BCA (HONS) 3rd SEMESTER
DISCIPLINE SPECIFIC COURSE (CORE)

BCA320C3: COMPUTER NETWORKS

CREDITS: THEORY: 4; PRACTICAL: 2
MAX. MARKS: THEORY: 60; PRACTICAL: 30
MIN. MARKS: THEORY: 24; PRACTICAL: 12

UNIT-I

1. Introduction to Computer Networks (7 Lectures)

Network definition; network topologies; network classifications; network protocol; layered network architecture; overview of OSI reference model; overview of TCP/IP protocol suite.

2. Data Communication Fundamentals and Techniques (8 Lectures)

Analog and digital signal; data-rate limits; digital to digital line encoding schemes; pulse code modulation; parallel and serial transmission; digital to analog modulation-; multiplexing techniques- FDM, TDM; transmission media.

UNIT-II

3. Networks Switching Techniques and Access mechanisms (7 Lectures)

Circuit switching; packet switching- connectionless datagram switching, connection-oriented virtual circuit switching; dial-up modems; digital subscriber line; cable TV for data transfer.

4. Data Link Layer Functions and Protocol (8 Lectures)

Error detection and error correction techniques; data-link control- framing and flow control; error recovery protocols- stop and wait ARQ, go-back-n ARQ; Point to Point Protocol on Internet.

UNIT-III

5. Multiple Access Protocol and Networks (7 Lectures)

CSMA/CD protocols; Ethernet LANS; connecting LAN and back-bone networks- repeaters, hubs, switches, bridges, router and gateways;

6. Networks Layer Functions and Protocols (8 Lectures)

Routing; routing algorithms; network layer protocol of Internet- IP protocol, Internet control protocols.

UNIT-IV

7. Transport Layer Functions and Protocols (8 Lectures)

Transport services- error and flow control, Connection establishment and release- three way handshake;

8. Overview of Application layer protocol (7 Lectures)

Overview of DNS protocol; overview of WWW &HTTP protocol.

REFERENCE BOOKS

1. B. A. Forouzan: Data Communications and Networking, Fourth edition, THM, 2007.
2. A. S. Tanenbaum: Computer Networks, Fourth edition PHI, 2002

LAB: COMPUTER NETWORKS **LAB: 2 CREDITS; 60 LECTURES**

1. Simulate Cyclic Redundancy Check (CRC) error detection algorithm for noisy channel.
2. Simulate and implement stop and wait protocol for noisy channel.
3. Simulate and implement go back n sliding window protocol.
4. Simulate and implement selective repeat sliding window protocol.
5. Simulate and implement distance vector routing algorithm.
6. Simulate and implement Dijkstra algorithm for shortest path routing.