MASTER OF COMPUTER APPLICATIONS (MCA-NEW)

Term-End Examination

June, 2022

MCS-218 : DATA COMMUNICATION AND COMPUTER NETWORKS

Time : 3 hours *Maximum Marks : 100*

Note : *Question no.* ***1*** *is* ***compulsory*** *and carries 40 marks. Attempt any* ***three*** *questions from the rest.*

1. (a) What is meant by CRC ? Write the following bitstring in polynomial representation : *4*

"1100010"

(b) What are Wireless LANs ? Discuss the disadvantages of using radio transmitters. *5*

(c) What is Transmission Media ? Compare optical fiber with copper wire. *5*

(d) What is meant by burst error ? How can burst errors be corrected ? *5*

(e) Explain the three types of internetwork addresses with a suitable example for each. *5*

(f) Explain the concept of Diffie-Hellman key generation. Generate public and private key pairs using RSA algorithm using 7 and 11 as two prime numbers. *6*

(g) Differentiate between PSK and FSK modulation techniques. Explain the term "Quantization". *5*

(h) Draw IPv4 header structure and explain the significance of Fragment offset. *5*

2. (a) What is encoding ? Explain digital-to-digital encoding with an example. *5*

(b) Explain the characteristics of Wide Area Network (WAN). Differentiate between client-server and peer-to-peer architecture. *10*

(c) Discuss the importance of multiplexing. List the basic multiplexing techniques. *5*

3. (a) What is checksum ? Explain the features of sliding window protocol. *5*

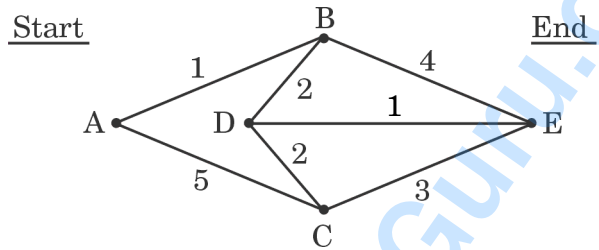
(b) What is pipelining ? Explain stop and wait ARQ when 'ACK' is lost, with the help of a diagram. *5*

(c) Briefly discuss the terms CSMA and CSMA/CD. Explain Ethernet frame format IEEE 802.3. *5*

(d) Explain the utility of Spanning Tree and Source Routing Bridges in computer networks. *5*

4. (a) What is a MAC address ? Compare virtual circuit and datagram subnets. *5*

(b) Find the shortest route between points 'A' and 'E' in the graph given below : *7*



(c) Explain Token Bucket Traffic Shaper with a suitable diagram. *3*

(d) What is meant by fragmentation ? Compare Interior and Exterior gateway routing protocols. *5*

5. (a) Define handshaking protocol. What are the types of services provided by the transport layer ? *5*

(b) What is Nagle's Algorithm ? Explain TCP connection establishment in normal operation. *5*

(c) What is a Feistel network ? Write short notes on Modes of Operation (CBC and OFB). *5*

(d) What is a Virtual Private Network (VPN) ? Write the salient features of X.509 certificates. *5*