

B.E. PRINTING ENGINEERING - FOURTH YEAR - 1st SEM

Subject Code: Ex/PRN/PC/B/CSE/T/414/2025

Subject: DATA COMMUNICATION AND NETWORKING

Time: Three hours

Full Marks:100

Group-A (Answers any five questions)

- (1) What is fixed size and Variable size framing? (2)
- (2) Write the difference between FDM and TDM. (2)
- (3) What is flow control? (2)
- (4) Convert the IPv4 address from binary to dotted decimal notation (10000101 00001100 10001011 11101101) (2)
- (5) Describe sliding window protocol using diagram. (2)
- (6) What is the relationship between period and frequency? (2)
- (7) What are the difference between Bit error and Burst error? (2)
- (8) Write the name of browser protocol with full form. (2)
- (9) How frame is formed in OSI layer? (2)
- (10) Packet is formed in which layer in OSI model (2)

Group-B (Answers any Six questions)

1. (a) Find out codeword of message bit $(101011)_2$ using Hamming Code. (5)
(b) If the received data (using Hamming Code) in the receiver side be (01100101010). Check whether any error occurs or not. Further find out the correct message bit. (5+2)
(c) Find the hamming distance between each pair of following codes: 11011011, 11101111, 10011110, 00110011. (3)
2. (a) What is point to point & multipoint communication (2)
(b) Write the advantage of Hybrid topology. (3)
(c) Write the difference between Coaxil cable & Twisted Pair cable. (3)
(d) The period of a signal is 20 msec. What is its frequency in hertz? (2)
(e) Write the function of different OSI Model. (5)
3. (a) Explain what are the different components required in data communication? (5)
(b) Compare the TCP/IP and UDP. (4)
(c) Write the difference between LAN & WAN. (3)
(d) Assume 9 devices are arranged in a mesh topology. How many cables and no of ports are required for this arrangement. (3)
4. (a) Draw and explain four basic network topologies. (5)
(b) We have two computers connected by an Ethernet hub at home. Is this a LAN or WAN? Explain the reason. (3)
(c) Write the difference between UTP and STP. (4)

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- (d) Write the difference between simplex, Half Duplex, Full Duplex. (3)
5. (a) Draw the graph of the data stream 01010101 using polar NRZ, unipolar RZ, Polar RZ, Bipolar RZ and Manchester. (10)
(b) Describe Stop-And-Wait ARQ Protocol using different cases. (5)
- 6.(a) Station A needs to send a message consisting of 9 packets to station B using a sliding window (window size is 3) & Go-Back- N-Error control strategy. All packets are ready and immediately available for transmission. If every 5th pack that A transmits gets lost (but no ACKs from B ever get lost) then what is the number of packets that A will transmit for sending the message to B? (Solve using line diagram) (10)
(b)What is RTT? (2)
(c) Convert the IPv4 address from dotted decimal to binary notation 125.25.19.7 (3)
7. (a) Find the CRC for the data blocks 100100 with the divisor 1101? (5)
(b) Consider the data unit to be transmitted is 10011001 11100010 00100100 10000100. It is divided in equal distribution. Find out the checksum of this data unit. (5)
(c) What is bandwidth? (2)
(d) How detect the received message is correct or not in LRC process. (3)