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COMMUNICATION NETWORK

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PREFACE

This book is written, as per the latest syllabus of Anna University, Chennai. The primary objective of this book is to introduce the concept, terminologies and technologies used in modern data communication and Communication Networking.

Strengthen the students' understanding of Communication Networks for the foundation they need to successfully design, implement and maintain virtually any Networking with this theoretical, yet practically. Review questions are given at the end of each unit.

Each concept is explained with pictorial representation in detailed manner. This book also includes previous year's Anna University question papers with answers.

Contents and Organization

Unit I discusses the introduction to fundamentals of data Communication & link layer it includes network requirements, reference models, and layer services.

Unit II discusses the media access & Internetworking, it covers Ethernet, wireless LANs, Bluetooth, zigbee and Network layer protocols

Unit III presents routing, its covers routing algorithms, IP addressing methods and intradomain and interdomain protocols

Unit IV presents the transport layer design issues, TCP, UDP, congestion control, Qos and sockets

Unit V discusses the application layer, it covers DNS, SMTP, WWW, SMTP, Security firewalls and introduction to Cryptography.

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SYLLABUS

EC8551-COMMUNICATION NETWORKS

UNIT I FUNDAMENTALS & LINK LAYER

Overview of Data Communications- Networks — Building Network and its types- Overview of Internet — Protocol Layering — OSI Mode — Physical Layer — Overview of Data and Signals — introduction to Data Link Layer — Link layer Addressing- Error Detection and Correction

UNIT II MEDIA ACCESS & INTERNETWORKING

Overview of Data link Control and Media access control — Ethernet (802.3) — Wireless LANs — Available Protocols — Bluetooth — Bluetooth Low Energy — WiFi — 6LowPAN-Zigbee — Network layer services — Packet Switching — IPV4 Address — Network layer protocols (IP, ICMP, Mobile IP)

UNIT III ROUTING

Routing — Unicast Routing — Algorithms — Protocols — Multicast Routing and its basics — Overview of Intradomain and interdomain protocols — Overview of IPV6 Addressing — Transition from IPV4 to IPV6

UNIT IV TRANSPORT LAYER

Introduction to Transport layer — Protocols- User Datagram Protocols (UDP) and Transmission Control Protocols (TCP) Services — Features — TCP Connection — State Transition Diagram — Flow, Error and Congestion Control — Congestion avoidance (DECBit, RED) — QoS — Application requirements


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UNIT V APPLICATION LAYER

Application Layer Paradigms — Client Server Programming — World Wide Web and HTTP — DNS- -Electronic Mail (SMTP, POP3, IMAP, MIME) — Introduction to Peer to Peer Networks — Need for Cryptography and Network Security — Firewalls.

TEXT BOOK:

1. Behrouz A. Forouzan, —Data communication and NetworkingI, Fifth Edition, Tata McGraw-Hill, 2013 (UNITI-V)

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1. James F. Kurose, Keith W. Ross, —Computer Networking - A Top-Down Approach Featuring the InternetI, Seventh Edition, Pearson Education, 2016.
2. Nader. F. Mir,— Computer and Communication NetworksI, Pearson Prentice Hall Publishers, 2nd Edition, 2014.
3. Ying-Dar Lin, Ren-Hung Hwang, Fred Baker, —Computer Networks: An Open Source ApproachI, Mc Graw Hill Publisher, 2011.
4. Larry L. Peterson, Bruce S. Davie, —Computer Networks: A Systems ApproachI, Fifth Edition, Morgan Kaufmann Publishers, 2011.

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