BASIC CONCEPTS OF MICROWAVE ELECTRONICS

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PREFACE

Microwave techniques are being adopted increasingly in such diverse applications as long-distance communication by terrestrial and satellite systems, navigation, industrial heating and drying, and the study of physical and chemical properties of matter. This book has been written to provide an integrated course in this field for electrical engineers and physicists. An effort has been made to produce a text book for the use of senior under-graduate students. that is sophisticated enough to establish a firm basis for advanced sytud in this area. Although there is sufficient material for a two-semester course, yet many instructors may prefer to select only certain chapters to be covered in one semester course. The division of material among chapters has been made with these facts in mind.

It is an outgrowth of the notes prepared for courses given by the author at the University of Engineering and Technology, Lahore. Author's experience as a teaching assistant at the University of Alberta, Canada has been a great help in the selection of materia presented here. An effort has been made to keep on a middle groun with respect to the choice of the subject matter and the level of th presentation. Most of the book ought to be understood by reade with a basic understanding of electromagnetic theory, calculus a vector aljebra. For last three chapters reader will require so familiarity with solid-state physics. Whenever possible the fun mental theory has been presented with easily traceable mathemat analysis and thus a pure qualitative description as well as an ov complicated mathematical analysis of the device behaviour has b avoided.

Preparation of this book would have been impossible without the cooperation and assistance of my students at the University of Engineering and Technology, Lahore. I am indebted to many students for locating errors and suggesting various changes in the manuscript. To Dr. A.A. Ahmad, the Head of the Department of Electrical Engineering, I am grateful for his constant encouragement and support in otherwise very discouraging circumstances. I am also grateful to Dr. Islam Sheikh, Vice-Chancellor, University of Engineering & Technology, Lahore for his personal interest in the publication of this book. I am especially grateful to my wife for her help in the preparation of the manuscript and for her constant encouragement. Acknowledgements are also due to friends and colleagues at home and abroad for their helpful criticism and comments.

A few years ago it was my privilege to take three graduate courses in microwave electronics from Dr. P.A. Goud at University of Alberta, Canada. The original notes for those course have been of immense help. It is hoped that some of the engineering philosophy that was so much part of those courses may have been incorporated into this work.

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