

BOOK REVIEW

Electronic Devices and Circuits—Discrete and Integrated. By. Y. N. Bapat. Published by Tata McGraw-Hill Publishing Co. Ltd, New Delhi 110 002. Pp 432, Price Rs. 21.

This book deals with the fundamental principles of operation of electron devices as well as their circuit applications. As indicated in the chart on the development of the subject matter of the book given at its beginning, the author has covered physical electronics, device characteristics, small-signal, large-signal and switching-signal operation of devices, and basic circuit applications including linear and pulse circuits, as well as IC's. Although the whole field of electron devices is touched upon in the first two chapters, the emphasis has been rightly on solid-state devices in view of their importance at present. Not only are the diodes and bipolar transistors covered in detail, but also other solid-state devices, such as, photodevices, FET's, UJT's, SCR's dealt with to the same extent. In all cases, the basic theory, operating principles, equivalent circuit, typical parameters, V-I characteristics, etc., are given together with simple illustrative examples. The students should find these two chapters a good source of introduction to modern electron devices.

The third chapter is entitled IC fabrication. While it is important to introduce IC's as early as possible, and the author should be complimented for this, the reviewer would have been happier if the presentation on IC technology was expanded further. It would have been better to split the subject matter of this chapter into two full chapters, viz., one dealing with IC fabrication technology and the other covering IC design features. However, the analytical treatment on IC design covered in this chapter, particularly on biasing circuits, should be useful for the students.

The following three chapters deal with small-signal amplifiers, single-stage, multi-stage, as well as feedback type. The treatment of these chapters is very rigorous and covers the latest trends in this area. The analysis is detailed and usually leads to worked examples, making it very useful for students.

The AF power amplifiers and power supply circuits are covered in the next two chapters. Here again, the analysis is very detailed and many examples are worked out. It is interesting to see IC power amplifiers which form an important part in present-day consumer IC's, also being discussed at some length.

Chapter 9 covers RF circuits. Tuned RF amplifiers—both small-signal and power types, modulation and demodulation circuitry, as well as mixers have been dealt with

in somewhat detail. Amplifiers and oscillators using negative-resistance devices have also been given their rightful place in this chapter. The quality of this chapter would have definitely gone up if a few special IC amplifiers for RF use were also covered.

While, so far, linear circuits have figured prominently, the next chapter covers pulse circuits, particularly waveform generators and some basic logic circuits. For a book aimed at the under-graduate curriculum in electronics, this chapter should have been expanded considerably, or split into two chapters, *viz*, one covering waveform shaping and generation techniques and the other dealing with digital logic circuits.

The last chapter which deals with IC analysis and applications is very important for this book. Not only typical linear IC's are covered here, but also digital IC families have found their rightful place. A number of appendices have been included at the end of the book, which give useful supplementary information.

In the reviewer's opinion, the strength of the book lies in the analytical treatment, illustrative examples worked out and a very large number of problems included in all the chapters. The author has attempted to bring to the student what is latest in the state-of-the-art, without sacrificing the basics of electron devices and discrete circuits on whose strong foundation the superstructure is built. The book can be recommended as a useful text for senior undergraduate students specializing in electrical/electronics/telecommunication engineering and as a reference book for all those who would like to pursue scientific work in electronics.

B. S. SONDE.