MASTER OF COMPUTER APPLICATIONS (MCA–NEW)
Term-End Examination
June, 2025

MCS-218 : DATA COMMUNICATION AND COMPUTER NETWORKS

Time : 3 Hours　　　　　*Maximum Marks : 100*

Note : *(i)* *Question No.* ***1*** *is compulsory and carries 40 marks.*

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

1. (a) Discuss the Standard Internet Protocols and their roles. 　　5

(b) Discuss the concept of Signal to Noise ratio and its significance in data transmission.   5

(c) Find CRC for the frame 1101011011 with generator polynomial $x^3 + 1$.   5

(d) What do you mean by noise in a signal ? Briefly discuss the types of noise.   5

(e) Explain the importance of transmission media.   4

(f) Explain the process of analog to analog modulation. Discuss different types of encoding method for an analog signal. 5

(g) Explain pipelining in Go-Back-N ARQ with example.   6

(h) Enlist sublayers of data link layer. What are the key functions of these sublayers ? 5

2. (a) Discuss different types of Malware. 5

(b) List the challenges faced by ad-hoc networks. 5

(c) Explain the structure and functionality of UDP. 5

(d) Explain the difference between circuit switching and packet switching. 5

3. (a) Draw the timing diagram for piggybacking process in case where sender and receiver both transmitting the data. 5

(b) Give an expression for finding throughput of the system in pure ALOHA and draw the diagram to represent the relation between throughput and load. 5

(c) Discuss the advantages of P-persistent CSMA. 5

(d) How does cryptography contribute to network security ? 5

4. (a) Illustrate WSN topologies with the help of diagram. 6

(b) Explain the structure of WSNs and classification of WSNs. 7

(c) Describe the concept of link state routing and its significance. 7

5. (a) Discuss the concept of admission control, traffic policing and traffic shaping. 6

   (b) Draw the MANET layer architecture and explain the functionality of each layer in it. 7

   (c) Describe the different methods for framing in data link layer with example. 7

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