



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal-500043, Hyderabad

B.Tech V SEMESTER END EXAMINATIONS (REGULAR/ SUPPLEMENTARY) - FEBRUARY 2024

Regulation: UG20

COMPUTER NETWORKS

(COMMON TO CSE | CSE (AI&ML) | CSE (DS) | CSIT)

Time: 3 Hours

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

1. (a) State how the nodes are interconnected using relationship of connecting each other. Explain any two approaches with a neat diagram. [BL: Understand| CO: 1|Marks: 7]
- (b) Suppose A wants to send a message to B through the communication medium using TCP/IP layered architecture. Draw a layered diagram which connects A and B by accessing link device and routers. [BL: Apply| CO: 1|Marks: 7]

MODULE – II

2. (a) How performance is improved in CSMA/CD protocol compared to CSMA protocol? Explain. [BL: Understand| CO: 2|Marks: 7]
- (b) One of the addresses in a block is 167.199.170.82/27. Find the number of addresses in the network, the first address, and the last address. [BL: Apply| CO: 2|Marks: 7]

MODULE – III

3. (a) Classify various types of adaptive algorithms. Explain the IPV4 datagram format with its neat structure. [BL: Understand| CO: 3|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 subnet works and find the address allocation information about each network. [BL: Apply| CO: 3|Marks: 7]
4. (a) Discuss internet control message protocol (ICMP) as error reporting and query message. [BL: Understand| CO: 4|Marks: 7]
- (b) Change the following IPv4 addresses from binary notation to dotted-decimal notation and vice versa.
 - i) 10000001 00001011 00001011 11101111
 - ii) 11000001 10000011 00011011 11111111
 - iii) 111.56.45.78
 - iv) 221.34.7.82[BL: Apply| CO: 4|Marks: 7]

MODULE – IV

5. (a) List out functions and duties of transport layer. Explain in detail about the features of it.
[BL: Understand| CO: 5|Marks: 7]
- (b) The following is the content of a UDP header in hexadecimal format.
The content is “CB84000D001C001C”. Find answer for the following questions.
- i) Source port number
 - ii) Destination port number
 - iii) Total length of the user datagram
 - iv) Length of the data
 - v) Is the packet directed from client to server or vice versa
 - vi) Client process. [BL: Apply| CO: 5|Marks: 7].
6. (a) Classify the network performance characteristics. Describe the TCP segment format in detail with its neat diagram. [BL: Understand| CO: 5|Marks: 7]
- (b) Find the suitable policy for handling congestions when the size of congestion window is increased exponential order ($2^0, 2^1, 2^2 \dots$). [BL: Apply| CO: 5|Marks: 7]

MODULE – V

7. (a) Distinguish between FTP and HTTP. Draw the basic model of FTP and explain its function in detail. [BL: Understand| CO: 6|Marks: 7]
- (b) Apply the steps to establish the connection using persistent connections in HTTP and explain the handshake process for accessing an image and text file with an example.
[BL: Apply| CO: 6|Marks: 7]
8. (a) Discuss the concept and working functionality of local and remote logging using TELNET.
[BL: Understand| CO: 6|Marks: 7]
- (b) Describe the working of electronic mail. Derive how SMTP is used in Email applications with neat sketch. [BL: Apply| CO: 6|Marks: 7]

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