

Revised Edition

A TEXTBOOK OF **Applied electronics**



Dr. R.S. SEDHA

S. CHAND

Revised Edition

A TEXTBOOK OF
Applied
Electronics

[For the Students of B.E./ B.Tech., B. Sc. (Engg.) Sec. A and B of A.M.I.E.,
Grade I.E.T.E Diploma and other Competitive Examinations]

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Preface to the Fourth Edition

The field of electronics engineering has been advancing at a great pace. Since the first edition of this book released in 1990, there has been a tremendous progress in integrated circuit design, manufacturing processes, technology and applications. Products with touch screens have become common these days. Mobile broadband and high-bandwidth Internet connection networks have made the Digital media so fast and reliable. The recent deployment of Optical fibre networks in advanced countries has removed further the bottlenecks that plagued previous systems. High definition display systems are also a commonplace. Video capture and broadcast has become so easy that even the mobile phones are capable of producing high definition video clips and sending over the wireless network and uploading to public sites such as YouTube or Facebook in very little time allowing millions to access to media quickly and freely.

There has been a tremendous progress in Electronic Design Automation (EDA or ECAD) Software Tools for design, simulation, analysis and verification and manufacturing preparation of electronic devices and printed circuit boards.

With each edition of this book, I am amazed at the new information that scientists, engineers and technologists have gathered about the electronic materials, their characteristic and applications. Although there are great achievements in the last 20 years, researchers face even great challenges in the future.

In this edition, I have included new material in many chapters particularly from 11 to 36. This will help the readers to enhance their conceptual framework about electronic devices and circuits. The chapter 16 on Integrated circuits has been expanded to include steps involved in integrated circuit design. In chapter, 26, topics on Darlington connection of BJT, parallel Darlington transistor, dc bias operation of Darlington circuit, ac analysis of Darlington pair, feedback pair, dc bias operation and ac analysis of feedback pair have been included. In Chapter 17, topics on series and parallel combination of SCR, protection circuit, SCR crowbar circuit and Snubber circuit have been included. In Chapter 27 on Power Amplifiers, topics on Class AB amplifier, Class D amplifier and Class E amplifier have been included. In Chapter 31 on Non-Sinusoidal oscillators, topics on Ring oscillators and Franklin oscillator have been included. In Chapter 35 on Operation Amplifiers, topics on averaging amplifier, linear amplifier and subtractor have been included. In Chapter 36 on Operational Amplifier Applications, topics on Instrumentation amplifier, precision rectifier, precision half-wave and precision full-wave rectifier, log and antilog amplifiers, voltage-to-current and current-to-voltage converters have been included. More photographs of the electronic devices have been included in this edition to help the readers to develop better understanding.

To help students for preparing and doing well in the examination, I have included "Examination Questions" from several Indian Universities until Dec 2011, as solved examples. I have expanded the section on "Descriptive Questions" also to include the theory type examination questions. The section on "Multiple Choice Questions" has also been expanded in several chapters.

The mistakes and misprints which had crept in the previous edition, have been eliminated in this edition.

I wish to express my sincere thanks to my friends and colleagues in various technical universities and engineering colleges for recommending this book to their students. I also express my sincere thanks to the students for recommending this book to their friends and relatives. I hope they will continue to patronize this book in the future also.

Any errors, omissions and suggestions for the improvement of this book brought to my notice will be thankfully acknowledged and incorporated in the next edition.

Dr. R.S. Sedha
Singapore
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Preface to the First Edition

I take an opportunity to present this standard treatise entitled **A Textbook of Applied Electronics** to the students of Degree, Diploma, A.M.I.E. (I) and I.E.T.E. in particular as well as B.Sc. of all the Indian Universities in general. The object of this book is to present the subject matter in a most concise, compact, to the point and lucid manner.

While writing this treatise, I have constantly kept in mind the requirements of all the students, regarding the latest as well as changing trend of their examinations. To make it really useful for the students, latest examination questions of various Indian and foreign universities as well as other important examining bodies have been included. The book has been written in an easy style, with full details and illustrations. All along the approach to the subject matter, every care has been taken to arrange the matter from simpler to harder, known to unknown, in a self-study style. In short, it is expected that the book will meet the crying need of the students, for whom it has been produced.

Although every care has been taken to check mistakes and misprints, yet it is very difficult to claim perfection. Any errors, omissions and suggestions, for the improvement of this book, brought to my notice will be thankfully acknowledged and incorporated in the next edition.

R.S. SEDHA

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The author is thankful to the following Indian as well as foreign universities and examining bodies whose examination papers have been included in the text of the subject by way of illustration. Moreover their syllabi have been kept in view while writing this treatise.

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The author wants to acknowledge a number of people who have been immensely helpful in making this book possible. My family has been more than usual “patient and understanding”. They are a constant reminder of the rich life beyond the electronics world. The author is deeply indebted to the people at S.Chand for providing continuous support while preparing this text.

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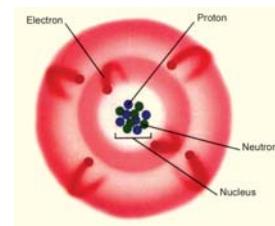
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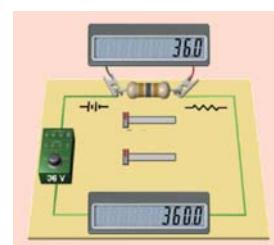
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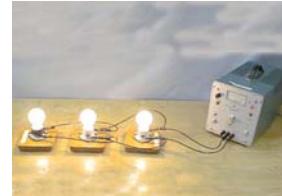
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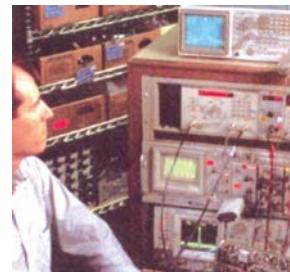
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