Satellite Communications

Covering latest Digital Satellite Technologies and Systems

Dr. D.C. Agarwal

SATELLITE COMMUNICATIONS

[*Covering Latest Digital Satellite Technologies and Systems*]

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Preface to the Seventh Edition

It is indeed a matter of great satisfaction that an over whelming response recieved to the Sixth Edition from both the teachers and the students from all over India which was a completely revised and updated edition covering the latest on **"Digital Satellite Technologies and Systems".**

In the present edition chapter on Global Positioning Satellite Systems and Satellite Program of India has been completely revised and new development in the field has been incorporated. The book in its present form contains large number of solved problems and multichoice questions. The Illustrated Glossary too contains over 120 new terms and definitions. Also, the new chapter on Amateur Radio Satellites will interest the hobbists and ambitious students aiming for some project work.

It is hoped that the book in its revised form will enjoy its ever increasing popularity.

Again, we will welcome suggestions for improvement of the text and will be greatful if any misprint or error is pointed out.

—Khanna Publishers

Preface

Satellite communication is of much importance for both the national and international communications which may be in the form of telephone transmission, television and radio program distribution, computer communications, ISDNs, martime navigation and military command and control. Satellite communication is a very vast topic and involves several aspects of communication technology including both the analog and digital techniques. Communication engineers are therefore supposed to have appropriate knowledge in satellite technology, link design and operations. Knowledge in the additional topics such as those or radio wave propagation, antennas, orbital mechanics, modulation, detection, coding, radio electronics, microwave techniques, lasers and fibre optic communication etc. is also required. Intercooperation between the mechanical engineers, electrical engineers, communication engineers and aeronautical engineers is extensively needed for rocket technology for lauching and manning the satellite.

India is having an ambitious program for communication as well as remote sensing satellites, the INSAT and IRS series of satellites. Several organizations including the Government laboratories and academic institutions are actively engaged in developing and implementing the Indian satellite communication program. And therefore it is now essential for all engineers to have knowledge in the techniques of communication through satellite communication in comprehensive manner. The book deals with the requisite communications technologies such as those of analog and digital satellite communication, multiple access technique, demand assignment, spread spectrum, random access techniques etc ; earth station technology and laser satellite communication. Discussions about satellite orbits and inclination, important subsystems of the communication satellites and various international as well as national communication satellites have been extensively made.

A separate chapter is given for Indian activities in satellite communication. At the end of each chapter, appropriate reference are also given alongwith the review questions.

The present book has come up by way of my teaching for several years the satellite communication to both the undergraduate and postgraduate students of electronic and communication engineering of the Allahabad University. The book infact covers far from the syllabi of satellite communication prescribed by various

engineering colleges, IITs and IISc, Bangalore. In the preparation of manuscript I was greatly benefitted by discussions with several of my colleagues at Allahabad and also especially with Prof. V.N. Sinha of IIT, Kanpur, Prof. H.M. Gupta of IIT Delhi and Prof. R.K. Jha of IT, BHU. I would like to thank the library incharges of ITI, Naini and M.N.R. Engg. College, Allahabad for providing their excellent library facilities. Prof M.S. Bisht was kind to provide moral support. Finally I owe my special thanks to my wife Abha for always encouraging me to complete the writing work

—Dr. D.C. Agarwal

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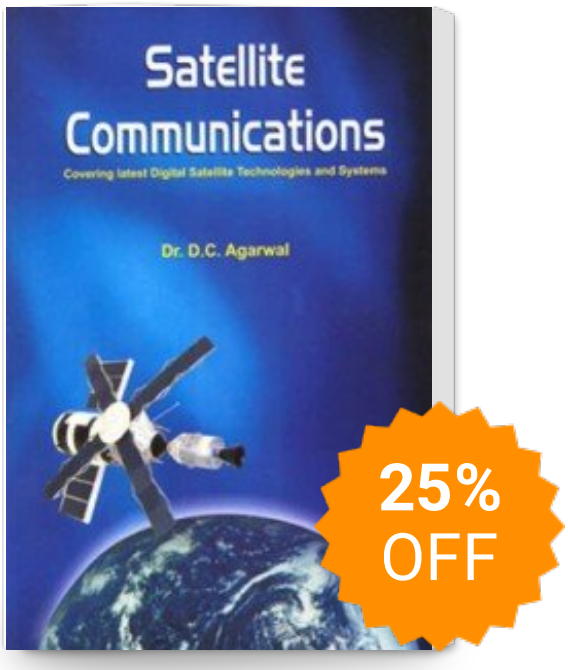

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