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ELECTRIC CIRCUITS FUNDAMENTALS

Sergio Franco

San Francisco State University

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Overview

Written by an enthusiastic circuits practitioner who draws upon his wide academic and industrial experience, this accessible text teaches students the foundations of electric circuits and guides them in developing a *style of thinking* and a *problem-solving methodology* based on *physical insight* and *verification*. Designed for the first course or course sequence in circuits and electrical engineering, the approach imparts not only an appreciation for the elegance of the mathematics of circuit theory, but also a genuine “*feel*” for a *circuit’s physical operation*. This will benefit students not only in the rest of their curriculum, but also in coping with the rapidly changing technology they will face on the job.

A proven author, Prof. Franco writes in a clear and captivating style, covering all the traditional topics in a way designed to hold students’ interest. The text aims to provide an engineering balance between mathematical conceptualization and physical insight, and therefore the presentation is only as mathematically rigorous as needed.

Franco introduces ideal transformers and amplifiers early on to stimulate student interest by giving a taste of actual engineering practice. Whenever possible, he relates theory back to practical, real-life situations. This is followed by extensive coverage of the ideal operational amplifier to provide a practical illustration of abstract but fundamental concepts such as resistance transformation and root-locus control—always with a vigilant eye on the underlying physical basis. PSpice is exploited throughout the text as a means for checking the results of hand calculations, and in separate end-of-chapter sections, which introduce the most important SPICE features in gradual fashion, at the specific points in which they are first needed.

Features

- Over **350** worked *examples* emphasize the application of conceptual understanding to problem solving and, focus on labeling, inspection, dimensional and asymptotic verification, and checking via alternate approaches. Over **400 exercises** provide students with an opportunity for immediate reinforcement of their grasp of principles and methods, challenging them to question whether their findings make physical sense.
- A total of **1000** end-of-chapter *problems* provide an extensive opportunity for additional practice.
- Boxed *essays* and *interviews* on topics of current interest, including biographies and career options, demonstrate the human and historical perspectives.

Supplements

The book is supported by a complete package of supplements as follows:

- **INSTRUCTOR'S MANUAL**
Sergio Franco, *San Francisco State University, San Francisco*.
Provides solutions to all exercises and end-of-chapter problems.
©1996, ISBN: **0-19-510577-X**
512 pp.; paper **APS SEE04C**
- **PSICE MANUAL FOR ELECTRIC CIRCUITS FUNDAMENTALS**
James S. Kang, *California State Polytechnic University, Pomona*.
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280 pp.; illus. paper **APS SEE04A**
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Reza Nahvi, *California Polytechnic State University, San Luis Obispo*, and **Michael Soderstrand**, *University of California, Davis*.
These practice problems are designed to supplement any first-year circuit analysis text. They offer detailed, logical solutions.
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947 pp.; illus. paper **APS SEE04B**
- **Transparency Masters for Electric Circuits Fundamentals by Sergio Franco**.
Contains transparency masters of the most important figures and graphs in the text.
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