CSE306:COMPUTER NETWORKS

Course Outcomes: Through this course students should be able to

CO1 :: describe the importance of data communications and the Internet in supporting business communications and daily activities

CO2 :: differentiate different types of network devices and their functions within a network

CO3 :: examine the practical utilization of networking standards and protocols in relevant scenarios

CO4 :: categorize routing protocols and congestion control mechanism pertaining to functionality

CO5 :: discover the basic protocols of computer networks, and how they can be used to assist in network design and implementation

CO6 :: evaluate sub-network using classful and classless addressing scheme

Unit I

INTRODUCTION : Networks and Types, Uses of Computer Networks, Network software architecture and its layers and protocols, Network hardware architecture and its topologies and device like HUB, Switch and Routers

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

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 by BEHROUZ FOROUZAN, MCGRAW HILL EDUCATION

References:

1. COMPUTER NETWORKS by ANDREW S. TANENBAUM, PEARSON