MCS–042

MASTER OF COMPUTER APPLICATIONS (MCA) (REVISED)
Term-End Examination
June, 2024

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.*

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1. (a) Explain simplex, half duplex and full duplex connection in data transmission.　5

   (b) For a noiseless channel with a bandwidth of 3000 Hz transmitting a signal with two signal levels. Find out the maximum bit rate.　5

(c) What is the need of network topology ? Explain mesh topology.   5

(d) Differentiate between client/server and peer-to-peer network.   5

(e) Given a bandwidth of 5000 Hz for an ASK signal. Find the bit rate and baud rate.   5

(f) Define QAM. Draw the constellation diagram for 4-QAM and 8-QAM.   5

(g) Explain stop and wait flow control method with the help of a diagram.   5

(h) Why PSK scheme cannot be applied in ASK for signal transmission ? Explain.   5

2. (a) Define pipelining. Name the methods where it is used. What is the purpose of pipelining ? Explain pipelining in selective repeat with the help of a diagram.   10

(b) What are the responsibilities of data link layer ? Explain character and bit stuffing with an example.   10

3. (a) Illustrate the principle of congestion control. Discuss a solution method for congestion control. 10

   (b) Define multiplexing. Explain the types of multiplexing. Give an example where upward multiplexing can be applied. 10

4. (a) Enlist the public key cryptography algorithms. Explain RSA algorithm. 10

   (b) What are connection-oriented services ? List any *three* characteristics of these services. Also, briefly explain the stages of connection-oriented transmission. 10

5. (a) Briefly discuss VPN. Explain the types of VPN. Also list the advantages of SSL. 10

   (b) Explain Link State Routing. Also describe how link state routing operates. 10

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