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Nota di contenuto	Cover; Half Title page; Title page; Copyright page; Dedication; Preface; Acknowledgement; About the Authors; Abbreviations; Chapter 1: General Introduction to Electrical and Electronic Materials; 1.1 Importance of Materials; 1.2 Importance of Electrical and Electronic Materials; 1.3 Classification of Electrical and Electronic Materials; 1.4 Scope of Electrical and Electronic Materials; 1.5 Requirements of Engineering Materials; 1.6 Operational Requirements of Electrical and Electronic Materials; 1.7 Classification of Solids on the Basis of Energy Gap 1.8 Glimpse of Some Electronic Products, Their Working Principles and Choicest Materials1.9 Different Types of Engineering Materials; 1.10 Different Levels of Materials Structure; 1.11 Spintronics (The Electronics of Tomorrow) and Spintronic Materials; 1.12 Ferromagnetic Semiconductor; 1.13 Left-Handed (LH) Materials; 1.14 Solved Examples; Chapter 2: Atomic Models, Bonding in Solids, Crystal Geometry, and Miller Indices; 2.1 Atomic Models; 2.2 Bohr's Quantum

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3.18 Characteristics of Dislocations3.19 Sources of Dislocations, Their Effects and Remedies; 3.20 Grain Boundary; 3.21 Twin or Twinning; 3.22 Mechanical Properties of Metals; Chapter 4: Conductive Materials: Electron Theories, Properties and Behaviour; 4.1 Electrons and Their Role in Conductivity; 4.2 Electron Theories of Solids; 4.3 Free Electron Theory; 4.4 Energy Band Theory; 4.5 Brillouin Zone Theory; 4.6 Conductors; 4.7 Factors Affecting Conductivity (and Resistivity) of Metals; 4.8 Thermal Conductivity; 4.9 Heating Effect of Current; 4.10 Thermoelectric Effect (or Thermoelectricity)
4.11 Seebeck Effect

Sommario/riassunto

This comprehensive and unique book is intended to cover the vast and fast-growing field of electrical and electronic materials and their engineering in accordance with modern developments. Basic and pre-requisite information has been included for easy transition to more complex topics. Latest developments in various fields of materials and their sciences/engineering, processing and applications have been included. Latest topics like PLZT, vacuum as insulator, fiber-optics, high temperature superconductors, smart materials, ferromagnetic semiconductors etc. are covered. Illustrations and exa