

tion to thermal stresses and stress wave propagation would have further enhanced the utility of this book. Nevertheless, these comments do not in any way undermine the quality of this book, which as already mentioned, will serve as an outstanding textbook for graduate students in engineering.

1. Fung, Y. C., *Foundations of Solid Mechanics*, Prentice-Hall, Englewood Cliffs, New Jersey, 1965.
2. Sokolnikoff, I. S., *Mathematical Theory of Elasticity*, Krieger Publishing Company, Florida, 1956, 2nd edn.
3. Timoshenko, S. P. and Goodier, J. N., *Theory of Elasticity*, McGraw Hill, New York, 1970, 3rd edn.

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Radio Frequency Principles and Applications – The Generation, Propagation, and Reception of Signals and Noise. Albert A. Smith (ed.). Universities Press (India) Ltd, 3-5-819, Hyderabad, Hyderabad 500 029. 2001. 217 pp. Price: US\$ 89.95. (original price). Rs 215 (special Indian price).

Radio Frequency (RF) techniques and technology have undergone a paradigm shift over the past decade, owing to the expansive market in wireless communications as well as in industrial, scientific and medical fields. With the utility of increasingly higher frequencies in these applications, the field of RF engineering has broadened to encompass microwave techniques. The book under review in its seven chapters, offers a broad overview of the basics of diverse areas that constitute RF engineering to suit the needs of practising RF engineers.

The book begins by introducing the basic laws of electrostatics and magnetostatics in chapter 1. Chapter 2 deals with time-varying electromagnetic fields along with some practical examples. Chapters 3–7 cover diverse areas; namely propagation, antennas, RF environment,

waveforms and spectral analysis, and transmission lines. There is exhaustive literature in the form of published papers and books on each of these areas. The author has extracted the essential topics and information from the published literature and has presented them in a compact form under a single cover. Each chapter presents the basic principles and definitions pertaining to the topic in a lucid and understandable manner. Without going into any detailed mathematical derivations, the author has presented the essential formulas along with the necessary theoretical base and applications so as to be useful to practising engineers.

Chapter 2 begins with Maxwell's equations and boundary conditions, and then presents the theory of plane wave incidence at a metal surface leading to the concept of skin depth, and shielding effectiveness of metal sheets in practice. Next, time-varying fields due to an elementary dipole and a small loop are introduced followed by practical examples of microwave oven and personal computer to illustrate the concepts of near- and far-field regions. This chapter also addresses in brief, the commonly posed question of human exposure to electromagnetic radiation. Chapter 3 offers a brief overview of free space propagation, and ground-wave propagation over plane earth. Relevant formulas and characteristics of different propagation modes are summarized. Practical aspects such as attenuation due to ground, buildings, edge diffraction and Raleigh roughness criterion are covered.

Chapter 4 first provides, the definitions and basic formulae of antenna parameters. The reciprocity theorem is discussed next, followed by a review of the essential features of different types of antennas used for measuring electromagnetic fields, and methods for calibrating receiving antennas. Chapter 5 discusses RF environment from the point of view of electromagnetic noise and interference. The various noise parameters are reviewed, followed by a discussion on a receiving system, its sensitivity, received noise voltage and noise figure. Salient characteristics of extraterrestrial noise, atmospheric noise, man-made radio noise, power line-conducted noise, and the earth's magnetic and electric fields are included. Chapter 6 presents the basics of waveforms and spectral analysis. The topics covered are Fourier transform, spectral intensity of deterministic

energy signals and Fourier series of periodic power signals.

The last chapter is on transmission lines. In addition to the basic two-wire transmission line theory, this chapter deals with the excitation of two-wire line and single conductor above a ground plane by external electromagnetic fields and also radiation from transmission lines. Appendices are included that list information on physical constants, electrical units, wave relations, math identities, vector operators and frequency bands.

On the whole, the book offers a fine compilation of useful, practical information and should serve as a ready reference to practising RF engineers. Unlike the conventional reference data handbooks, this book includes, in each chapter, the basic principles and the necessary theoretical aspects without going into complicated mathematical derivations. With this theoretical base, the book makes a useful reference to graduate students in electromagnetics and microwaves. Portions of the book dealing with practical applications should prove useful to teachers to enrich classroom teaching in the area of RF and microwave engineering.

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Annual Review of Immunology, 2002. William E. Paul, C. Garrison Fathman and Lauri H. Glimcher (eds). Annual Reviews, 4139 El Camino Way, P.O. Box 10139, Palo Alto, CA 94303-0139, USA. Vol. 20. 956 pp. Price not mentioned.

The *Annual Review of Immunology (ARI)* continues to be one of the most endearing publications which every student of immunology, young or old, looks forward to. The most important of all the articles that appear in the *ARI* is the prefatory chapter. This chapter from Kabat to Eisen has provided a broad view of major developments in immunology over the years. The volume under