CSE306:COMPUTER NETWORKS

L:3　T:0　P:0　Credits:3

Course Outcomes:　Through this course students should be able to

CO1 :: define network topologies, models and functionalities of different layers

CO2 :: explain data communication, transmission media and modulation at physical layer

CO3 :: identify error handling and use of multiple access protocols in a network.

CO4 :: demonstrate the concepts of classful and classless ip addressing scheme

CO5 :: analyze various routing protocols and congestion control mechanisms

CO6 :: illustrate the services provided by transport and application layer

Unit I

INTRODUCTION : Network software architecture and its layers and protocols, Network hardware architecture and its topologies and device like HUB, Switch and Routers, Uses of Computer Networks, Networks and Types, Introduction to internet, browser, web server, URL, domain name, IP address, packets

NETWORK MODELS : Protocol Layering, TCP/IP protocol suite, OSI Model

Unit II

PHYSICAL LAYER: Signal & Media : Basics for Data Communications and Analog and Digital signals, Transmission Impairments and Performance, Data Rate, Transmission media like Guided and Unguided media, Cabling standards

PHYSICAL LAYER: Modulation & Multiplexing : Digital to Digital Conversion, Analog to Digital Conversion, Analog to Analog conversion, Digital to Analog conversion, Multiplexing

Unit III

DATA LINK LAYER : Data link Layer design issues, Elementary Datalink Protocols, Error Detection and Correction- Hamming code, CRC, Parity, Checksum, Switch working

MAC SUBLAYER : Multiple Access Protocols- ALOHA, CSMA and CSMA/CD, Random Access, Controlled access, Ethernet protocol

Unit IV

NETWORK LAYER: IP Addressing : Network layer design issue, IP Addressing Both Classfull and Classless, Subnetting and Supernetting, Subnetting examples, Network layer services, Network layer performance, Forwarding of IP packets, IP Header, IPv6 addressing

Unit V

NETWORK LAYER: Routing : Routing Algorithm-Shortest path algorithm, Distance vector Routing, Link State routing, Routing algorithms, Unicast routing protocols

NETWORK LAYER: Congestion Control : Congestion Control Algorithms

Unit VI

TRANSPORT LAYER : Transport Layer Services, TCP- Header format and handshaking operation, UDP- Header format

APPLICATION LAYER : Domain Name System, E Mail, FTP

Text Books:
1. DATA COMMUNICATIONS AND NETWORKING WITH TCPIP PROTOCOL SUITE by BEHROUZ A. FOROUZAN, Tata McGraw Hill, India

References:
1. COMPUTER NETWORKS by ANDREW S. TANENBAUM, PEARSON