Printed Pages:02 **Sub Code:KCA-303**

Paper Id: | 2 | 3 | 2 | 3 | 0 | 1 | **Roll No.** | | | | | | | | | | | | |

MCA
(SEM III) THEORY EXAMINATION 2022-23
COMPUTER NETWORKS

Time: 3 Hours ***Total Marks: 100***

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

(a) List out components of data communication system.
(b) Discuss various transmission modes.
(c) Discover how many times a packet has to visit the network layer and data link layerduring a transmission from S to D? Assume that Source S and Destination D areconnected through an intermediate router R.
(d) Discuss CSMA/CD.
(e) Discuss Dynamic Host Configuration Protocol(DHCP).
(f) Explain Round-Trip Time (RTT).
(g) Describe sockets with respect to communication system.
(h) What is three-way handshaking?
(i) Discuss role of SMTP in email communication system.
(j) Define cookies with respect to computer networks.

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

(a) Discuss various computer network topologies with suitable diagrams.
(b) A bit stream 10011101 is transmitted using the standard CRC method. The generator polynomial is x^3 + 1. Show the actual bit string transmitted. Suppose the third bit from the left is inverted during transmission. Show that this error is detected at the receiver's end.
(c) Consider an IP address 196.10.19.10 /26. Solve the following:
  (i) Network Address
  (ii) Custom subnet mask
  (iii) Total Number of available subnets
  (iv) Total number of host addresses
  (v) e. Subnet address and broadcast address of every subnet.
(d) Justify the statement "TCP is reliable than UDP". Also elaborate format for TCP packet.
(e) Write short notes on any two:
  (i) Domain Name Systems
  (ii) Telnet
  (iii) FTP

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) Discuss various types of transmission media with their applications areas.
(b) Explain responsibilities each layer in ISO/OSI Model with suitable diagrams.

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain Selective Reject and Go-Back-N-ARQ with reference to sliding window protocol.

(b) What do you mean error handling at data link layer? Discuss hamming code with suitable example.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) What is need of IP address? Discuss Classful addressing in IPv4.

(b) Discuss IPv4 packet format with suitable diagram the at network layer.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Differentiate between Open Loop and Closed Loop Congestion Control at transport layer.

(b) Explain various traffic shaping algorithms.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) Define network security and discuss various network security services in computer networks.

(b) Discuss E-mail architectures with its components.