



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal-500043, Hyderabad

B.Tech IV SEMESTER END EXAMINATIONS (REGULAR / SUPPLEMENTARY) - AUGUST 2023

Regulation: UG-20

COMPUTER NETWORKS

Time: 3 Hours

COMMON TO to CSE(CS) | IT

Max Marks: 70

Answer ALL questions in Module I and II

Answer ONE out of two questions in Modules III, IV and V

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

MODULE – I

- (a) Describe TCP/IP model. Explain the functions and protocols and services of each layer? Compare it with OSI model. [BL: Understand| CO: 1|Marks: 7]
- (b) Calculate propagation time and transmission time for 2.5 Kbyte message and network bandwidth of 1 GBPS. Distance between two end points are 12000 km and light travels at speed of 2.4×10^8 m/s. [BL: Apply| CO: 1|Marks: 7]

MODULE – II

- (a) Outline about link layer addressing in detail. How IP address and link layer address in a small internet? [BL: Understand| CO: 2|Marks: 7]
- (b) A user wants to transmit the message 11001001 and protect it from errors using the CRC-8 polynomial $x^3 + 1$. Use polynomial long division to determine the message that should be transmitted. [BL: Apply| CO: 2|Marks: 7]

MODULE – III

- (a) Discuss the design issues of network layer. Demonstrate the IP packet format with a neat sketch. [BL: Understand| CO: 3|Marks: 7]
- (b) Create a datagram table using a link state algorithm for all the nodes of the graph shown in Figure 1 to find a least cost path. [BL: Apply| CO: 3|Marks: 7]

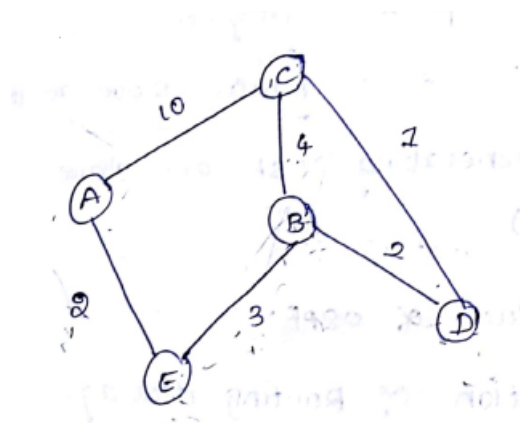


Figure 1

4. (a) How many types of frames HDLC uses? Explain briefly. Differentiate between IPv4 and IPv6 with its detailed sketch. [BL: Understand| CO: 4|Marks: 7]
- (b) An organization is granted the block 130.34.12.64/26. The organization needs four subnetworks, each with an equal number of hosts. Design the subnetworks and find the address allocation information about each network. [BL: Apply| CO: 4|Marks: 7]

MODULE – IV

5. (a) Enumerate the mechanism of three way handshake protocol to establish the transport level connection. [BL: Understand| CO: 5|Marks: 7]
- (b) Summarize about TCP sliding window algorithm for flow control. A TCP machine is sending windows of 65535 B over a 1 Gbps channel that has a 10 msec one way delay.
- i) What is the maximum throughput achievable?
- ii) What is the line efficiency? [BL: Apply| CO: 5|Marks: 7]
6. (a) Explain the following
- i) User datagram protocol (UDP)
- ii) Congestion avoidance techniques [BL: Understand| CO: 5|Marks: 7]
- (b) What is multiplexing and de-multiplexing and why it is required? Discuss the working with respect to connection oriented and connectionless with an example. [BL: Apply| CO: 5|Marks: 7]

MODULE – V

7. (a) Give the objectives and mechanism of file transfer protocol (FTP). Illustrate the FTP with a neat diagram. [BL: Understand| CO: 6|Marks: 7]
- (b) State the features of HTTP and also discuss how HTTP works? Enumerate the methods of HTTP. [BL: Apply| CO: 6|Marks: 7]
8. (a) Outline domain name service (DNS) and explain in detail about the domain hierarchy and name servers? [BL: Understand| CO: 6|Marks: 7]
- (b) Show the sequence of bits sent from a client TELNET for the binary transmission of 11110011 00111100 11111111 [BL: Apply| CO: 6|Marks: 7]

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