

9. (a) Explain one algorithm for controlling congestion based on closed loop policy.
- (b) Describe one security technique that may provide confidentiality of data.

Roll No.

Total Pages : 04

CMCS/M-24

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DATA COMMUNICATION AND COMPUTER NETWORKS
MS-20-24

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *Five* questions in all. Question No. **1** is compulsory. In addition to the compulsory question, attempt *four* more questions selecting *one* question from each Unit. All questions carry equal marks.

(Compulsory Question)

1. Answer any *five* of the following questions in brief :
- (i) Draw a conceptual view of the Internet.
 - (ii) What will be the maximum bit rate of a noiseless 4 KHz channel if a signal can be sent at 32 different levels ?
 - (iii) List two functions of a Network Interface Card in a Network.
 - (iv) What will be the output of the bit stream 101111110010111110 if starting and ending bits with bit stuffing are used for framing ?

- (v) Describe the purpose of the Binary Exponential Back-off algorithm.
- (vi) What is the role of the home agent and foreign agent in routing for mobile hosts ?
- (vii) Name any two attacks that may breach the security of a network.

Unit I

2. Bring out a distinction between Local Area, Metropolitan Area, and Wide Area Networks specifying their wired and wireless deployment layouts (depicting the connecting devices used in each) and example network standards. The distinction should be based on topologies and design issues.
3. Sketch the layered architecture of OSI reference model and describe the functions of each of its layers with a focus on a description of connection-oriented and connection-less services and their provisions in specific layers.

Unit II

4. Answer the following questions in brief :
 - (a) Give a description of the transmission media that is used in Fiber-to-the-Home (FTTH) broadband.

- (b) What is the distinction between radio waves and microwaves ?
- (c) Describe the encoding schemes used in IEEE 802.3 (Ethernet LAN) and IEEE 802.5(Token Ring LAN).

5. Distinguish between the following :

- (a) Pulse code modulation and Delta modulation.
- (b) Frequency Division Multiplexing and Code Division Multiplexing

Unit III

6. (a) What is the advantage of selective repeat sliding window protocol over go back n protocol ?
(b) How is multiplexing used in WDMA ?
7. Why is CSMA protocol not suitable for wireless LANs ? How is MACA different from CSMA ? Describe the functionality of MACA.

Unit IV

8. (a) What is the purpose of sequence numbers and age field in Link state packets ?
(b) Describe the addressing and format of IPv4.