No. of Printed Pages : 4 **MCS-042**

MASTER OF COMPUTER

APPLICATIONS (MCA) (REVISED)

Term-End Examination

June, 2021

MCS-042 : DATA COMMUNICATION AND COMPUTER NETWORKS

Time : 3 Hours *Maximum Marks : 100*

Note : (*i*) *Question No.* **1** *is compulsory.*

(*ii*) *Attempt any* **three** *questions from the rest.*

1. (a) What is delay in data transmission ? Differentiate between transmission delay and propagation delay. 5

   (b) What is multiplexing ? Explain any *two* advantages of frequency division multiplexing with the help of a diagram. 5

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(c) Define Forward Error Correction (FEC). Explain 'Hamming Code' with the help of an example. 5

(d) Describe, how parity check method is used for error detection using an example. 5

(e) Explain the flow control mechanisms used in Data-Link Layer and in Transport Layer. 10

(f) Which layer in TCP/IP model is mainly responsible for congestion control ? How is it different from flow control ? 5

(g) Define User Datagram Protocol (UDP). Draw the UDP header format and explain the use of any *two* fields in this header. 5

2. (a) What is Remote Procedure Call (RPC) ? Explain the working of RPC with the help of a diagram. 10

(b) Explain, what should be the minimum sampling interval needed for reconstructing a signal where the highest frequency is 2 kHz ?   5

(c) Draw RZ encoding for the following bit stream :   5

101001110

3. (a) What is WAN ? Explain characteristics of WAN. Also compare WAN with LAN.   10

(b) Explain three-way handshake mechanism of TCP connection establishment with suitable diagrams.   10

4. (a) Explain, how Go-BACK-N ARQ work, with the help of a diagram.   10

(b) What is synchronous communication ? Give examples of synchronous communications. Also, write its advantages.   5

(c) Explain ring topology with the help of a diagram. Also write its advantages.   5

5. (a) What is TCP/IP reference model ? Briefly explain different layes of TCP/IP reference model. Also, list any *two* differences between TCP/IP and OSI models.   10

(b) What is Quality of Service (QoS) ? Briefly explain different QoS parameters to be considered for online (live) video streaming service.   10