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**Fifth Semester B.E. Degree Examination, Dec.2024/Jan.2025**  
**Computer Networks and Security**

Time: 3 hrs.

Max. Marks: 100

**Note:** Answer any FIVE full questions, choosing ONE full question from each module.

**Module-1**

- 1 a. With neat diagram, explain HTTP Request and Response messages. (10 Marks)  
 b. Illustrate the basic operations of SMTP with diagram. (10 Marks)

**OR**

- 2 a. Explain FTP with its commands and replies. (10 Marks)  
 b. With a diagram, explain the interaction of various DNS servers. (10 Marks)

**Module-2**

- 3 a. Describe the various fields of UDP segment. Explain how checksum is calculated. (10 Marks)  
 b. With a diagram, explain the FSM for sender and receiver side of rdt 2.0 protocol. (10 Marks)

**OR**

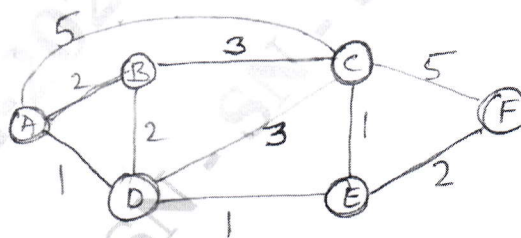
- 4 a. Explain 2 way handshake and closing a TCP connection with diagram. (10 Marks)  
 b. With neat diagram, explain TCP segment structure and its field. (10 Marks)

**Module-3**

- 5 a. With diagram, explain router architecture. (06 Marks)  
 b. With general format, explain various fields of IPV6 datagram. (08 Marks)  
 c. Compare IPV4 and IPV6 datagram. (06 Marks)

**OR**

- 6 a. Write the link state algorithm and apply it to the following graph with source node A. (10 Marks)



- b. Briefly illustrate the Routing Information Protocol (RIP). (06 Marks)  
 c. Briefly explain the Border Gateway Protocol (BGP). (04 Marks)

**Module-4**

- 7 a. What are the elements of Network security? Explain the threats to Network security. (08 Marks)  
 b. Discuss about : i) Cryptographic technique ii) Authentication technique. (06 Marks)  
 c. Briefly explain the steps of DES algorithm. (06 Marks)

OR

- 8 a. Explain RSA algorithm using RSA algorithm encrypt a message  $m = 9$ . Assume  $P = 5$  and  $q = 11$ . Find the public and private keys and also show the cipher text. (10 Marks)
- b. Discuss the following : i) Secure Hash Algorithm ii) Firewalls. (10 Marks)

Module-5

- 9 a. Briefly explain the properties of Audio and Video. (08 Marks)
- b. List the categories of streaming of stored video and explain any one. (08 Marks)
- c. Classify the multimedia network applications. (04 Marks)

OR

- 10 a. With neat diagram, explain CDN operations. (10 Marks)
- b. With general format, explain the various fields of RTP header. (10 Marks)

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