BANGALORE INSTITUTE OF TECHNOLOGY
DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

SUBJECT: DATA COMMUNICATIONS **SUBJECT CODE: 17CS46**
SEM : 4TH **FACULTY: PRASHANTH KUMAR K N**

MODULE WISE QUESTIONS

Module 1

1. What is Data Communication? Explain the fundamental characteristics and components of a data communication system.
2. Explain the different ways of Data Flow with an example.
3. Define Network. Explain the different Network Criteria.
4. Define Topology. Explain the different kinds of topologies with advantages and disadvantages of each.
5. Write short notes on LAN and WAN.
6. Difference between LAN and WAN.
7. Explain
    a. Circuit Switched networks
    b. Packet Switched networks
8. Write short notes on
    a. The Internet
    b. Internet History
    c. Birth of Internet
    d. Internet Today
9. Explain Standards and Administration.

10. With the neat diagram explain the TCP/IP protocol suite mentioning the different layers and their functions in TCP/IP.

11. Explain the concept of encapsulation and decapsulation with neat diagram.

12. Explain the reason for the lack of OSI model success.

13. Explain the different modes of transmission of digital signals

14. Mention and explain the reasons the causes of impairment of transmission of signals through transmission media

15. Explain the parameters which affect the Performance.

16. Write short notes on Latency.

Module 2

1. What is Line Coding? Explain with example the different Line coding schemes used for

digital to digital conversion.

2. Explain Pulse Code Modulation in detail?
3. Explain the different mechanisms for modulating digital data into an analog signal.
4. Explain the Transmission Modes.
5. When is the use of Multiplexing justified? Mention and explain different types of multiplexing.
6. Describe the different switched networks used in computer networks, mentioning specifically which of these need setup, transfer and teardown phase.
7. What is the concept of Spread Spectrum? Explain Frequency Hopping Spread Spectrum (FHSS)
8. Explain the Direct Sequence Spread Spectrum (DSSS)
9. Distinguish between Circuit Switched Network and Virtual Circuit Networks.
10. Explain Synchronous and Statistical TDM.

Module 3

1. Describe different types of errors.
2. Explain with example error detection with respect to block coding.
3. Infer the meaning of hamming distance? Explain the block diagram of simple parity check code C (5, 4) with dmin = 2.
4. Draw a CRC encoder and decoder for CRC code with C (7, 4). Also explain how CRC design works, with an example.
5. Find the code word c(x), using CRC for the information d(x) = x3 + 1 with generator polynomial t(x) = x3 + x + 1
6. Find the code word, using CRC given data word "1001" and generator "1011".
7. Explain Checksum with an example.
8. What is internet checksum? With an example list the steps done by the sender and the receiver for error detection.
9. Briefly explain the forward error correction.
10. What is a High – level Data Link Control (HDLC) protocol? Indicate in diagrammatic form, the frame format of different HDLC frames.
11. What is framing? Explain
    a. Character Oriented framing
    b. Bit oriented framing.
12. Explain
    a. Simple Protocol
    b. Stop and Wait Protocol
13. Explain PPP and Transition Phases

Module 4

1. What is random access? Explain following random access protocols.
    a. Pure ALOHA
    b. Slotted ALOHA

2. Explain the following random access protocols along with the neat flow diagram.
    a. CSMA
    b. CSMA/CD
    c. CSMA/CA
3. Explain any two popular controlled access methods, with a neat diagram.
4. Explain the following channelization techniques.
    a. FDMA
    b. TDMA
    c. CDMA
5. Discuss IEEE 802.3 MAC frame format. Mention the restriction imposed on minimum and maximum lengths of an 802.3 frame.
6. Write short notes on four of the popular standard Ethernet common implementations.
7. Explain the IEEE 802.11 architecture.
8. Discuss the IEEE 802.11 MAC layer frame format along with the addressing mechanisms.
9. Explain the hidden station and exposed station problem in IEEE 802.11.
10. Explain the architecture of Bluetooth.
11. Explain Bluetooth Layers.

Module 5

1. Write short notes on
    a. WiMAX
    b. Cellular Telephony
    c. Satellite Networks
2. Explain IPv4 datagram format (along with options explanation)
3. Write short notes on ICMPv4 and ICMPv6 messages.
4. Explain the following debugging tools
    a. PING
    b. Tracert
5. Explain the concept of Mobile IP.
6. Explain the IPv6 addressing mechanisms.
7. Explain the advantages of IPv6 over IPv4
8. Explain the IPv6 Packet format.
9. Explain the different methods of transition from IPv4 to IPv6

Faculty-Incharge

Course Co-ordinator **Module Co-ordinator** **IQAC** **Programme Co-ordinator**