables and Software • 3.9 Introducing Specific Heats c_p and c_v • 3.10 Evaluating Properties of Liquids and Solids • 3.11 Generalized Compressibility Chart • 3.12 Introducing the Ideal Gas Model • 3.13 Internal Energy, Enthalpy and Specific Heats of Ideal Gases • 3.14 Applying the Energy Balance Using Ideal Gas Tables, Constant Specific Heats and Software • 3.15 Polytropic Process Relations • 4 Control Volume Analysis Using Energy • 4.1 Conservation of Mass for a Control Volume • 4.2 Forms of the Mass Rate Balance • 4.3 Applications of the Mass Rate Balance • 4.4 Conservation of Energy for a Control Volume • 4.5 Analyzing Control Volumes at Steady State • 4.6 Nozzles and Diffusers • 4.7 Turbines • 4.8 Compressors and Pumps • 4.9 Heat Exchangers • 4.10 Throttling Devices • 4.11 System Integration
- 4.12 Transient Analysis • 5 The Second Law of Thermodynamics • 5.1 Introducing the Second Law • 5.2 Statements of the Second Law • 5.3 Irreversible and Reversible Processes • 5.4 Interpreting the Kelvin-Planck Statement • 5.5 Applying the Second Law to Thermodynamic Cycles • 5.6 Second Law Aspects of Power Cycles Interacting with Two Reservoirs • 5.7 Second Law Aspects of Refrigeration and Heat Pump Cycles Interacting with Two Reservoirs • 5.8 The Kelvin and International Temperature Scales
- 5.9 Maximum Performance Measures for Cycles Operating between Two Reservoirs • 5.10 Carnot Cycle • 5.11 Clausius Inequality • 6 Using Entropy • 6.1 Entropy--A System Property • 6.2 Retrieving Entropy Data • 6.3 Introducing the T dS Equations • 6.4 Entropy Change of an Incompressible Substance • 6.5 Entropy Change of an Ideal Gas • 6.6 Entropy Change in Internally Reversible Processes of Closed Systems • 6.7 Entropy Balance for Closed Systems • 6.8 Directionality of Processes • 6.9 Entropy Rate Balance for Control Volumes • 6.10 Rate Balances for Control Volumes at Steady State • 6.11 Isentropic Processes • 6.12 Isentropic Efficiencies of Turbines, Nozzles, Compressors and Pumps • 6.13 Heat Transfer and Work in Internally Reversible, Steady-State Flow Processes • 7 Exergy Analysis • 7.2 Conceptualizing Exergy • 7.3 Exergy of a System
- 7.4 Closed System Exergy Balance • 7.5 Exergy Rate Balance for Control Volumes at Steady State • 7.6 Exergetic (Second Law) Efficiency • 7.7 Thermoeconomics • 8 Vapor Power Systems • 8.1 Introducing Vapor Power Plants • 8.2 The Rankine Cycle
- 8.3 Improving Performance--Superheat, Reheat and Supercritical • 8.4 Improving Performance--Regenerative Vapor Power Cycle • 8.5 Other Vapor Power Cycle Aspects
- 8.6 Case Study: Exergy Accounting of a Vapor Power Plant • 9 Gas Power Systems • 9.1 Introducing Engine Terminology • 9.2 Air-Standard Otto Cycle • 9.3 Air-Standard Diesel Cycle • 9.4 Air-Standard Dual Cycle • 9.5 Modeling Gas Turbine Power Plants • 9.6 Air-Standard Brayton Cycle • 9.7 Regenerative Gas Turbines • 9.8 Regenerative Gas Turbines with Reheat and Intercooling • 9.9 Gas Turbine--Based Combined Cycles • 9.10 Integrated Gasification Combined-Cycle Power Plants • 9.11 Gas Turbines for Aircraft Propulsion • 9.12 Compressible Flow Preliminaries • 9.13 Analyzing One-Dimensional Steady Flow in Nozzles and Diffusers • 9.14 Flow in Nozzles and Diffusers of Ideal Gases with Constant Specific Heats • 10 Refrigeration and Heat Pump Systems • 10.1 Vapor Refrigeration Systems • 10.2 Analyzing Vapor-Compression Refrigeration Systems • 10.3

- Selecting Refrigerants • 10.4 Other Vapor-Compression Applications • 10.5 Absorption Refrigeration • 10.6 Heat Pump Systems • 10.7 Gas Refrigeration Systems • 11 Thermodynamic Relations • 11.1 Using Equations of State • 11.2 Important Mathematical Relations • 11.3 Developing Property Relations • 11.4 Evaluating Changes in Entropy, Internal Energy and Enthalpy • 11.5 Other Thermodynamic Relations • 11.6 Constructing Tables of Thermodynamic Properties • 11.7 Generalized Charts for Enthalpy and Entropy • 11.8 $p - \delta \text{d}T$ Relations for Gas Mixtures • 11.9 Analyzing Multicomponent Systems • 12 Ideal Gas Mixture and Psychrometric Applications • 12.1 Describing Mixture Composition • 12.2 Relating p , V and T for Ideal Gas Mixtures • 12.3 Evaluating U , H , S and Specific Heats • 12.4 Analyzing Systems Involving Mixtures • 12.5 Introducing Psychrometric Principles • 12.6 Psychrometers: Measuring the Wet-Bulb and Dry-Bulb Temperatures • 12.7 Psychrometric Charts • 12.8 Analyzing Air-Conditioning Processes • 12.9 Cooling Towers • 13 Reacting Mixtures and Combustion • 13.1 Introducing Combustion • 13.2 Conservation of Energy-- Reacting Systems • 13.3 Determining the Adiabatic Flame Temperature • 13.4 Fuel Cells • 13.5 Absolute Entropy and the Third Law of Thermodynamics • 13.6 Conceptualizing Chemical Exergy • 13.7 Standard Chemical Exergy • 13.8 Applying Total Exergy • 14 Chemical and Phase Equilibrium • 14.1 Introducing Equilibrium Criteria • 14.2 Equation of Reaction Equilibrium • 14.3 Calculating Equilibrium Compositions • 14.4 Further Examples of the Use of the Equilibrium Constant • 14.5 Equilibrium between Two Phases of a Pure Substance • 14.6 Equilibrium of Multicomponent, Multiphase Systems • Chapter Summary and Study Guide • Appendix Tables, Figures and Charts • Index to Tables in SI Units • Index to Figures and Charts • Index

9788126556724 | ₹ 1029



Fluid Mechanics, SI Version, 7ed | IM | e

Munson

About the Author

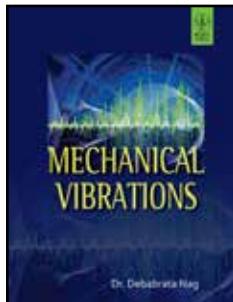
Bruce R.Munson, Professor Emeritus of Engineering Mechanics, has been faculty member at Iowa State university since 1974. Dr. Munson's main professional activity has been in the area of fluid mechanics education and research. He has been responsible for the development of many fluid mechanics courses for studies in civil engineering, mechanical engineering, engineering science, and agricultural engineering and is the recipient of an Iowa State university Superior engineering Teacher Award and the Iowa State University Alumni Association Faculty Citation.

Table of Contents

- Introduction • 1.1 Some Characteristics of Fluids • 1.2 Dimensions, Dimensional Homogeneity and Units • 1.3 Analysis of Fluid Behavior • 1.4 Measures of Fluid Mass and Weight • 1.5 Ideal Gas Law • 1.6 Viscosity • 1.7 Compressibility of Fluids • 1.8 Vapor Pressure • 1.9 Surface Tension • 1.10 A Brief Look Back in History • 1.11 Chapter Summary and Study Guide • 2 Fluid Statics • 2.1 Pressure at a Point • 2.2 Basic Equation for Pressure Field • 2.3 Pressure Variation in a Fluid at Rest • 2.4 Standard Atmosphere • 2.5 Measurement of Pressure • 2.6 Manometry • 2.7 Mechanical and Electronic Pressure-Measuring Devices • 2.8 Hydrostatic Force on a Plane Surface • 2.9 Pressure Prism • 2.10 Hydrostatic Force on a Curved Surface • 2.11 Buoyancy, Flotation and Stability • 2.12 Pressure Variation in a Fluid with Rigid-Body Motion • 2.13 Chapter Summary and Study Guide • 3 Elementary Fluid Dynamics--The Bernoulli Equation • 3.1 Newton's Second Law • 3.2 F_{net} along a Streamline • 3.3 F_{net} Normal to a Streamline • 3.4 Physical Interpretation • 3.5 Static, Stagnation, Dynamic and Total Pressure • 3.6 Examples of Use of the Bernoulli Equation • 3.7 The Energy Line and the Hydraulic Grade Line • 3.8 Restrictions on Use of the Bernoulli Equation • 3.9 Chapter Summary and Study Guide • 4 Fluid Kinematics • 4.1 The Velocity Field • 4.2 The Acceleration Field • 4.3 Control Volume and System Representations • 4.4 The Reynolds Transport Theorem • 4.5 Chapter Summary and Study Guide • 5 Finite Control Volume Analysis • 5.1 Conservation of Mass--The • 5.2 Newton's Second Law--The Linear Momentum and Moment-of-Momentum Equations • 5.3 First Law of Thermodynamics--The Energy Equation • 5.4 Second Law of Thermodynamics--Irreversible Flow • 5.5 Chapter Summary and Study Guide • 6 Differential Analysis of Fluid Flow • 6.1 Fluid Element Kinematics • 6.2 Conservation of Mass • 6.3 Conservation of Linear Momentum • 6.4

Inviscid Flow • 6.5 Some Basic, Plane Potential Flows • 6.6 Superposition of Basic, Plane Potential Flows • 6.7 Other Aspects of Potential Flow Analysis • 6.8 Viscous Flow • 6.9 Some Simple Solutions for Viscous, Incompressible Fluids • 6.10 Other Aspects of Differential Analysis • 6.11 Chapter Summary and Study Guide • 7 Dimensional Analyses, Similitude and Modeling • 7.1 Dimensional Analysis • 7.2 Buckingham Pi Theorem • 7.3 Determination of Pi Terms • 7.4 Some Additional Comments about Dimensional Analysis • 7.5 Determination of Pi Terms by Inspection • 7.6 Common Dimensionless Groups in Fluid Mechanics • 7.7 Correlation of Experimental Data • 7.8 Modeling and Similitude • 7.9 Some Typical Model Studies • 7.10 Similitude Based on Governing Differential Equations • 7.11 Chapter Summary and Study Guide • 8 Viscous Flow in Pipes • 8.1 General Characteristics of Pipe Flow • 8.2 Fully Developed Laminar Flow • 8.3 Fully Developed Turbulent Flow • 8.4 Dimensional Analysis of Pipe Flow • 8.5 Pipe Flow Examples • 8.6 Pipe Flow rate Measurement • 8.7 Chapter Summary and Study Guide • 9 Flow Over Immersed Bodies • 9.1 General External Flow Characteristics • 9.2 Boundary Layer Characteristics • 9.3 Drag • 9.3.1 Friction Drag • 9.4 Lift • 9.5 Chapter Summary and Study Guide • 10 Open-Channel Flow • 10.1 General Characteristics of Open-Channel Flow • 10.2 Surface Waves • 10.3 Energy Considerations • 10.4 Uniform Depth Channel Flow • 10.5 Gradually Varied Flow • 10.6 Rapidly Varied Flow • 10.7 Chapter Summary and Study Guide • 11 Compressible Flow • 11.1 Ideal Gas Relationships • 11.2 Mach Number and Speed of Sound • 11.3 Categories of Compressible Flow • 11.4 Isentropic Flow of an Ideal Gas • 11.5 Nonisentropic Flow of an Ideal Gas • 11.6 Analogy between Compressible and Open-Channel Flows • 11.7 Two-Dimensional Compressible Flow • 11.8 Chapter Summary and Study Guide • 12 Turbomachines • 12.1 Introduction • 12.2 Basic Energy Considerations • 12.3 Basic Angular Momentum Considerations • 12.4 The Centrifugal Pump • 12.5 Dimensionless Parameters and Similarity Laws • 12.6 Axial-Flow and Mixed-Flow Pumps • 12.7 Fans • 12.8 Turbines • 12.9 Compressible Flow Turbomachines • 12.10 Chapter Summary and Study Guide • References • Review Problems • Conceptual Questions • Problems • A Computational fluid dynamics • B Physical Properties of Fluids • C Properties of the U.S. • Standard Atmosphere • D Compressible Flow graphs • For an Ideal Gas (k = 1.4) • Answers ANS- • Index I • Video Index

9788126553433 | ₹ 1229



Mechanical Vibrations | IM | e | k

Nag

About the Author

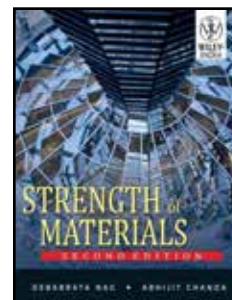
Dr. Debabrata Nag is teaching at the Department of Mechanical Engineering, Jadavpur University, Kolkata. Earlier, he worked with the design consultancy industry for more than a decade, contributing to the field of stress analysis of piping systems for thermal/nuclear power plants, petrochemicals, etc. Dr. Nag teaches Mechanical Vibrations, Strength of Materials, and Engineering Mechanics to the graduate and postgraduate students of mechanical, electrical and civil engineering. His active research areas include Numerical Modeling of Non-Newtonian Fluids, Biological Fluids, Mathematical Theories of Mechanical Vibration, Theory of Elasticity and Dynamics of Engineering Systems. Dr. Nag has authored three more textbooks: Fundamentals of Strength of Materials (Wiley), Fundamentals of Engineering Mechanics, and An Introduction to Engineering Mechanics.

Table of Contents

- Introduction to Vibration • Introduction • Systems Undergoing Vibration • Types of Vibration • Importance of Vibration • Sources of Vibration • Mathematical Formulations of Periodic Response • Free Vibration of Undamped Single Degree of Freedom System • Introduction • Free Vibration of Single Degree of Freedom System • Dynamic of Rigid Bodies-A Quick Overview • Energy Considerations of Free Vibration • Damped Free Vibration of Single Degree of Freedom System • Introduction • Viscous Damping • Coulombic Damping • Solution of Differential Equation of Motion of a System with Coulombic Damping • Force Vibration of Single Degree of Freedom System • Introduction • Forced Vibration • Forced Vibration due to General Periodic Forces/Disturbances • Energy Dissipated due to Viscous Damping-Concept of Equivalent Viscous Damping Coefficient • Structural/ Material Damping • Eddy-Current Damping • Sharpness of Resonance • Some Useful Concluding Remark • Transient

Vibration of Single Degree of Freedom Systems • Introduction • Response to Unit Impulse • Response to Arbitrary Excitation • Response to Ground Motion • Vibration of Two Degree of Freedom Systems • Introduction • Free Vibration, Normal Modes of Vibration • Coordinate Systems and Coordinate Coupling • Forced Vibration of Undamped System • Vibration Absorbers • Vibration of Multidegree of Freedom Systems • Introduction • Formulation of Equations of Motion (Force Method) • Stiffness Matrix Formulation • Energy Principle-Lagrange's Equation • Equation for Free Vibration (Undamped System) • Expansion Theorem • Modal Analysis • Damped Free Vibration • Free Vibration of Continuous Systems • Introduction • Tightly-Stretched String or Wire • Vibration of Continuous Elastic Media • Free Vibration of a Membrane • Free Vibration of a Plate • Forced Vibration of Continuous Systems • Introduction • Introduction to Virtual-Work Theorem for a Deformable Body • Forced Vibration of Continuous Systems • Approximate Methods • Introduction • Estimation of Fundamental Frequency • Estimation of Higher-Mode Frequency • Concluding Remarks • Appendix A: Finite Element Method • Appendix B: Vibration Measurements and Control • Appendix C: Vibration and Noise • Appendix D: Special Topics in Vibration • Bibliography • Test Your Comprehension • Answers • Model Test Papers • Index

9788126530908 | ₹ 919



Strength of Materials, 2ed, w/cd | e | k

Nag

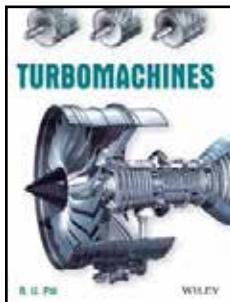
About the Author

Dr. Debabrata Nag, a graduate in Mechanical Engineering from Jadavpur University, is presently designated as the Reader in the Department of Mechanical Engineering in Applied Mechanics specialisation of his alma mater. He has over 7 years of teaching experience both in Undergraduate and Postgraduate levels and over 12 years of industrial experience in finite element stress analysis of industrial piping systems. Credited with a number of research papers in various International journals, his research interest includes areas of numerical modeling of non-Newtonian fluids, biological fluids, mathematical theories of mechanical vibration, theory of elasticity and dynamics of engineering systems. Dr. Nag has also co-authored the book "Fundamentals of Engineering Mechanics", published by Scholar Books, Kolkata with Dr. Abhijit Chanda.

Table of Contents

- Part A Elementary Strength of Materials • Stress and Strain • Torsion • Thin-Walled Pressure Vessels • Biaxial Stresses • Shear Force and Bending Moment of Beams • Stresses in Beams • Deflection of Beams • Buckling of Columns • Part B Advanced Strength of Materials • Analysis of Stress and Strain • Energy Principles • Theories of Failure • Combined Loadings • Unsymmetric Bending of Beam • Shear Stresses in Thin-walled beams • Axisymmetric Problems in Strength of Materials • Curved Beam Theory • Leaf Springs • Beams of Composite Materials • Statically Indeterminate Beams - Continuous Beams • Model Question Paper 1 • Model Question Paper 2 • Model Question Paper 3 • Model Question Paper 4 • Appendix A • A.1 Area Moment of Inertia • A.2 Product Area Moment of Inertia • A.3 Parallel-Axis Theorem • Appendix B • B.1 Deflection and Elastic Equations of Some Common Beams • B.2 Area, Centroid and Area Moment of Inertia for Some Common Sections • Appendix C • C.1 Symbols and Units • C.2 System of Units • C.3 Area under Parabola • Appendix D • D.1 Pure Bending • Appendix E • Bibliography • Index

9788126534876 | ₹ 909



Turbomachines | IM | e | k

Pai

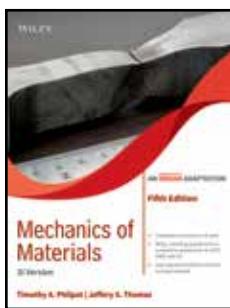
About the Author

Prof. B. U. Pai is well known as a popular teacher of the course Turbomachines. His 39 years of vast teaching and administrative experience is an amalgam of distinctions based on imparting quality education as a Professor & Head (Dept. of Mech. Engg.) and Principal of various engineering colleges. Over the years, he has taught subjects such as Thermodynamics, Heat Transfer, IC Engines, R&AC, etc. he has many reputed national and international publications to his credit.

Table of Contents

- Basics of Turbomachines • Thermodynamics of Fluid Flow • Energy Exchange in Turbomachines • General Analyses of Turbomachines • Steam Turbines • Hydraulic Turbines • Centrifugal Pumps • Fans, Blowers, and Compressors • Power-Transmitting Turbomachines

9788126539550 | ₹ 829



Mechanics of Materials, SI Version, 5ed, An Indian Adaptation | IM | e | k

Philpot

About the Author

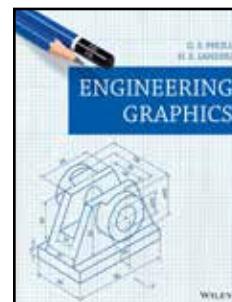
Timothy A. Philpot was an Associate Professor in the Department of Civil, Architectural, and Environmental Engineering at the Missouri University of Science and Technology (formerly known as the University of Missouri-Rolla). He was the developer of MDSolids and MecMovies, two award-winning instructional software packages. MDSolids—Educational Software for Mechanics of Materials won a 1998 Premier Award for Excellence in Engineering Education Courseware by NEEDS, the National Engineering Education Delivery System.

Table of Contents

- 1 Stress • 1.1 Introduction • 1.2 Normal Stress Under Axial Loading • 1.3 Direct Shear Stress • 1.4 Bearing Stress • 1.5 Stresses on Inclined Sections • 1.6 Equality of Shear Stresses on Perpendicular Planes • • 2 Strain • 2.1 Displacement, Deformation, and the Concept of Strain • 2.2 Normal Strain • 2.3 Shear Strain • 2.4 Thermal Strain • • 3 Mechanical Properties of Materials • 3.1 The Tension Test • 3.2 The Stress–Strain Diagram • 3.3 Hooke's Law • 3.4 Poisson's Ratio • • 4 Design Concepts • 4.1 Introduction • 4.2 Types of Loads • 4.3 Safety • 4.4 Allowable Stress Design • 4.5 Load and Resistance Factor Design • • 5 Axial Deformation • 5.1 Introduction • 5.2 Saint-Venant's Principle • 5.3 Deformations in Axially Loaded Bars • 5.4 Deformations in a System of Axially Loaded Bars • 5.5 Statically Indeterminate Axially Loaded Members • 5.6 Thermal Effects on Axial Deformation • 5.7 Stress Concentrations • • 6 Torsion • 6.1 Introduction • 6.2 Torsional Shear Strain • 6.3 Torsional Shear Stress • 6.4 Stresses on Oblique Planes • 6.5 Torsional Deformations • 6.6 Torsion Sign Conventions • 6.7 Gears in Torsion Assemblies • 6.8 Power Transmission • 6.9 Statically Indeterminate Torsion Members • 6.10 Stress Concentrations in Circular Shafts Under Torsional Loadings • 6.11 Torsion of Noncircular Sections • 6.12 Torsion of Thin-Walled Tubes: Shear Flow • • 7 Equilibrium of Beams • 7.1 Introduction • 7.2 Shear and Moment in Beams • 7.3 Graphical Method for Constructing Shear and Moment Diagrams • 7.4 Discontinuity Functions to Represent Load, Shear, and Moment • • 8 Bending • 8.1 Introduction • 8.2 Flexural Strains • 8.3 Normal Stresses in Beams • 8.4 Analysis of Bending Stresses in Beams • 8.5 Introductory Beam Design for Strength • 8.6 Flexural Stresses in Beams of Two Materials • 8.7 Bending Due to an Eccentric Axial Load • 8.8 Unsymmetric Bending • 8.9 Stress Concentrations Under Flexural Loadings • 8.10 Bending of Curved Bars • • 9 Shear Stress in Beams • 9.1 Introduction • 9.2 Resultant Forces Produced by Bending Stresses • 9.3 The Shear Stress Formula • 9.4 The First Moment of Area, Q • 9.5 Shear Stresses in Beams of Rectangular Cross Section • 9.6 Shear Stresses in Beams of Circular Cross Section • 9.7 Shear Stresses in Beams of Triangular Cross Section • 9.8 Shear

Stresses in Webs of Flanged Beams • 9.9 Shear Flow in Built-Up Members • 9.10 Shear Stress and Shear Flow in Thin-Walled Members • 9.11 Shear Centers of Thin-Walled Open Sections • • 10 Beam Deflections • 10.1 Introduction • 10.2 Moment–Curvature Relationship • 10.3 The Differential Equation of the Elastic Curve • 10.4 Determining Deflections by Integration of a Moment Equation • 10.5 Determining Deflections by Integration of Shear-Force or Load Equations • 10.6 Determining Deflections by Using Discontinuity Functions • 10.7 Determining Deflections by the Method of Superposition • 10.8 Determining Deflection by Using Moment Area Method • 10.9 Determining Deflections by Using Conjugate Beam Method • • 11 Statically Indeterminate Beams • 11.1 Introduction • 11.2 Types of Statically Indeterminate Beams • 11.3 The Integration Method • 11.4 Use of Discontinuity Functions for Statically Indeterminate Beams • 11.5 The Superposition Method • • 12 Stress Transformations • 12.1 Introduction • 12.2 Stress at a General Point in an Arbitrarily Loaded Body • 12.3 Equilibrium of the Stress Element • 12.4 Plane Stress • 12.5 Generating the Stress Element • 12.6 Equilibrium Method for Plane Stress Transformations • 12.7 General Equations of Plane Stress Transformation • 12.8 Principal Stresses and Maximum Shear Stress • 12.9 Presentation of Stress Transformation Results • 12.10 Mohr's Circle for Plane Stress • 12.11 General State of Stress at a Point • • 13 Strain Transformations • 13.1 Introduction • 13.2 Plane Strain • 13.3 Transformation Equations for Plane Strain • 13.4 Principal Strains and Maximum Shearing Strain • 13.5 Presentation of Strain Transformation Results • 13.6 Mohr's Circle for Plane Strain • 13.7 Strain Measurement and Strain Rosettes • • 14 Pressure Vessels • 14.1 Introduction • 14.2 Thin-Walled Spherical Pressure Vessels • 14.3 Thin-Walled Cylindrical Pressure Vessels • 14.4 Strains in Thin-Walled Pressure Vessels • 14.5 Stresses in Thick-Walled Cylinders • 14.6 Deformations in Thick-Walled Cylinders • 14.7 Interference Fits • • 15 Combined Loads • 15.1 Introduction • 15.2 Combined Axial and Torsional Loads • 15.3 Principal Stresses in a Flexural Member • 15.4 General Combined Loadings • 15.5 Theories of Failure • • 16 Columns • 16.1 Introduction • 16.2 Buckling of Pin-Ended Columns • 16.3 The Effect of End Conditions on Column Buckling • 16.4 The Secant Formula • 16.5 Empirical Column Formulas—Centric Loading • 16.6 Eccentrically Loaded Columns • • 17 Energy Methods • 17.1 Introduction • 17.2 Work and Strain Energy • 17.3 Elastic Strain Energy for Axial Deformation • 17.4 Elastic Strain Energy for Torsional Deformation • 17.5 Elastic Strain Energy for Flexural Deformation • 17.6 Impact Loading • 17.7 Work–Energy Method for Single Loads • 17.8 Method of Virtual Work • 17.9 Deflections of Trusses by the Virtual-Work Method • 17.10 Deflections of Beams by the Virtual-Work Method • 17.11 Castigliano's Second Theorem • 17.12 Calculating Deflections of Trusses by Castigliano's Theorem • 17.13 Calculating Deflections of Beams by Castigliano's Theorem • • Appendix A Geometric Properties of an Area • A.1 Centroid of an Area • A.2 Moment of Inertia for an Area • A.3 Product of Inertia for an Area • A.4 Principal Moments of Inertia • A.5 Mohr's Circle for Principal Moments of Inertia • • Appendix B Geometric Properties of Structural Steel Shapes • • Appendix C Table of Beam Slopes and Deflections • • Appendix D Average Properties of Selected Materials • • Appendix E Generalized Hooke's Law for Isotropic and Orthotropic Materials • E.1 Generalized Hooke's Law for Isotropic Materials • E.2 Generalized Hooke's Law for Orthotropic Materials • • Appendix F Fundamental Mechanics of Materials Equations • • Appendix G Multiple Choice Questions • • Answers to Odd Numbered Problems (Available Online) • Index

9789354643293 | ₹ 1299



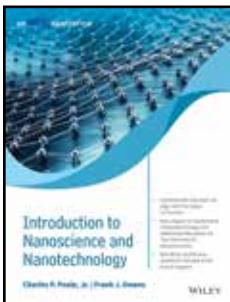
Engineering Graphics | k

Phull

Description

The book offers ample illustrations of technical drawings along with step-by-step instructions for their development. The coverage of the topics is as per syllabus requirements of AICTE. The book covers the basic concepts and conventions of Engineering Graphics; describes methods for geometrical constructions and drawing engineering curves and extends the basics to drawing orthographic projections of points, lines, planes and solids as per prevalent BIS conventions. It further covers techniques for orthographic projections of sections of solids, intersecting solids and development of surfaces.

9788126549702 | ₹ 779



Introduction to Nanoscience and Nanotechnology, An Indian Adaptation | e | k

Poole

About the Author

Charles P. Poole Jr., PhD, is a professor emeritus in the Department of Physics and Astronomy at the University of South Carolina is a member of the USC nanotechnology center.

Table of Contents

- 1 Introduction • 1.1 History of Nanoscience and Nanotechnology • 1.2 Definition and Classification of Nanomaterials • 1.3 Present and Future Perspectives of Nanomaterials and Nanotechnology • • 2 Introduction to Solid State Physics • 2.1 Structure • 2.2 Energy Bands • 2.3 Localized Particles • • 3 Methods of Measuring Properties • 3.1 Introduction • 3.2 Structure Analysis • 3.3 Microscopic Techniques • 3.4 Spectroscopic Techniques • • 4 Properties and Synthesis of Nanoparticles • 4.1 Introduction • 4.2 Metal Nanoclusters and Nanoparticles • 4.3 Semiconducting Nanoparticles • 4.4 Rare Gas and Molecular Clusters • 4.5 Methods of Synthesis • 4.6 Conclusion • • 5 Carbon-Based Nanostructures • 5.1 Introduction • 5.2 Carbon Molecules • 5.3 Carbon Clusters • 5.4 Carbon Nanotubes • 5.5 Applications of Carbon Nanotubes • • 6 Nanostructured Materials • 6.1 Solid Disordered Nanostructures • 6.2 Nanostructured Crystals • • 7 Nanostructured Ferromagnetism • 7.1 Basics of Ferromagnetism • 7.2 Effect of Bulk Nanostructuring of Magnetic Properties • 7.3 Dynamics of Nanomagnets • 7.4 Nanopore Containment of Magnetic Particles • 7.5 Nanocarbon Ferromagnets • 7.6 Giant and Colossal Magnetoresistance • 7.7 Ferrofluids • • 8 Optical and Vibrational Spectroscopy • 8.1 Introduction • 8.2 Infrared Frequency Range • 8.3 Luminescence • • 9 Quantum Wells, Wires, and Dots • 9.1 Introduction • 9.2 Preparation of Quantum Nanostructures • 9.3 Size and Dimensionality Effects • 9.4 Excitons • 9.5 Single-Electron Tunneling • • 9.6 Applications • 9.7 Superconductivity • • 10 Self-Assembly and Catalysis • 10.1 Self-Assembly • 10.2 Catalysis • 11 Organic Compounds and Polymers • 11.1 Introduction • 11.2 Forming and Characterizing Polymers • 11.3 Nanocrystals • 11.4 Polymers • 11.5 Supramolecular Structures • • 12 Biological Materials • 12.1 Introduction • 12.2 Biological Building Blocks • 12.3 Nucleic Acids • 12.4 Biological Nanostructures • • 13 Nanomachines and Nanodevices • 13.1 Microelectromechanical Systems (MEMS) • 13.2 Nanoelectromechanical Systems (NEMS) • 13.3 Molecular and Supramolecular Switches • • 14 Applications of Nanotechnology • 14.1 Nanotechnology for Environmental Engineering • 14.2 Nanotechnology for Textile Industry • 14.3 Nanotechnology in Agriculture and Food • 14.4 Nanotechnology Applications for Air and Soil • 14.5 Nanotechnology in Industry, Defence, and Security • 14.6 Water Demands for Nanotechnology • 14.7 Therapeutics and Regenerative Medicine • 14.8 Nanotechnology and the Energy Challenge • • Summary • Keywords • Multiple-Choice Questions • Review Questions • Further Reading • • Appendices • • A Two-Dimensional Nanostructures • A.1 Introduction • A.2 Examples of 2D nanostructures • A.3 Synthesis of 2D Nanostructures • A.4 Applications of 2D Nanostructures • • B Formulas for Dimensionality • B.1 Introduction • B.2 Delocalization • B.3 Partial Confinement • • C Tabulations of Semiconducting Material Properties • • D Answers to Multiple-Choice Questions • • Index

9789354240201 | ₹ 1009

Control Engineering | e | k

Ramachandran

About the Author

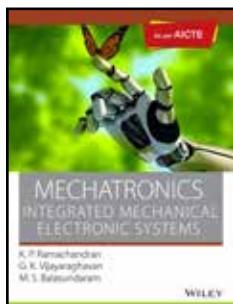
Dr K.P. Ramachandran, works as Associate Dean (Postgraduate Studies & Research), Caledonian College of Engineering, Sultanate of Oman - Muscat. He has been associated for more than 25 years in engineering institutions and worked as a consultant to many industries. His research interests include vibration measurement, analysis and control engineering, condition monitoring of rotating machines; and has supervised many Ph.D. students in this area. He has more than 80 international journals and conference

publications to his credit and has authored 3 textbooks in the areas of Mechatronics and Control Engineering. He has been conferred Sir C.V. Raman award for the best technical paper published in the Journal of Vibration & Acoustics (1997). He is associated with professional bodies such as ASME, Asset Management Council (Australia), Indian Society of Technical Education and Institution of Plant Engineers.

Table of Contents

- 1 Introduction to Control Systems • Learning Objectives • 1.1 Control System Terminology • 1.2 Basic Concepts of Control Systems • 1.3 Requirements of a Control System • 1.4 Types of Control System • Summary • Key Terms • Objective-Type Questions • Review Questions • Answers • 2 Mathematical Models • Learning Objectives • 2.1 Block Diagrams • 2.2 Laplace Transforms • 2.3 Transfer Function • 2.4 Mechanical Systems • 2.5 Electrical Systems • 2.6 Electromechanical Systems • 2.7 Stepper Motor • 2.8 Analogous Circuit Systems • 2.9 Thermal and Fluid Systems • 2.10 Hydraulic Power System • 2.11 Pneumatic System • 2.12 Comparison of Hydraulic and Pneumatic Systems • Key Terms • Summary • Objective-Type Questions • Review Questions • Numerical Problems • Answers • 3 Block Diagrams and Signal Flow Graphs • Learning Objectives • 3.1 Block Diagram of a Closed-Loop System • 3.2 Block Diagram Simplification • 3.3 Signal Flow Graphs • Summary • Key Terms • Objective-Type Questions • Review Questions • Numerical Problems • Answers • 4 Transient and Steady-State Response Analysis • Learning Objectives • 4.1 Test Signal • 4.2 Static Response • 4.3 Poles, Zeros and Stability • 4.4 Transient Response • Summary • Key Terms • Objective-Type Questions • Review Questions • Numerical Problems • Answers • 5 Frequency Response Analysis using Nyquist Diagrams • Learning Objectives • 5.1 Frequency Response Analysis • 5.2 Polar Plots • 5.3 Stability Analysis using Nyquist Diagrams • 5.4 Relative Stability, Gain Margin and Phase Margin • 5.5 Frequency Domain Specification • 5.6 M & N Circles • 5.7 Nichols Chart • Summary • Key Terms • Objective-Type Questions • Review Questions • Numerical Problems • Answers • 6 Frequency Response Analysis using Bode Diagrams • Learning Objectives • 6.1 Bode Diagrams • 6.2 Calculation of Transfer Function from Bode Plots • Summary • Key Terms • Objective Type Questions • Review Questions • Numerical Problems • Answers • 7 Root Locus Plots • Learning Objectives • 7.1 Definition • 7.2 Sketching Root Loci • 7.3 Refining the Sketch • 7.4 Effect of Adding Open-Loop Poles and Open-Loop Zeros • 7.5 Advantages of Root Locus • 7.6 Some Definitions • Summary • Key Terms • Objective-Type Questions • Review Questions • Numerical Problems • Answers • 8 Control Action and System Compensation • Learning Objectives • 8.1 Compensation • 8.2 Types of Compensation • 8.3 Compensating Networks • 8.4 Design of Compensators • Summary • Key Terms • Objective-Type Questions • Review Questions • Numerical Problems • Answers • 9 Controllers • Learning Objectives • 9.1 Controller Principles • 9.2 Two-Position Controller (ON/OFF Controller) • 9.3 Proportional Controllers • 9.4 Integral Controller • 9.5 Derivative Controller • 9.6 Composite Controller Modes • 9.7 Selection of Controllers • 9.8 PID Controller Tuning • 9.9 Digital Controllers • 9.10 Adaptive Controllers • Summary • Key Terms • Objective-Type Questions • Review Questions • Numerical Problems • Answers • 10 State Variable Models • Learning Objectives • 10.1 State Variables of Dynamic System • 10.2 State Differential Equation using Physical Variables • 10.3 Converting a Transfer Function into State Space using Phase Variables • 10.4 Signal Flow Graph State Models • 10.5 State Space Representation using Canonical Variables • 10.6 Transfer Function from the State Equation • 10.7 Eigen Values and Eigen Vectors • 10.8 State Transition Matrix and Time Response • 10.9 Controllability and Observability • Summary • Key Terms • Objective-Type Questions • Review Questions • Numerical Problems • Answers • Appendix A Introduction to MATLAB Programming • A.1 Application of MATLAB Programs for Control Problems • A.2 Summary of Commands • Appendix B Basics of Matrices • • B.1 Definition of Matrices • B.2 Addition and Subtraction of Matrices • B.3 Multiplication of Matrices • B.4 Determinants • B.5 Transpose of Matrix • B.6 Adjoint (or Adjugate) of Matrix • B.7 Inverse of Matrix • Model Question Paper 1 • Model Question Paper 2 • Model Question Paper 3 • Bibliography • Index

9788126522880 | ₹ 869



Mechatronics: As per AICTE w/cd | e

Ramachandran

About the Author

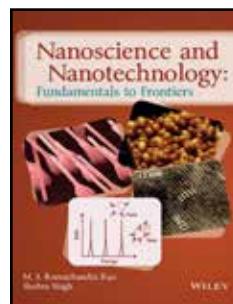
Dr.K.P.Ramachandran is currently working as Associate Dean (Academic), Caledonian College of Engineering, Sultanate of Oman -Muscat. He has been working more than 23 years in engineering institutions and as a consultant to many industries. He joined Caledonian College of Engineering (A University College) in 1997 where he has had variety of roles. He has been instrumental in designing, developing and validating many new academic programmes, setting up many laboratory facilities including Mechatronics lab at Caledonian College of Engineering

Table of Contents

- "Chapter 1 Mechatronics Systems • 1.1 Elements of Mechatronics System • 1.2 Mechatronics Design Process • 1.3 System • 1.4 Measurement Systems • 1.5 Control Systems • 1.6 Microprocessor-based Controllers • 1.7 Real-time Mechatronics Systems
- 1.8 Other Applications • 1.9 Advantages and Disadvantages of Mechatronics Systems
- • Chapter 2 Sensors and Transducers • 2.1 Introduction • 2.2 Types of Transducers • 2.3 Characteristic Parameters Used in Transducers • 2.4 Displacement Sensors • 2.5 Position Sensors • 2.6 Proximity Sensors • 2.7 Velocity Sensors • 2.8 Motion Sensors • 2.9 Force Sensors • 2.10 Acceleration Sensors • 2.11 Torque Sensors • 2.12 Fluid Pressure Sensors • 2.13 Liquid Flow Sensor • 2.14 Liquid-level Sensors • 2.15 Temperature Sensors
- 2.16 Light Sensors • 2.17 Digital Transducer • 2.18 Selection of Sensors • • Chapter 3 Solid-State Electronic Devices • 3.1 Solid-State Electronics • 3.2 PN Junction Diode • 3.3 Bipolar Junction Transistor (BJT) • 3.4 Field-Effect Transistor (FET) • 3.5 Thyristors • 3.6 Diode AC Switch (DIAC) and Triode AC Switch (TRIAC) • 3.7 Light-Emitting Diodes and Optical Isolation • • Chapter 4 Analog Signal Conditioning • 4.1 Signal Conditioner • 4.2 Operational Amplifier (Op-amp) • 4.3 Noise Reduction • 4.4 Bridge Circuits • 4.5 Current-to-Voltage and Voltage-to-Current Converters • 4.6 Voltage-to-Frequency and Frequency-to-Voltage Converters • • Chapter 5 Hydraulic and Pneumatic Actuating Systems • 5.1 Fluid Power Systems • 5.2 Hydraulic Systems • 5.3 Pneumatic System • 5.4 System Structure and Signal Flow • 5.5 Hydraulic Pumps and Pressure Regulation • 5.6 Air Compressors, Air Treatment and Pressure Regulation • 5.7 Control Valves • 5.8 Actuator and Output Devices • 5.9 Electro-Pneumatics • 5.10 Pneumatic and Hydraulic Circuits • 5.11 Cylinder Sequencing and Cascade Control • 5.12 Process Control Valves • Chapter 6 Mechanical Actuating Systems • 6.1 Introduction • 6.2 Types of Motion • 6.3 Degrees of Freedom • 6.4 Constraints • 6.5 Kinematic Chains • 6.6 Cams • 6.7 Gears and Gear Trains • 6.8 Ratchet and Pawl • 6.9 Belt Drive • 6.10 Chain Drive • 6.11 Bearings
- 6.12 Preload • • Chapter 7 Electrical Actuating Systems • 7.1 Basic Principles of Electrical Switching • 7.2 Solenoids • 7.3 Electrical Relays • 7.4 Representation of Output Devices • 7.5 Electrical Motors • 7.6 AC Motors • 7.7 Stepper Motor • 7.8 Induction Motor Speed Control • • Chapter 8 Digital Electronics and Systems • 8.1 Digital Logic Control • 8.2 Microprocessors and Microcontrollers • 8.3 Programming • • Chapter 9 System Interfacing and Data Acquisition • 9.1 Data Acquisition Systems (DAQS) • 9.2 I/O Hardware and Software at the Microprocessor Level and Communication • 9.3 Analog-to-Digital and Digital-to-Analog Conversions • 9.4 Digital Signal Processing (DSP) • 9.5 Data Flow in DSPs, Block Diagrams and Typical Layouts • 9.6 Component Interconnection and Impedance Matching • 9.7 Interfacing Motor Drives • 9.8 Electrical Power Supply and Protection • • Chapter 10 Dynamic Models • 10.1 Block Diagrams • 10.2 Laplace Transforms • 10.3 Transfer Function • 10.4 Block Diagram Simplification
- 10.5 Dynamic Models and Analogies • • Chapter 11 System Response • 11.1 Static Response • 11.2 Poles, Zeros and Stability • 11.3 Time Response • 11.4 Frequency Response • • Chapter 12 Process Controllers • 12.1 Controller Principles • 12.2 Two-Position Controller (ON/OFF Controller) • 12.3 Proportional Controllers • 12.4 Integral Controller • 12.5 Derivative Controller • 12.6 Composite Controller Modes • 12.7 Pneumatic Controllers • 12.8 Selection of Controllers • 12.9 PID Controller Tuning • 12.10 Digital Controllers • 12.11 Adaptive Controllers • • Chapter 13 Programmable Logic Controllers • 13.1 Introduction to PLCs • 13.2 Basic Structure of a PLC • 13.3 Principles of Operation • 13.4 PLCs versus Computers • 13.5 Introduction to Internal Architecture and Hardware Components • 13.6 PLC Programming • 13.7 ANALOG I/O • 13.8 Selecting a PLC for the Application • 13.9 Application of PLCs for Control • • Chapter 14 Introduction to CNC Machines and Robotics • 14.1 CNC Machines • 14.2 Robotics • • Chapter 15 Design of Mechatronics Systems • 15.1 Introduction • 15.2

Mechatronics Approach to Design • 15.3 Case Examples • 15.4 Future trends - Smart Homes • • Summary • Key Terms • Review Questions • Index

9788126540402 | ₹ 1039



Nanoscience and Nanotechnology: Fundamentals to Frontiers | e | k

Rao

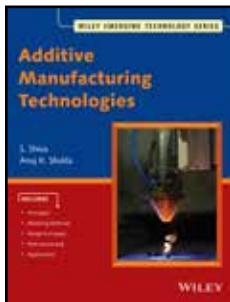
About the Author

Dr. M.S. Ramachandra Rao is a professor in the Department of Physics and head of the "Nanostructured Thin Films and Advanced Materials" group at IIT Madras. His research activities are primarily focused on Physics and applications of nanostructures and nanomaterials.

Table of Contents

- 1. The Science behind Nanotechnology • 1.1 History of Nanoscience • 1.2 Definition of Nanometer, Nanomaterial, and Nanotechnology • 1.3 Classification of Nanomaterial • 1.4 Nanotechnology from the Perspective of Medieval Period • • 2. Concepts of Solid-State Physics Relevant to Low-Dimensional Systems • 2.1 Introduction • 2.2 Crystal Symmetries, Crystal Directions, and Crystal Planes • 2.3 Band Structure • 2.4 Classification of Solid-State Materials • 2.5 Bulk Properties of Materials • 2.6 Magnetic Materials • 2.7 Effect of Size Reduction on Bulk Properties • 2.8 Optoelectronic Property of Bulk and Nanostructures • 2.9 Electronic Structure of Nanomaterial and the Fermi Surface • 2.10 Luminescence from Nanoparticles • 2.11 Raman Spectroscopy of Nanoparticles • 2.12 Thermodynamics of Nanomaterial: Change in Melting Point • • 3. Quantum Mechanics of Low-Dimensional Systems and Its Application to Nanoscience • 3.1 Introduction • 3.2 Energy Considerations: Bound States and Density of States • 3.3 Quantum Confinement • 3.4 Super lattices • 3.5 Band Offsets • 3.6 Quantum Transport in Nano clusters /Quantum Dots • • 4. Basic Aspects of Synthesis of Nanomaterial and Device Fabrication • 4.1 Introduction • 4.2 Synthesis of Bulk Polycrystalline Samples • 4.3 Growth of Single Crystals • 4.4 Synthesis Techniques for the Preparation of Nanoparticles • 4.5 Requirements for Realizing Semiconductor Nanostructures • 4.6 Some Specialized Growth Techniques for Nanostructures • 4.7 Electrostatic-Induced Growth • 4.8 Thermally Annealed Quantum Wells • 4.9 Semiconductor Nano crystals • • 5. Different Types of Nanostructures • 5.1 Introduction • 5.2 Shapes and Structures of Nanomaterial • 5.3 Quantum Dots • 5.4 Semiconductor Nanoparticles • • 6. Diffusion Kinetics • 6.1 Introduction • 6.2 Thermodynamics of Diffusion • 6.3 Grain Boundary Effect • 6.4 Effect of Defects on Diffusion • • 7. Nanostructured Thin Films and Nano composites • 7.1 Introduction • 7.2 Micro- and Nano scale Thin-Film Fabrication Techniques • 7.3 Optical, Electrical, and Magnetic Properties of Nanostructured • Thin Films • 7.4 Nano composites • 7.5 Physical and Optical Properties • 7.6 Metal/Dielectric-Organic Nano composites • • 8. Nano scale Characterization Techniques • 8.1 Introduction • 8.2 X-Ray Diffraction and Scherer Method • 8.3 Scanning Electron Microscopy • 8.4 Transmission Electron Microscopy • 8.5 Stoichiometry Study by Energy-Dispersive X-Ray Analysis • 8.6 Scanning Probe Microscopy • 8.7 Atomic Force Microscopy • 8.8 Piezoresponse Microscopy • 8.9 X-Ray Photoelectron Spectroscopy • 8.10 XANES and XAFS • 8.11 Angle-Resolved Photoemission Spectroscopy • 8.12 Diffuse Reflectance Spectra • 8.13 Photoluminescence Spectra • 8.14 Raman Spectroscopy • 8.15 DC Magnetization • 8.16 Electrical Resistivity Measurements • 8.17 Theory of Linear Four-Probe Method • • 9. Recent Advances in Nanotechnology • 9.1 Introduction • 9.2 Designing Molecules for Nano electronics • 9.3 Advances of Nanotechnology in Materials Science • • 10. New Trends in Nanoscience and Applications of Nanotechnology in Various Fields • 10.1 Introduction • 10.2 Applications in Material Science • 10.3 Applications in Biology and Medicine • 10.4 Applications in Surface Science • 10.5 Applications in Energy and Environment • 10.6 Applications of Nanostructured Thin Films • 10.7 Applications of Quantum Dots • 10.8 Carbon Nanotechnology • 10.9 Applications of Magnetic Nanoparticles • • Appendix A - Useful Lab Experiments • Appendix B - Useful Tables • Index

9788126542017 | ₹ 859



Additive Manufacturing Technologies | IM | e | k

Shiva

About the Author

S. Shiva is heading the Laboratory for Advanced Manufacturing and Processing (LAMP) at the Indian Institute of Technology Jammu (IIT Jammu), Jammu and Kashmir, India. He has a decade of experience in additive manufacturing and laser surface processing.

Table of Contents

- Chapter 1 Additive Manufacturing: Basics and Principles
- 1.1 Introduction
- 1.2 Definition and Examples
- 1.3 Evolution of Additive Manufacturing
- 1.4 Computerized Manufacturing or Numerical Control
- 1.5 Advantages of Additive Manufacturing
- 1.6 Limitations of Additive Manufacturing
- 1.7 Additive Manufacturing File Formats
- 1.8 Scanning Technology and Output Files
- 1.9 Role of Additive Manufacturing in Production
- Summary
- Exercises
- Answers
- Chapter 2 Numerical Modeling of Additive Manufacturing Processes
- 2.1 Introduction
- 2.2 Modeling of Additive Manufacturing
- 2.3 Heat Transfer Analyses
- 2.4 Mechanical Analyses
- 2.5 Validation of Modeling
- Summary
- Exercises
- Answers
- Chapter 3 Systems and Subsystems of Additive Manufacturing
- 3.1 Introduction
- 3.2 Heating Sources
- 3.3 Powder Feeders
- 3.4 Controllers and Automation
- 3.5 In-Situ Monitoring Systems
- 3.6 Eligibility of Equipment
- 3.7 Safety Cautions in Additive Manufacturing
- Summary
- Exercises
- Answers
- Chapter 4 Additive Manufacturing Techniques
- 4.1 Introduction
- 4.2 Additive Manufacturing Techniques I
- 4.3 Additive Manufacturing Techniques II
- Summary
- Exercises
- Answers
- Chapter 5 Materials and Design for Additive Manufacturing
- 5.1 Introduction
- 5.2 Types of Materials
- 5.3 Recent Advances in Materials
- 5.4 Raw Materials
- 5.5 Powder Manufacturing Techniques
- 5.6 Powder Characterization
- 5.7 Liquid Material Characterization
- 5.8 Solid Material Characterization
- 5.9 Design for Additive Manufacturing
- 5.10 Design Guidelines for Additive Manufacturing
- 5.11 Benchmarking for Additive Manufacturing
- Summary
- Exercises
- Answers
- Chapter 6 Quality Assurance and Post-Processing Techniques
- 6.1 Introduction
- 6.2 X-Ray Computer Tomography
- 6.3 Ultrasonic Testing
- 6.4 Microwave-Based Non-Destructive Testing
- 6.5 Thermal Imaging Cameras
- 6.6 Near-Infrared NDT
- 6.7 Requirement for Post-Processing
- 6.8 Post-Processing Techniques
- 6.9 Properties Enhancement Techniques
- Summary
- Exercises
- Answers
- Chapter 7 Applications of Additive Manufacturing
- 7.1 Introduction
- 7.2 Additive Manufacturing in Various Fields
- 7.3 Additive Manufacturing for Repairing
- 7.4 Economic Considerations of Additive Manufacturing
- 7.5 Trends in Additive Manufacturing
- Summary
- Exercises
- Answers
- Bibliography
- Index

9789357462419 | ₹ 849

Thermal Turbomachines, 2ed | e | k

Singh

About the Author

Dr. Onkar Singh, formerly Founder Vice Chancellor of Madan Mohan Malaviya University of Technology, Gorakhpur, Uttar Pradesh, is the Professor of Mechanical Engineering at Harcourt Butler Technical University, Kanpur, Uttar Pradesh. He has vast teaching experience of more than 27 years at undergraduate and postgraduate level in different institutions. Dr. Singh has published a large number of research papers in national/international journals and conference proceedings.

Table of Contents

- Preface
- Chapter 1 Fundamental Concepts of Turbomachines
- 1.1 Introduction and Definition of Turbomachines
- 1.2 Classification of Turbomachines
- 1.3 Basic Laws and Governing Equations
- 1.4 Energy Transfer in Turbomachines and Euler's Equation
- 1.5 Efficiencies of Compressors and Preheat Factor
- 1.6 Efficiencies of Turbines and Reheat Factor
- 1.7 Blade Classification
- 1.8 Blade Terminology
- 1.9 Drag and Lift
- 1.10 Cascade Testing
- 1.11 Drag and Lift in Cascade
- 1.12 Fans and Blowers
- Chapter 2 Centrifugal Compressors
- 2.1 Introduction
- 2.2 Construction and Working
- 2.3

- Energy Transfer
- 2.4 Velocity Diagram for Centrifugal Compressors
- 2.5 Slip Factor
- 2.6 Stage Pressure Rise and Pressure (Loading) Coefficient
- 2.7 Degree of Reaction
- 2.8 Effect of Inlet Guide Vanes and Impeller Blade Profile
- 2.9 Surging
- 2.10 Stalling
- 2.11 Choking
- 2.12 Centrifugal Compressor Characteristics Curves
- Chapter 3 Axial Flow Compressors
- 3.1 Introduction
- 3.2 Construction and Working
- 3.3 Energy Transfer
- 3.4 Velocity Diagram for Axial Flow Compressor
- 3.5 Elementary Theory
- 3.6 Factors Affecting Stage Pressure Rise
- 3.7 Blockage in Compressor Annulus
- 3.8 Degree of Reaction
- 3.9 Design Theory for 3D Flow
- 3.10 Design Process
- 3.11 Blade Design
- 3.12 Calculation of Stage Performance
- 3.13 Axial Flow Compressor Characteristics Curves
- Chapter 4 Turbines
- 4.1 Introduction
- 4.2 Classification of Turbines
- 4.3 Description of Axial Flow Turbines
- 4.4 Energy Transfer in Axial Flow Turbines
- 4.5 Velocity Diagram for Axial Flow Turbines
- 4.6 Types of Blades in Axial Flow Turbines
- 4.7 Vortex Theory
- 4.8 Choice of Blade Profile, Pitch and Chord
- 4.9 Estimation of Stage Performance in Axial Flow Turbines
- 4.10 Description of Radial Flow Turbines
- 4.11 Velocity Diagram and Elementary Theory for Radial Flow Turbines
- 4.12 Estimation of Stage Performance in Outward-Flow Radial Turbines
- 4.13 Characteristic Curves for Turbines
- 4.14 Gas Turbine Starting and Control System
- 4.15 Combustion Systems in Gas Turbines
- 4.16 Gas Turbine Blade Cooling
- 4.17 Safety Limits and Control
- 4.18 Losses in Turbine
- 4.19 Governing of Turbines
- Chapter 5 Steam Turbines
- 5.1 Introduction
- 5.2 Classification of Steam Turbines
- 5.3 Construction and Working of Steam Turbines
- 5.4 Losses in Steam Turbine
- Chapter 6 Pumps
- 6.1 Introduction
- 6.2 Classification of Pumps
- 6.3 Construction and Working of Pumps
- 6.4 Centrifugal Pump Calculations
- 6.5 Elementary Theory of Pumps
- 6.6 Performance Characteristic Curves
- 6.7 Cavitation and Its Control
- 6.8 Miscellaneous Types of Pumps
- Chapter 7 Design Considerations of Thermal Turbomachines
- 7.1 Introduction
- 7.2 Overall Design Choices
- 7.3 Selection of Number of Stages
- 7.4 Material Selection
- 7.5 Design with Traditional Materials
- 7.6 Testing and Measurements
- Summary
- Objective-Type Questions
- Review Questions
- Answers

9788126579235 | ₹ 789



Wiley Acing the GATE: Mechanical Engineering, 2ed, 2023

Tamrakar

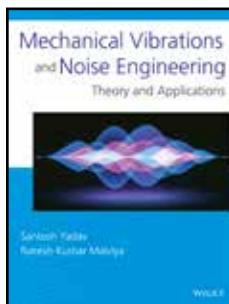
About the Author

Ajay Kumar Tamrakar is currently serving Indian Railways as Senior Divisional Mechanical Engineer at Bhopal Division of West Central Railway, under the prestigious cadre of Indian Railway's Services of Mechanical Engineers (IRSME). During his tenure at IISc, his research interests were smart materials, multi-functional composites, and multi-body dynamics and he presented several research papers in national and international conferences.

Table of Contents

- Preface
- Acknowledgments
- About the Authors
- Acing the GATE
- Syllabus of GATE (Mechanical Engineering)
- Trend of Topics (2014-17)
- Methodological Concepts of Engineering Studies
- Part I Applied Mechanics & Design
- 1 Engineering Mechanics
- 2 Strength of Materials
- 3 Theory of Machines
- 4 Vibrations
- 5 Machine Design
- Part II Fluid Mechanics & Thermal Sciences
- 6 Fluid Mechanics
- 7 Heat Transfer
- 8 Thermodynamics
- 9 Applications
- Part III Manufacturing & Industrial Engineering
- 10 Engineering Materials
- 11 Metal Casting
- 12 Forming
- 13 Joining
- 14 Machining
- 15 Metrology and Inspection
- 16 Computer Integrated Manufacturing
- 17 Production Planning & Control
- 18 Inventory Control
- 19 Operations Research
- Solved GATE 2018 Papers (Set I and Set II)
- Solved GATE 2019 Papers (Set I and Set II)
- Solved GATE 2020 Papers (Set I and Set II)
- Solved GATE 2021 Papers (Set I and Set II)
- Index

9789354644962 | ₹ 1069



Mechanical Vibrations and Noise Engineering: Theory and Applications | e | k

Yadav

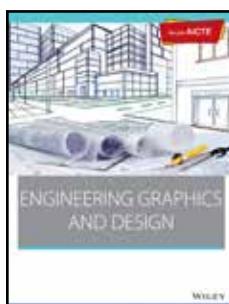
About the Author

Prof. Santosh Yadav is currently Assistant Professor in the Department of Mechanical Engineering, Shri Vaishnav Institute of Technology and Science, Shri Vaishnav Vidyapeeth Viswavidyalaya, Indore, India. Prof. Yadav has more than six years of industry, teaching, and research experience.

Table of Contents

- Chapter 1 Fundamental Aspects of Vibration • 1.1 Introduction • 1.2 Classification of Vibration • 1.3 Significance of Vibration • 1.4 Engineering Applications of Vibration • 1.5 Terms Used in Vibration • 1.6 Vector Representation of Harmonic Motion • 1.7 Harmonic Analysis • 1.8 Beats Phenomenon • 1.9 Work Done by Harmonic Forces on Harmonic Motion • 1.10 Non-harmonic Functions — Fourier Series Analysis • 1.11 Elements of a Vibratory System • 1.12 Lumped and Distributed Parameters • 1.13 Equivalent Spring • 1.14 Equivalent Dampers • Chapter 2 Undamped Free Vibrations • 2.1 Introduction • 2.2 Concepts of Undamped and Damped Free Vibrations, Undamped and Damped Forced Vibrations • 2.3 Determination of Natural Frequency of Undamped Free Vibration • 2.4 Effect of Mass of Spring on Natural Frequency • 2.5 Derivation of Natural Frequency of Compound Pendulum • • Chapter 3 Damped Free Vibrations • 3.1 Introduction • 3.2 Types of Damping • 3.3 Differential Equation of Damped Free Vibration • 3.4 Types of Damped System • 3.5 Logarithmic Decrement (d) • • Chapter 4 Harmonically Excited Vibration • 4.1 Introduction • 4.2 Causes of Unbalance in a System • 4.3 Equation of Motion of Forced Vibration • 4.4 Vibration Isolation • 4.5 Vibration Transmissibility • 4.6 Methods of Measurement of Vibration • • Chapter 5 Whirling Motion and Critical Speed • 5.1 Introduction • 5.2 Significance of Critical Speed • 5.3 Critical Speed of a Shaft Carrying a Single Rotor (without Damping) • 5.4 Critical Speed of a Shaft Carrying a Single Rotor (with Damping) • 5.5 Secondary Critical Speed • 5.6 Critical Speed of a Shaft Carrying Multiple Rotors (without Damping) • • Chapter 6 System with Two Degrees of Freedom • 6.1 Introduction • 6.2 Vibrations of Undamped Two-Degree-of-Freedom Systems • 6.3 Natural Frequency of Free Torsional Vibrations • 6.4 Free Torsional Vibrations of Single-Rotor Systems • 6.5 Free Torsional Vibrations of Two-Rotor Systems • 6.6 Free Torsional Vibrations of Three-Rotor Systems • 6.7 Torsionally Equivalent Shaft • 6.8 Free Torsional Vibrations of Geared Systems • 6.9 Coordinate Coupling • 6.10 Vibration Absorber • 6.11 Control of Vibration • • Chapter 7 Multi-Degree-of-Freedom Systems • 7.1 Introduction • 7.2 Generalized Coordinates • 7.3 Influence Coefficient • 7.4 Methods to Determine Natural Frequency of a Multi-Degree-of- Freedom System • • Chapter 8 Noise Engineering • 8.1 Introduction • 8.2 Characteristics of Sound Waves • 8.3 Loudness and the Decibel Scale • 8.4 Decibel Addition, Subtraction, and Averaging • 8.5 Sound Power Level • 8.6 The A-Weighting • 8.7 Relationship between Sound Power • 8.8 Relationship between Sound Pressure • 8.9 Octave Bands (Frequency Bands) • • Chapter 9 Noise: Isolation and Control Engineering • 9.1 Introduction • 9.2 How We Hear • 9.3 Hearing Loss • 9.4 Effects of Excessive Occupational Noise Exposure • 9.5 Noise Exposure Controls: Overview • 9.6 Noise Control Engineering: Concepts and Options • 9.7 Administrative Controls • 9.8 Personal Protective Equipment (Hearing Protection) • 9.9 Statutory Provisions of Noise Pollution • • Exercises • Multiple Choice Questions • Bibliography • Index

9788126599998 | ₹ 619



Engineering Graphics and Design: As per AICTE

Wiley Editorial Team

Table of Contents

- Chapter 1 Concepts and Conventions • 1.1 Introduction
- 1.2 Use of Drawing Instruments • 1.3 BIS Conventions and Specifications • 1.4 Size, Layout, and Folding of Drawing Sheets • 1.5 Lines • 1.6 Lettering • 1.7 Dimensioning • 1.8 Concept of Scale in Drawing • 1.9 Basic Definitions of Geometrical Objects • Chapter

- 2 Plane Curves • 2.1 Introduction • 2.2 Conics • 2.3 Cycloidal Curves • 2.4 Involutes • 2.5 Spirals • 2.6 Helix • Chapter 3 Geometrical Constructions • 3.1 Introduction • 3.2 Dividing a Line into Any Number of Equal Parts • 3.3 Bisect an Angle • 3.4 Dividing a Circle in Equal Parts • 3.5 Drawing Normal and Tangent to Arcs of Circles • 3.6 Construction of Regular Polygons • Chapter 4 Theory of Projections • 4.1 Introduction • 4.2 Relevance of Projection • 4.3 Types of Projections • 4.4 Theory of Orthographic Projections • 4.5 Axonometric Projections • 4.6 Perspective Projection • Chapter 5 Projection of Points • 5.1 Introduction • 5.2 Projections of a Point in Four Quadrants • 5.3 Projections on Profile Planes • 5.4 Projections on Auxiliary Planes • 5.5 Projections in Octants • • Chapter 6 Projections of Lines • 6.1 Introduction • 6.2 Traces • 6.3 Line Parallel to One or Both the Reference Planes • 6.4 Projection of Line Perpendicular to One of the Planes • 6.5 Line Parallel to One Reference Plane and Inclined to the Other • 6.6 Projection of Line Contained by One Reference Plane and Inclined to the Other • 6.7 Projection of Line Contained in a Profile Plane • 6.8 Projection of Lines Inclined to Both the Reference Planes (Oblique Lines) • 6.9 General Characteristics of Projections of Lines • 6.10 Determination of True Length and True Inclination (Angle of Orientation) of a Line • 6.11 Distance Between Two Intersecting Lines • Chapter 7 Projections of Planes • 7.1 Introduction • 7.2 Types of Planes • 7.3 Traces of Planes • 7.4 Representation and Projections of Plane Surfaces • 7.5 Projections of Plane Surface Perpendicular to Both Reference Planes • 7.6 Projections of Plane Surface Parallel to One Plane and Perpendicular to the Other • 7.7 Plane Surface Inclined to One Plane and Perpendicular to the Other • 7.8 Plane Surface Inclined to Both Reference Planes (Oblique Planes) • 7.9 Applications of Auxiliary Planes • Chapter 8 Projections of Solids • 8.1 Introduction • 8.2 Classification of Solids • 8.3 Positions of Solids with Respect to the Reference Planes • 8.4 Projections of Solids in Simple Positions • 8.5 Projections of Solids with their Axis Inclined to One Principal Plane and Parallel to the Other • 8.6 Projections of Solids with their Axes Inclined to Both HP and VP • Chapter 9 Section of Solids • 9.1 Introduction • 9.2 Basic Concepts of Sections of Solids • 9.3 Drawing Sectional View • 9.4 Section Plane Perpendicular to the HP and Parallel to the VP • 9.5 Section Plane Perpendicular to the VP and Parallel to the HP • 9.6 Section Plane Perpendicular to the HP and Inclined to the VP • 9.7 Section Plane Perpendicular to the VP and Inclined to the HP • 9.8 Section Plane Perpendicular to Both HP and VP • Chapter 10 Development of Surfaces • 10.1 Introduction • 10.2 Methods of Development • 10.3 Development of Prisms • 10.4 Development of Cylinders • 10.5 Development of Pyramids • 10.6 Development of Cones • 10.7 Development of Spheres • Chapter 11 Intersection of Surfaces of Solids • 11.1 Introduction • 11.2 Methods of Determining the Line of Intersection • 11.3 Intersection of Prisms • 11.4 Intersection of Prisms with Pyramids • 11.5 Intersection of Pyramids • 11.6 Intersection of Cylinders • 11.7 Intersection of Cylinder and Cone • 11.8 Intersection of Cylinder and Pyramid • 11.9 Intersection of Cylinder and Prism • 11.10 Intersection of Cones 236 • 11.11 Intersection of Cylinder and Sphere • 11.12 Practical Applications of Intersection of Surfaces • Chapter 12 Isometric Projections • 12.1 Introduction • 12.2 Principle of Isometric Projections • 12.3 Isometric Scale • 12.4 Isometric Drawing • 12.5 Methods for Drawing Isometric Projections/Views • 12.6 Isometric Projections of Plane Objects • 12.7 Isometric Projections of Solids • 12.8 Isometric Projections of Simple Machine Parts • Chapter 13 Orthographic Projections • 13.1 Introduction • 13.2 Review of Theory of Orthographic Projections • 13.3 Free-hand Sketching and Dimensioning • 13.4 Drawing Orthographic Projections • Chapter 14 Introduction to AutoCAD 2017 • 14.1 Introduction to CAD • 14.2 Product Modeling in CAD • 14.3 CAD Software Application • 14.4 Introduction to AutoCAD • 14.5 Starting AutoCAD 2017 • 14.6 AutoCAD 2017 Interface • 14.7 Coordinate System • 14.8 Object Selection Methods • 14.9 Drawing Commands • 14.10 Concept of Layers • 14.11 Concept of Blocks • 14.12 Creating Text • 14.13 Modify Tools • 14.14 Dimensioning • 14.15 Object Snap Options • Chapter 15 Introduction to Solid Edge Software • 15.1 Introduction • 15.2 Menus • 15.3 Tool Bars • 15.4 Drawing Area Setup in 2D Model Space • 15.5 Applying and Displaying Relationships • Illustrative Example • Reviews if Received

9788126507740 | ₹ 569

AUTHOR WISE LISTING

ISBN	Author	Title	Price (₹)	Qty
AERONAUTICS / AEROSPACE ENGINEERING				
9789354642210	Borgnakke , Bhattacharyya, Soni	Fundamentals of Thermodynamics, 10ed, An Indian Adaptation IM e k	1139	
9788126589203	Borgnakke	Thermodynamics Databook, 3ed	349	
9788126570935	Chanda	Engineering Mechanics e k	719	
9788126577538	Gupta	Applied Computational Fluid Dynamics e k	779	
9788126509478	Jagadeesa T.	Fluid Power: Generation, Transmission and Control: As per AICTE e	939	
9788126571246	Kadambi	Applications of Thermodynamics IM e k	749	
9788126519071	Kulkarni	Quality Control e k	859	
9788126579921	Kumar	Engineering Economy and Management e k	859	
9789354248566	Meriam	Engineering Mechanics Statics and Dynamics, 9ed, An Indian Adaptation IM e k	1319	
9788126564033	Meriam	Engineering Mechanics: Statics, SI Version IM e	1079	
9788126565375	Meriam	Engineering Mechanics: Dynamics, SI Version e	1069	
9788126530908	Nag	Mechanical Vibrations IM e k	919	
9788126539550	Pai	Turbomachines IM e k	829	
9789357461610	Pandey	Disaster Management, 2ed e k	929	
CHEMICAL ENGINEERING				
9789354244452	Bird	Transport Phenomena, Revised 2ed, An Indian Adaptation IM e k	1039	
9788126570935	Chanda	Engineering Mechanics e k	719	
9789354641077	Fox	Fox and McDonald's Introduction to Fluid Mechanics, 10ed, An Indian Adaptation IM e k	1179	
9788126578245	Incropera	Incropera's Principles of Heat and Mass Transfer, Wiley India Edition IM e	1179	
9788126577538	Gupta	Applied Computational Fluid Dynamics e k	779	
9789388991001	Keshav	Transport Phenomena : As per AICTE IM e k	599	
9788126579921	Kumar	Engineering Economy and Management e k	859	
9789354244605	Levenspiel	Chemical Reaction Engineering, 3ed, An Indian Adaptation IM e k	1139	
9789354640407	Malik	Wiley's GATE Chemical Engineering Chapter-Wise Solved Papers (2000-2022)	699	
9789354248566	Meriam	Engineering Mechanics Statics and Dynamics, 9ed, An Indian Adaptation IM e k	1319	
9788126564033	Meriam	Engineering Mechanics: Statics, SI Version IM e	1079	
9788126565375	Meriam	Engineering Mechanics: Dynamics, SI Version e	1069	
9788126553433	Munson	Fluid Mechanics , SI Version, 7ed IM e	1229	
9789357461610	Pandey	Disaster Management, 2ed e k	929	
9789354240201	Poole	Introduction to Nanoscience and Nanotechnology, An Indian Adaptation e k	1009	
9788126542017	Rao	Nanoscience and Nanotechnology: Fundamentals of Frontiers e k	859	
9788126512348	Ravichandran	Probability and Statistics for Engineers: As per AICTE IM e	929	
9789354248429	Seborg	Process Dynamics and Control, 4ed An Indian Adaptation IM e k	1089	
9788126557486	Seider	Product and Process Design Principles: Synthesis, Analysis and Evaluation, 3ed, ISV IM	1339	
9788126543205	Wiley Editorial Team	Engineering Chemistry, 2ed IM e k	939	
CIVIL ENGINEERING				
9788126534142	Botkin	Environmental Science, 8ed, ISV e	1259	
9788126570935	Chanda	Engineering Mechanics e k	719	
9789357462174	Gilat	MATLAB: An Introduction with Applications, 6ed, An Indian Adaptation IM	899	
9788126538591	Hosur	Earthquake-Resistant Design of Building Structures e k	869	
9788126519071	Kulkarni	Quality Control e k	859	



ISBN	Author	Title	Price (₹)	Qty
9788126579921	Kumar	Engineering Economy and Management e k	859	
9789354644948	Maini	Wiley Acing the GATE: Engineering Mathematics and General Aptitude, 2ed, 2023	859	
9789354248566	Meriam	Engineering Mechanics Statics and Dynamics, 9ed, An Indian Adaptation IM e k	1319	
9788126564033	Meriam	Engineering Mechanics: Statics, SI Version IM e	1079	
9788126565375	Meriam	Engineering Mechanics: Dynamics, SI Version e	1069	
9789354249280	Mungule	Wiley Acing the GATE: Civil Engineering, 2ed, 2022	1029	
9788126573233	Mungule	Wiley's GATE Civil Engineering Chapter-wise Solved Papers (2000-2020) e k	529	
9788126530908	Nag	Mechanical Vibrations IM e k	919	
9788126534876	Nag	Strength of Materials, 2ed, w/cd e k	909	
9788126599905	Nagarajan	Design of Concrete Bridges e k	589	
9789357461610	Pandey	Disaster Management, 2ed e k	929	
9788126509461	Parthasarathy	Engineering Geology: As per AICTE e	959	
9789354240201	Poole	Introduction to Nanoscience and Nanotechnology, An Indian Adaptation e k	1009	
9788126528813	Raghunath	Irrigation Engineering e k	939	
9788126542017	Rao	Nanoscience and Nanotechnology: Fundamentals of Frontiers e k	859	
9788126540396	Rao	Soil Mechanics and Foundation Engineering: As per AICTE	969	
9788126512348	Ravichandran	Probability and Statistics for Engineers: As per AICTE IM e	929	
9789354644153	Singh	Analysis and Design of Prestressed Concrete Structures e k	1129	
9788194726333	Todd	Groundwater Hydrology, 3ed, An Indian Adaptation (Exclusively distributed by CBS Publishers & Distributors) IM e		

ENVIRONMENTAL / EARTH SCIENCE & ENGINEERING SCIENCES

9788126534142	Botkin	Environmental Science, 8ed, ISV e	1259
9788126519071	Kulkarni	Quality Control e k	859
9788126529698	Mukunda	Understanding Clean Energy and Fuels from Biomass e k	1009
9788126509461	Parthasarathy	Engineering Geology: As per AICTE e	959
9788126554072	Sidhwani	An Introductory Text on Green Chemistry : For Undergraduate Students e k	529

ENGINEERING SPECIAL TOPICS

9789354247835	Chakraborty	Social Network Analysis e k	1009
9789390395910	Durafe	Intellectual Property Rights e k	499
9788126549115	Hemamalini	Technical English, (As per syllabus of Anna University), w/cd k	669
9788126538027	Singh	Behavioural Science: Achieving Behavioural Excellence for Success e k	669
9788126576340	Wiley Editorial Team	Biology for Engineers: As per Latest AICTE Curriculum BS e k	479
9789390395514	Wiley Editorial Team	Wiley Acing the Interviews e k	519

INDUSTRIAL ENGINEERING

9788126572632	Black	DeGarmo's Materials and Processes in Manufacturing, SI Version, Wiley India Edition IM e	1259
9788126534142	Botkin	Environmental Science, 8ed, ISV e	1259
9788126570935	Chanda	Engineering Mechanics e k	719
9788126564743	Chattopadhyay	Machining and Machine Tools, 2ed, w/cd e k	959
9788126573059	Groover	Groover's Principles of Modern Manufacturing SI Version, Wiley India Edition IM e	1219
9788126519071	Kulkarni	Quality Control e k	859
9788126579921	Kumar	Engineering Economy and Management e k	859
9789354248566	Meriam	Engineering Mechanics Statics and Dynamics, 9ed, An Indian Adaptation IM e k	1319
9788126564033	Meriam	Engineering Mechanics: Statics, SI Version IM e	1079



ISBN	Author	Title	Price (₹)	Qty
9788126565375	Meriam	Engineering Mechanics: Dynamics, SI Version e	1069	
9788126571253	Moinikunta	Production Technology: A Treatise of Industrial Practices, Vol 1 IM e k	639	
9788126571260	Moinikunta	Production Technology : A Treatise of Industrial Practice, Vol 2 e k	689	
9788126562947	Montgomery	Applied Statistics and Probability for Engineers, 6ed, ISV IM e	1069	
9788126540501	Montgomery	Design and Analysis of Experiments, 8ed, ISV IM e	1079	
9788126542635	Montgomery	Engineering Statistics, 5ed, SI Version IM e	869	
9788126525065	Montgomery	Statistical Quality Control: A Modern Introduction, 6ed IM	1049	
9789354240201	Poole	Introduction to Nanoscience and Nanotechnology, An Indian Adaptation e k	1009	
9788126542017	Rao	Nanoscience and Nanotechnology: Fundamentals of Frontiers e k	859	

MATERIAL SCIENCE

9788126541607	Balasubramaniam	Callister's Materials Science and Engineering, 2ed, w/cd IM BS e	1159	
9788126534142	Botkin	Environmental Science, 8ed, ISV e	1259	
9788126570935	Chanda	Engineering Mechanics e k	719	
9789354248566	Meriam	Engineering Mechanics Statics and Dynamics, 9ed, An Indian Adaptation IM e k	1319	
9788126564033	Meriam	Engineering Mechanics: Statics, SI Version IM e	1079	
9788126565375	Meriam	Engineering Mechanics: Dynamics, SI Version e	1069	
9788126534876	Nag	Strength of Materials, 2ed, w/cd e k	909	
9789354240201	Poole	Introduction to Nanoscience and Nanotechnology, An Indian Adaptation e k	1009	
9788126542017	Rao	Nanoscience and Nanotechnology: Fundamentals of Frontiers e k	859	
9788126579976	Shah	Nanotechnology: The Science of Small , 2ed e k	709	

MECHANICAL ENGINEERING

9788126518784	Agrawal	Basic Mechanical Engineering e k	669	
9788126520701	Ananthasuresh	Mirco and Smart Systems: As per AICTE	1009	
9788194726395	Boresi	Advanced Mechanics of Materials, 6ed, An Indian Adaptation IM e k	949	
9789354642210	Borgnakke , Bhattacharyya, Soni	Fundamentals of Thermodynamics, 10ed, An Indian Adaptation IM e k	1139	
9788126589203	Borgnakke	Thermodynamics Databook, 3ed	349	
9788126564743	Chattopadhyay	Machining and Machine Tools, 2ed, w/cd e k	959	
9788126564491	Elger	Engineering Fluid Mechanics, 10ed, SI Version IM e	1179	
9788126564996	Fradin	Successful Product Design and Management Toolkit e k	1065	
9789354641077	Fox	Fox and McDonald's Introduction to Fluid Mechanics, 10ed, An Indian Adaptation IM e k	1179	
9789357462174	Gilat	MATLAB: An Introduction with Applications, 6ed, An Indian Adaptation IM	899	
9788126577538	Gupta	Applied Computational Fluid Dynamics e k	779	
9788126578245	Incropera	Incropera's Principles of Heat and Mass Transfer, Wiley India Edition IM e	1179	
9788126509478	Jagadeesha T.	Fluid Power: Generation, Transmission and Control: As per AICTE e	939	
9788126515424	Joji	Pneumatic Controls e k	769	
9788126559732	Juvinall	Machine Component Design e	1289	
9788126571246	Kadambi	Applications of Thermodynamics IM e k	749	
9788126553037	Kittur	Elements of Mechanical Engineering e k	639	
9788126519071	Kulkarni	Quality Control e k	859	
9788126579921	Kumar	Engineering Economy and Management e k	859	
9788126579754	Mandal	Power Plant Engineering: Theory and Practice e k	859	
9788126571253	Moinikunta	Production Technology: A Treatise of Industrial Practices, Vol 1 IM e k	639	



ISBN	Author	Title	Price (₹)	Qty
9788126571260	Moinikunta	Production Technology : A Treatise of Industrial Practice, Vol 2 e k	689	
9789354248566	Meriam	Engineering Mechanics Statics and Dynamics, 9ed, An Indian Adaptation IM e k	1319	
9788126564033	Meriam	Engineering Mechanics: Statics, SI Version IM e	1079	
9788126565375	Meriam	Engineering Mechanics: Dynamics, SI Version e	1069	
9788126556724	Moran	Principles of Engineering Thermodynamics, SI Version, 8ed IM e	1029	
9788126553433	Munson	Fluid Mechanics , SI Version, 7ed IM e	1229	
9788126530908	Nag	Mechanical Vibrations IM e k	919	
9788126534876	Nag	Strength of Materials, 2ed, w/cd e k	909	
9788126539550	Pai	Turbomachines IM e k	829	
9789354643293	Philpot	Mechanics of Materials, SI Version, 5ed, An Indian Adaptation IM e k	1299	
9788126549702	Phull	Engineering Graphics k	779	
9789354240201	Poole	Introduction to Nanoscience and Nanotechnology, An Indian Adaptation e k	1009	
9788126522880	Ramachandran	Control Engineering e k	869	
9788126540402	Ramachandran	Mechatronics: As per AICTE w/cd e	1039	
9788126542017	Rao	Nanoscience and Nanotechnology: Fundamentals of Frontiers e k	859	
9789357462419	Shiva	Additive Manufacturing Technologies IM e k	849	
9788126579235	Singh	Thermal Turbomachines, 2ed e k	789	
9789354644962	Tamrakar	Wiley Acing the GATE: Mechanical Engineering, 2ed, 2023	1069	
9788126599998	Yadav	Mechanical Vibrations and Noise Engineering: Theory and Applications e k	619	
9788126507740	Wiley Editorial Team	Engineering Graphics and Design: As per AICTE	569	

WILEY

Learning Never Stops...

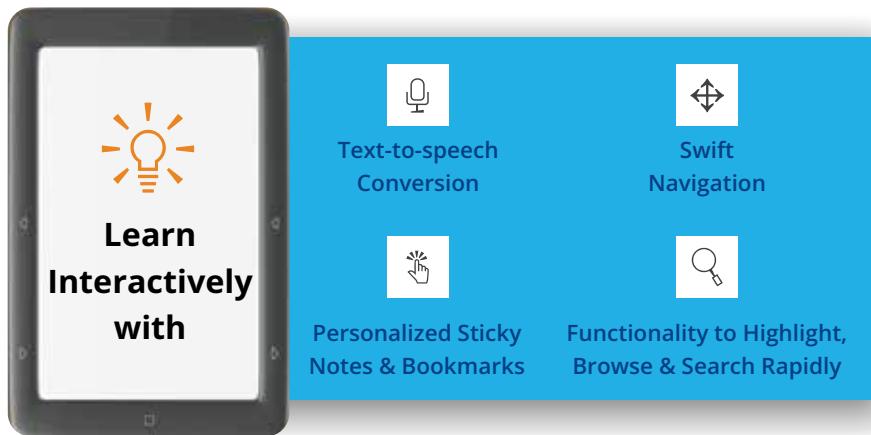
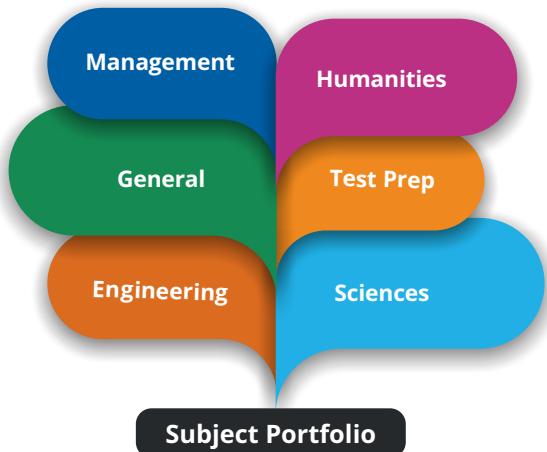
Wiley's eLibrary of 3150+ Textbooks

now available on your favorite devices



KEY FEATURES

-  24X7 multiple simultaneous access without any extra shelf space
-  Immediate delivery, no need to purchase any software
-  Flexible access online through a web browser or reader app on handheld devices.
-  Customer support and user training



MODES OF ACCESS

 IP Based

 Shibboleth

 LMS and Referral URL

 User Name / Password

 Offline Based App

For more information, please contact
acadmktg@wiley.com

wileyindia.com/e-books

Wiley India Pvt. Ltd.

HEAD OFFICE: 1402, 14th Floor World Trade Tower, Plot No. C-1, Sector-16, Noida 201301 INDIA
Tel: 0120-6291100 Email: csupport@wiley.com

wileyindia.com

Books are available at

amazon.in

amazonkindle

Flipkart 

Exclusive Wiley Brand Store @ www.amazon.in/wiley