

CAP476:DATA COMMUNICATION AND NETWORKING

L:2 T:0 P:0 Credits:2

Course Outcomes: Through this course students should be able to

CO1 :: understand the concepts of data flow and criteria for the selection of transmission medium.

CO2 :: observe the topologies used to connect variable nodes in a network or subnet.

CO3 :: interpret the working of the static and dynamic routing protocols to connect two or more networks.

CO4 :: analyze the working of various application services in the network communications.

Unit I

Network basics : data communication characteristics, components, data representation, transmission modes, network design, network classifications, protocols, layered architecture, OSI model, TCP/IP protocol suite, addressing mechanisms in layers

Unit II

Physical layer : unguided media, networking devices, analog and digital signals, data rate, transmission impairments, guided media

Unit III

Data link layer : type of errors, error detection and correction techniques, framing, data link layer protocols, flow and error control, stop-and-wait ARQ, go-back-n ARQ, selective repeat ARQ, multiple access control protocols, random access, controlled access, channelization

Unit IV

Network layer : classful addressing, public and private addresses, network address translation (NAT), static routing, dynamic routing, distance vector routing, RIP, link state routing, OSPF, default routing

Unit V

Transport layer : port addresses, socket address, user datagram protocol (UDP), transmission control protocol (TCP), 3-way handshaking, congestion control, quality of service, techniques to improve QoS

Unit VI

Application layer : domain name system (DNS), Dynamic Host Configuration Protocol (DHCP), remote logging, TELNET, electronic mail, file transfer, WWW, HTTP, simple network management protocol (SNMP), IPSec, VPN, firewalls

Text Books:

1. DATA COMMUNICATIONS AND NETWORKING WITH TCP/IP PROTOCOL SUITE by BEHROUZ A. FOROUZAN, MC GRAW HILL

References:

1. DATA AND COMPUTER COMMUNICATIONS BY WILLIAM STALLING, PEARSON EDUCATION INDIA by STALLINGS WILLIAM, PEARSON