

# MCA-19 Data Communication and Computer Networks

## Unit 1: Introduction to Networking

Data communications, Networks, The Internet, Protocol & Standards

## Unit 2: Network Models

Layered tasks, Internet model, OSI model

## Unit 3: Physical layer

Signals: Analog and digital signals, data rate limits, Transmission impairment, Signal measurements like throughput, propagation speed and time, wave length

Digital Transmission: Line coding, block coding, sampling, transmission mode

Analog Transmission: Modulation digital data, telephone modem, Modulation analog signals

Multiplexing: FDM, WDM, TDM

Transmission Media: Guided media, unguided media

Circuit Switching & Telephone Network: Circuit switching, telephone network

## Unit 4: Data Link Layer

Error detection and Correction: Type of errors, detection and correction of errors

Data Link Control & Protocol: Flow & error control, Stop-And -Wait ARQ, Go-Back-N ARQ, Select Repeat ARQ, HDLC

Point-To-Point Access: Point-to-point protocol, PPP stack

Local Area Network: Traditional Ethernet, fast and gigabit Ethernets

Connecting LANs, Backbone Networks and Virtual LANs: Connecting devices, Backbone networks, Virtual LANs

## Unit 5: Network Layer

Internetworks, Addressing, Routing

Network Layer Protocols: ARP, IP, ICMP, IPV6

Unicast routing, Unicast routing protocols, Multi routing, Multicast routing protocols

## Unit 6: Transport Layer

Process-To-Process delivery, user data gram, Transmission control protocol

## Unit 7: Application Layer

Client-Server Model: Client-Server model, Socket interface

A brief introduction to DNS, SMTP, FTP

## Suggested readings:

1. A. S Tanenbaum, "Computer Networks, 3rd Edition", PHI
2. W. Stallings, "Data and Computer Communication", Macmillan Press
3. Comer, "Computer Networks & Internet", PHI.
4. Comer, "Internetworking with TCP/IP", PHI
5. Forouzan, "Data Communication and Networking", TMH