

BCA-14
DATA COMMUNICATION AND COMPUTER NETWORKS

Unit 1 : Basics of Computer Network

Computer Network: Definition, Goals, Structure; Broadcast and Point-To-Point Networks; Network Topology and their various Types; Types of Network: LAN, MAN, WAN; Server Based LANs & Peer-to-Peer LANs; Communications Types: Synchronous, Asynchronous; Modes of Communication: Simplex, Half Duplex, Full Duplex; Protocols and Standards

Unit 2 : Network Models

Design Issues of the Layer, Protocol Hierarchy, ISO-OSI Reference Model : Functions of each Layer, Various Terminology used in Computer Network, Connection-Oriented & Connectionless Services, Internet (TCP/IP) Reference Model, Comparison of ISO-OSI and TCP/IP Model

Unit 3 : Transmission Media

Transmission Media, Guided Media (Wired) : Coaxial Cable: Physical Structure, Standards, BNC Connector, Applications, Twisted Pair : Physical Structure, UTP vs STP, Connectors, Applications, Fiber Optics Cable: Physical Structure, Propagation Modes (Single Mode & Multimode), Fiber Sizes, Connectors , Applications , Advantages & Disadvantages; Unguided Media(Wireless): Electromagnetic Spectrum for Wireless Communication, Propagation Methods, (Ground, Sky, Line-of-Sight); Wireless Transmission: Radio Waves, Infrared, Micro-wave; Wireless LANs (IEEE 802.11), Architecture, MAC Sub Layer, Frame Format, Frame Types; Bluetooth, Architecture (Piconet, Scatternet, Bluetooth, Layers), Applications

Unit 4 : Network Connectivity Devices

Categories of Connectivity Devices, Passive and Active Hubs, Repeaters, Bridges, Switches (2-Layer Switch, 3-Layer, Switch(Router), Gateways, Network Security Devices (Firewalls, Proxy Servers)

Unit 5 : Components of LAN

Network Interface Card (NIC), Network Adapters, Components of NIC, Functions of NIC, Types of NIC; Ethernet : Basic Features, Types of Ethernet, Different Framer Format: IEEE 802.3, IEEE 802.4, IEEE 802.5

Unit 6 : Internet Basics

Internet:Growth, Architecture, Accessing, Internet Service Providers(ISP), Internet Addressing System:IP Address, DNS, URL; World Wide Web(WWW): Web Servers,Web Browsers, Search Engine; Concept of Intranet & Extranet.

Suggested Readings:

1. Tanenbaum, Andrew, Computer Networks, PHI
2. Forouzan Behrouz A., Tata Mcgraw Hill
3. Norton Peter, Complete Guide To Networking