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VI SEMESTER | **B.Tech. [MCE]**

END TERM EXAMINATION | ***May-2024***

MC308 COMPUTER NETWORKS

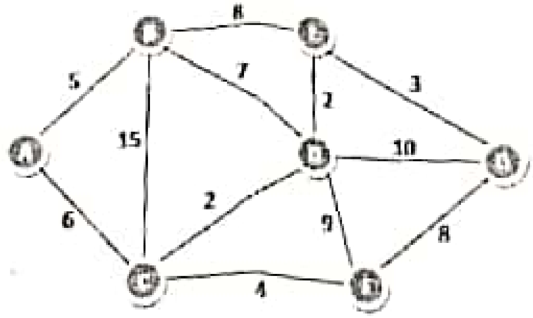
Time: 3:00 Hours | ***Max. Marks: 50***

Note : Answer all the questions.
Assume suitable missing data, if any.

Q.1 Explain the IPv4 packet header in detail. [5][CO5][L2]

Q.2 Demonstrate the parity check and checksum error detection techniques with the help of an example. [5][CO6][L3]

Q.3 Analyse the following weighted graph to find the shortest path from node A to node G by step-wise performing Dijkstra's algorithm. State the shortest path and the cost to traverse it. Also, illustrate the resultant graph. [5][CO5][L4]



Q.4 Determine various congestion control techniques in a datagram subnet. [5][CO3][L3]

Q.5 [a] Compare and differentiate between TCP and UDP. [2][CO3][L5]

[b] Determine how the transport layer ensures that the complete message arrives at the destination and in the proper order. [3][CO3][L3]

Q.6 Answer ***any One*** of the following:

[a] Explain various control flags in the TCP segment header.

[5][CO3][L2]

[b] Explain various design issues in the Session layer.

[5][CO2][L2]

Q.7 An ISP is granted a block of 65,536 addresses starting with 190.100.0.0/16. The ISP needs to distribute these addresses to three groups of customers as follows:

a) The first group has 64 customers; each needs 256 addresses

b) The second group has 128 customers; each needs 128 addresses

c) The third group has 128 customers; each needs 64 addresses

Generate the subblocks and find out how many addresses are still available after these allocations. **[5][CO5][L6]**

Q.8 [a] Apply the LZ encoding technique step by step to compress the character sequence "AAABBBCCCABCBA". **[5][CO4][L3]**

[b] Determine the binary encoding of the message "HEADACHE" after performing Huffman coding for the following characters with the corresponding frequencies: **[5][CO4][L3]**

Character	A	B	C	D	E	F	G	H
Frequency	75	11	39	30	146	33	48	41

Q.9 Answer ***any One*** of the following:

[a] Illustrate and explain the working of the Domain Name System.

[5][CO1][L4]

[b] Discuss the message transfer protocols in the Application layer.

[5][CO3][L2]