2/3 MCA First Semester

CA3T5 **COMPUTER NETWORKS** **Credits : 4**

Lecture Hours : 4 periods / week Internal assessment : 30 Marks

Semester and Examination: 70 Marks

Course Objective:

The course computer networks aims within the context of the Layers. It provides state-of-the-art in network protocols, architectures, and applications. It shows the operations between one layer to another layer. It provides the performance of a given set of routing protocols and queuing mechanisms.

Course Description:

- Understand state-of-the-art in network protocols, architectures, and applications.
- Process of networking research Constraints and thought processes for networking research
- Problem Formulation—Approach—Analysis—Results
- Illustrate the operation of common routing protocols, queuing mechanisms, and congestion control mechanisms;
- It develop elements of a network such as gateways and routers.
- Explain the performance of a given set of routing protocols, queuing mechanisms, and congestion control mechanisms on an example network

UNIT I:

Introduction: Uses of Computer Networks, OSI, TCP/IP and other networks models, Examples of Networks: Novell Networks , Arpanet, Internet, Network Topologies WAN, LAN, MAN.

UNIT II:

Physical Layer: Transmission media, wireless Transmission, switching and encoding asynchronous communications; Narrow band, broad band ISDN and ATM.

UNIT III :

Data link layer: Design issues, error detection and correction, Elementary Protocol, Sliding Window Protocol, Data link layer in HDLC, Internet & ATM.

UNIT IV:

Medium Access sub layer: ALOHA, MAC addresses, Carrier sense multiple access protocols, IEEE 802.X Standard, Bridges, High Speed LANS.

UNIT V:

Network Layer: Virtual circuit and Datagram subnets-Routing algorithm shortest path routing, Flooding, Hierarchical routing, Broad cast, Multi cast, distance vector routing.

UNIT VI:

Congestion Control Algorithms – Broadcast routing. Rotary for mobility. General Principles – of Congestion prevension policies. Internet working: The Network layer in the internet and in the ATM Networks.

UNIT VII :

Transport Layer: Transport Services, Connection management, TCP and UDP protocols; ATM AAL Layer Protocol.

UNIT VIII :

Application Layer – Network Security, Domain name system, SNMP, Electronic Mail; the World WEB,

Multi Media.

Learning Resources

Text Books:

1. Computer Networks — Andrew S Tanenbaum, . Pearson Education, 3/e, 2009.
2. Data Communications and Networking – Behrouz A. Forouzan.TMH, 3/e, 2003.

References Books:

1. An Engineering Approach to Computer Networks-S.Keshav, Pearson Education 2/e,
2. Understanding Data Communications and Networks, W.A. Shay, 3/e.2004.
3. Computer Networks — Andrew S Tanenbaum. Pearson Education. 4/e.2009