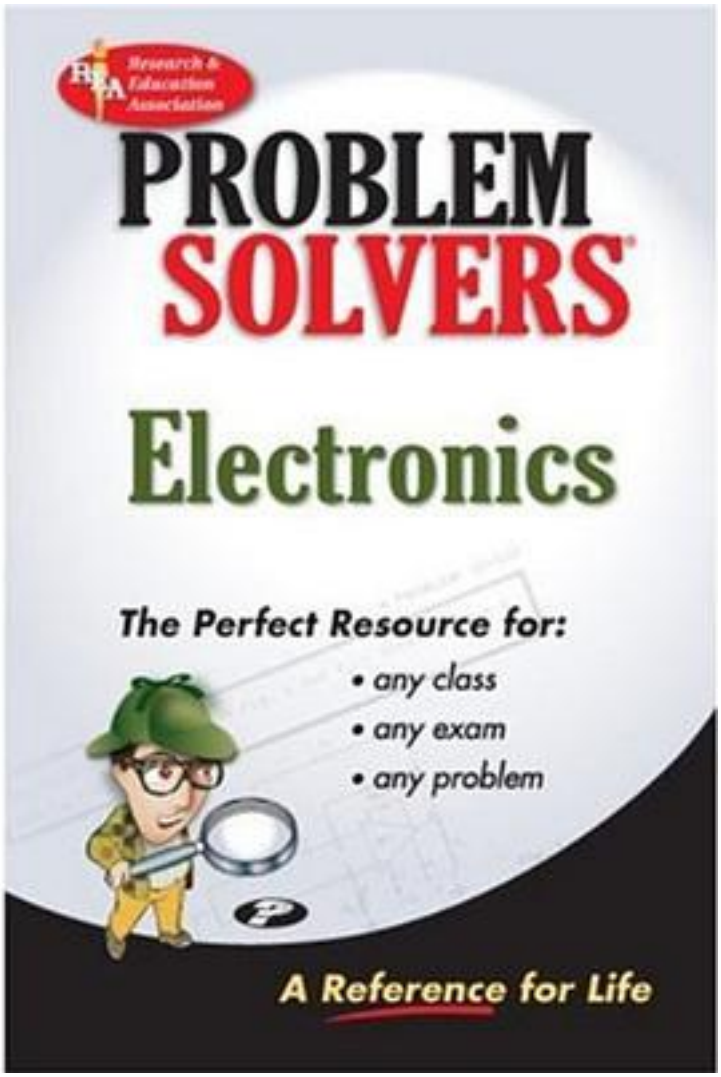
The Electronics



The Electronics_下载链接1_

著者:Not Available (NA)

出版者:Research & Education Assn

出版时间:1982-11

装帧:Pap

isbn:9780878915439

Each Problem Solver is an insightful and essential study and solution guide chock-full of clear, concise problem-solving gems. All your questions can be found in one convenient source from one of the most trusted names in reference solution guides. More useful, more practical, and more informative, these study aids are the best review books and textbook companions available. Nothing remotely as comprehensive or as helpful exists in their subject anywhere. Perfect for undergraduate and graduate studies.

Here in this highly useful reference is the finest overview of electronics currently available, with hundreds of electronics problems that cover everything from circuits and transistors to amplifiers and generators. Each problem is clearly solved with step-by-step detailed solutions.

DETAILS

- The PROBLEM SOLVERS are unique - the ultimate in study guides.

- They are ideal for helping students cope with the toughest subjects.

- They greatly simplify study and learning tasks.

- They enable students to come to grips with difficult problems by showing them the way, step-by-step, toward solving problems. As a result, they save hours of frustration and time spent on groping for answers and understanding.

- They cover material ranging from the elementary to the advanced in each subject.

- They work exceptionally well with any text in its field.

- PROBLEM SOLVERS are available in 41 subjects.

- Each PROBLEM SOLVER is prepared by supremely knowledgeable experts.

- Most are over 1000 pages.

- PROBLEM SOLVERS are not meant to be read cover to cover. They offer whatever may be needed at a given time. An excellent index helps to locate specific problems rapidly.

TABLE OF CONTENTS

Introduction

Chapter 1: Fundamental Semiconductor Devices

Properties of Semiconductors

The p-n Junction

Junction-Diode Characteristics

Bipolar Transistor Theory

Bipolar Transistor Characteristics

Field-Effect Transistors
Chapter 2: Analog Diode Circuits
Clippers and Clampers
Rectifiers and Filters
Synthesis of Volt-Ampere Transfer Functions
Zener Diode Voltage Regulators
Miscellaneous Diode Circuits
Chapter 3: Basic Transistor Circuits
Inverter
Common-Emitter Amplifier
Emitter-Follower
Common-Base Amplifier
Bias Stability and Compensation
Miscellaneous BJT Circuits
Common-Source JFET Amplifier
Common-Drain JFET Amplifier
MOSFET Amplifiers
Chapter 4: Small-Signal Analysis
Amplifier Concepts and Hybrid Parameters
Common-Emitter Amplifier
Emitter-Follower
Common-Base Amplifier
Common-Source JFET Amplifier
Common-Drain JFET Amplifier
Common-Gate JFET Amplifier
MOSFET Circuit Analysis
Noise

Chapter 5: Multiple Transistor Circuits
Cascading of Stages
Darlington Configuration
Difference Amplifier
Direct-Coupled Amplifiers
Other Configurations
Chapter 6: Power Amplifiers
Class A
Class B Push-Pull
Class AB Push-Pull
Complementary Symmetry Push-Pull
Chapter 7: Feedback Circuits
Feedback Concepts
Gain and Impedance of Feedback Amplifiers
Feedback Analysis and Design
Stability of Feedback Circuits
Regulated Power Supplies
Chapter 8: Frequency Response of Amplifiers
Low Frequency Response of BJT Amplifiers
Low Frequency Response of FET Amplifiers
High Frequency Behavior of CE Amplifiers
High Frequency Behavior of CC and CB Amplifiers
High Frequency Behavior of FET Amplifiers
Multistage Amplifiers
At High Frequencies
The Gain Bandwidth Product
Frequency Response of Miscellaneous Circuits

Transistor Switch
Chapter 9: Tuned Amplifiers and Oscillators
Single-Tuned Amplifiers
Double-Tuned Amplifiers
Synchronously-Tuned Amplifiers
Stagger-Tuned Amplifiers
Other Tuned Amplifiers
Phase-Shift Oscillators
Colpitts Oscillators
Hartley Oscillators
Other Oscillators
Chapter 10: Operational Amplifiers
Basic Op-Amp Characteristics
Frequency Response of Op-Amps
Stability and Compensation
Integrators and Differentiators
Mathematical Applications of Op-Amps
Active Filters
The Comparator
Miscellaneous Op-Amp Applications
Chapter 11: Timing Circuits Waveform Generators
Free-Running Multivibrators
Monostable Multivibrators
Schmitt Trigger
Sweep Circuits
Miscellaneous Circuits
Chapter 12: Other Electronic Devices and Circuits

Tubes
SCR and TRIAC Circuits
Unijunction Transistors
Tunnel Diodes
Four-Layer Diodes
Light-Controlled Devices
Miscellaneous Circuits
D/A and A/D Converters
Chapter 13: Fundamental Digital Circuits
Diode Logic (DL) Gates
Resistor-Transistor Logic (RTL) Gates
Diode-Transistor Logic (DTL) Gates
Transistor-Transistor Logic (TTL) Gates
Emitter-Coupled Logic (ECL) Gates
MOSFET Logic Gates
Chapter 14: Combinational Digital Circuits
Boolean Algebra
Logic Analysis
Logic Synthesis
Encoders, Multiplexers, and ROM's
Chapter 15: Sequential Digital Circuits
Flip-Flops
Synthesis of Sequential Circuits
Analysis of Sequential Circuits
Counters
Shift Registers
Appendix

Index

WHAT THIS BOOK IS FOR

Students have generally found electronics a difficult subject to understand and learn. Despite the publication of hundreds of textbooks in this field, each one intended to provide an improvement over previous textbooks, students of electronics continue to remain perplexed as a result of numerous subject areas that must be remembered and correlated when solving problems. Various interpretations of electronics terms also contribute to the difficulties of mastering the subject.

In a study of electronics, REA found the following basic reasons underlying the inherent difficulties of electronics:

No systematic rules of analysis were ever developed to follow in a step-by-step manner to solve typically encountered problems. This results from numerous different conditions and principles involved in a problem that leads to many possible different solution methods. To prescribe a set of rules for each of the possible variations would involve an enormous number of additional steps, making this task more burdensome than solving the problem directly due to the expectation of much trial and error.

Current textbooks normally explain a given principle in a few pages written by an electronics professional who has insight into the subject matter not shared by others. These explanations are often written in an abstract manner that causes confusion as to the principle's use and application. Explanations then are often not sufficiently detailed or extensive enough to make the reader aware of the wide range of applications and different aspects of the principle being studied. The numerous possible variations of principles and their applications are usually not discussed, and it is left to the reader to discover this while doing exercises. Accordingly, the average student is expected to rediscover that which has long been established and practiced, but not always published or adequately explained.

The examples typically following the explanation of a topic are too few in number and too simple to enable the student to obtain a thorough grasp of the involved principles. The explanations do not provide sufficient basis to solve problems that may be assigned for homework or given on examinations.

Poorly solved examples such as these can be presented in abbreviated form which leaves out much explanatory material between steps, and as a result requires the reader to figure out the missing information. This leaves the reader with an impression that the problems and even the subject are hard to learn - completely the opposite of what an example is supposed to do.

Poor examples are often worded in a confusing or obscure way. They might not state the nature of the problem or they present a solution, which appears to have no direct relation to the problem. These problems usually offer an overly general discussion - never revealing how or what is to be solved.

Many examples do not include accompanying diagrams or graphs, denying the reader the exposure necessary for drawing good diagrams and graphs. Such practice only strengthens understanding by simplifying and organizing electronics processes.

Students can learn the subject only by doing the exercises themselves and reviewing them in class, obtaining experience in applying the principles with their different

ramifications.

In doing the exercises by themselves, students find that they are required to devote considerable more time to electronics than to other subjects, because they are uncertain with regard to the selection and application of the theorems and principles involved. It is also often necessary for students to discover those "tricks" not revealed in their texts (or review books) that make it possible to solve problems easily. Students must usually resort to methods of trial and error to discover these "tricks," therefore finding out that they may sometimes spend several hours to solve a single problem.

When reviewing the exercises in classrooms, instructors usually request students to take turns in writing solutions on the boards and explaining them to the class. Students often find it difficult to explain in a manner that holds the interest of the class, and enables the remaining students to follow the material written on the boards. The remaining students in the class are thus too occupied with copying the material off the boards to follow the professor's explanations.

This book is intended to aid students in electronics overcome the difficulties described by supplying detailed illustrations of the solution methods that are usually not apparent to students. Solution methods are illustrated by problems that have been selected from those most often assigned for class work and given on examinations. The problems are arranged in order of complexity to enable students to learn and understand a particular topic by reviewing the problems in sequence. The problems are illustrated with detailed, step-by-step explanations, to save the students large amounts of time that...

作者介绍:

目录:

标签

评论

The Electronics_下载链接1_

书评

The Electronics_下载链接1_