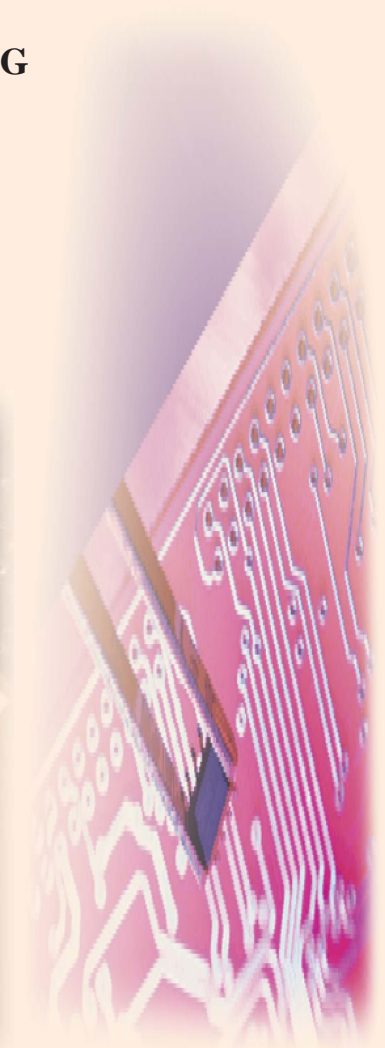
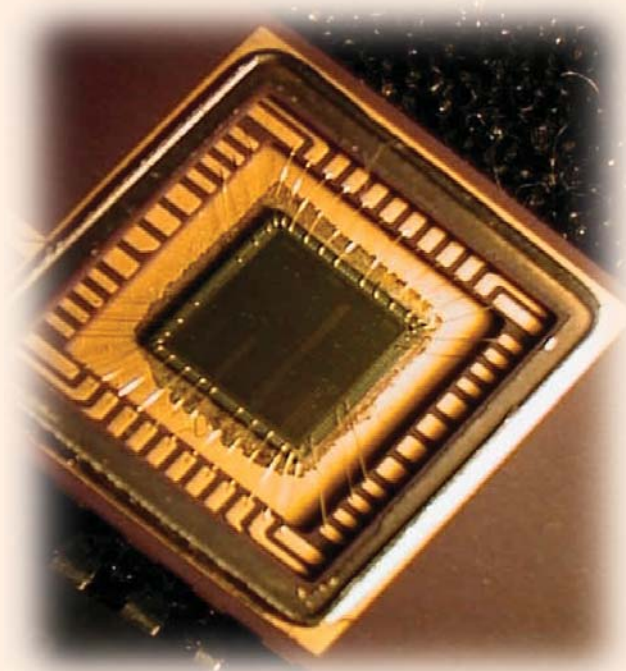


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VOLUME I
BASIC ELECTRICAL ENGINEERING
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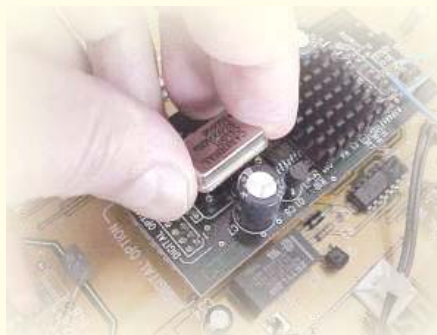
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Preface to the Twenty-Third Revised Multicoloured Edition

Authors feel happy to present to their esteemed readers this revised first **multicoloured** edition of Vol. I of “A Textbook of Electrical Technology”. To provide a comprehensive treatment of topics in “Basic Electrical Engineering” both for electrical as well as non-electrical students pursuing their studies in civil, mechanical, mining, textile, chemical, industrial, environmental, aerospace, electronic and computer engineering, information technology both at the Degree and Diploma level. Based on the suggestions received from our esteemed readers, both from India and abroad, the scope of the book has been enlarged according to their requirements.

Establishment of Technological Universities have taken place in recent past. This resulted into a pool of expert manpower within a large area. Unification of syllabi has taken place and the question papers set during the last 4-5 years have a wider variety and are of more inquisitive nature. Solutions to these with brief logical reasonings have been added for the benefit of our student community.

Many universities include a brief coverage on methods of “Electrical Power Generation”, in their first and basic paper on this subject. Hence, this revision includes an introductory chapter on this topic.

It is earnestly hoped that with these extensive additions and revisions, this revised edition will prove even more useful to our numerous readers in developing more confidence while appearing at national competitive examinations.

I would like to thank my Publishers particularly Mr. Ravindra Kumar Gupta, M.D. and Mr. Bhagirath Kaushik, Regional Manager (Western India) of S. Chand & Company Ltd., for the personal interest they look in the publishing of this revised and enlarged edition.

Our student-friends, teacher-colleagues, Booksellers and University authorities have been showing immense faith and affection in our book, which is acknowledged with modesty and regards. We are sure that this revised edition will satisfy their needs to a still greater extent and serve its cause more effectively.

S.G. TARNEKAR



Preface to the Twenty-second Edition

The primary objective of Vol. I of **A Textbook of Electrical Technology** is to provide a comprehensive treatment of topics in “Basic Electrical Engineering” both for electrical as well as non-electrical students pursuing their studies in civil, mechanical, mining, textile, chemical, industrial, environmental, aerospace, electronic and computer engineering both at the Degree and Diploma level. Based on the suggestions received from our esteemed readers, both from India and abroad, the scope of the book has been enlarged according to their requirements. Almost half the solved examples have been deleted and replaced by latest examination papers set upto 1994 in different engineering colleges and technical institutions in India and abroad.

Following major additions/changes have been made in the present edition :

1. Three new chapters entitled (a) *A.C. Network Analysis* (b) *A.C. Filter Networks* and (c) *Fourier Series* have been added thereby widening the scope of the book.

2. The chapter on *Network Theorems* has been updated with the addition of Millman’s Theorem (as applicable to voltage and current sources or both) and an article on Power Transfer Efficiency relating to Maximum Power Transfer Theorem.

3. The additions to the chapter on *Capacitors* include detailed articles on Transient Relations during Capacitor Charging and Discharging Cycles and also the Charging and Discharging of a Capacitor with Initial Charge.

4. Chapter on *Chemical Effects of Current* has been thoroughly revised with the inclusion of Electronic Battery Chargers, Static Uninterruptable Power Supply (UPS) Systems, High Temperature Batteries, Secondary Hybrid Cells, Fuel Cells and Aircraft and Submarine Batteries.

5. A detailed description of Thermocouple Ammeter has been added to the chapter on Electrical Instruments.

6. The chapter on *Series A.C. Circuits* has been enriched with many articles such as Determination of Upper and Lower Half-power Frequencies, Value of Edge Frequencies and Relation between Resonant Power and Off-resonance Power.

It is earnestly hoped that with these extensive additions and revisions, the present edition will prove even more useful to our numerous readers than the earlier ones.

As ever before, we are thankful to our publishers particularly Sh. Ravindra Kumar Gupta for the personal interest he took in the expeditious printing of this book and for the highly attractive cover design suggested by him. Our sincere thanks go to their hyperactive and result-oriented overseas manager for his globe-trotting efforts to popularise the book from one corner of the globe to the other. Lastly we would love to record our sincere thanks to two brilliant ladies; Mrs. Janaki Krishnan from ever-green fairy land of Kerala and Ms. Shweta Bhardwaj from the fast-paced city of Delhi for the secretarial support they provided us during the preparation of this book.

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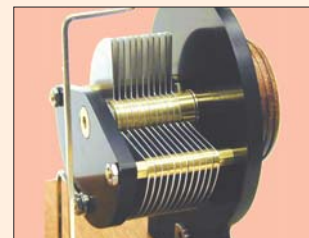
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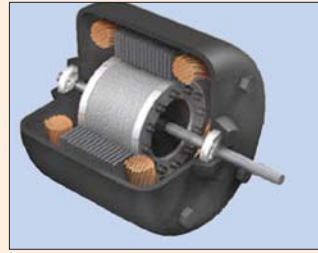
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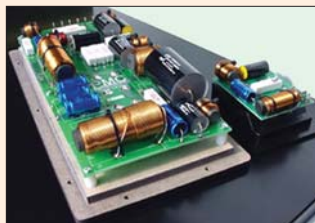
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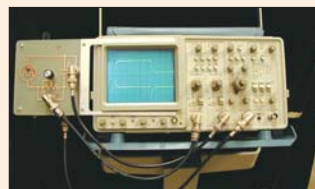
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