

Semester-II, Paper-2
COMPUTER NETWORKING

Teaching Scheme:

Lectures: 4 Hrs / Week

Practical: 2 Hrs / Week

Examination Scheme:

Theory Paper: 100 Marks

Term Work: 25 Marks

Unit 1.

(10 Hrs, 20 Marks)

Introduction in Computer Networks and Devices, Structure of communication network, Point to point and multidrop circuits, Network topologies, Hub, switch, router, bridges, additional network components. Network Models. Network software, OSI reference model, TCP/IP reference model, and comparison of OSI and TCP/IP model.

Unit 2.

(10 Hrs, 20 Marks)

Physical Layer: Transmission media, wireless transmission, geostationary communication satellite, modems, RS – 232C serial interface, SONET/SDH.

Data Link layer: Data Link layer design issues, Error detection and correction, Elementary data link layer protocols, Sliding window protocols, SDLC and HDLC

Unit 3.

(10 Hrs, 20 Marks)

Medium Access Sub layers: The Channel allocation problem, multiple access protocols, Ethernet, Bluetooth, Bridges, High speed LAN's.

Network Layer: Need of Network layer, Network layer design issues, routing algorithms, congestion control algorithms.

Unit 4.

(10 Hrs, 20 Marks)

Internet Working: Concatenated virtual circuits, connectionless internetworking, tunneling, Internet work, routing, fragmentation, and firewalls. Internet and its main applications, Broadband, ISDN and ATM and its reference model.

Internet Protocols: IPv4, IPv6, IP address, Internet control protocols – ICMP, ARP, RARP.

Unit 5.

(10 Hrs, 20 Marks)

Transport Layer: Transport service, Elements of transport protocols, The internet transport protocols – UDP, TCP –Introduction, Services, TCP segment header, connections, Transmission policy and congestion control.

Application Layer: DNS – Domain name system, Electronic mail, World Wide Web, Multimedia.

References:

1. Computer Networks, “Andrew S. Tanenbaum”, 4th edition, Pearson LPE /PHI.
2. Data Communications and Networking, “Behrouz Forouzan”, TMH, 4th Ed.
3. Data Communication and Networks:An Engg. Approach, “Irvine”, Wiley India
4. An Engineering Approach to Computer Networking, “S. Keshav”, Pearson Education, 5th Ed.
5. Computer Networks:Principles,Technologies and Protocols, “Irvine Olifer”, Wiley India.

List of Experiments:

1. Study of network resources and various components.
2. Use of RS – 232C for character transfer (Half duplex, Full duplex)
3. Use of RS – 232C for file transfer between two personal computers (Half duplex, Full duplex)
4. Sliding window protocols using RS 232c.
5. Interconnection of personal computers and PSTN (Public switching Telephone Networks) using MODEMS.
6. Data transfer and sharing resources in LAN.
7. Study of WAN.
8. Study of various application like Electronic mail, E- commerce, WWW.