DATA COMMUNICATION AND COMPUTER NETWORKS

Time: 3 Hrs. Maximum Marks: 70

Note: Attempt questions from all sections as directed.

SECTION – A (30 Marks)

Attempt any 5 questions out of six.
Each question carries 6 marks.

1. What are the different types of transmission technology? Name the different types of networks on the basis of transmission technology. Explain any one network briefly.

2. Discriminate between the send window and receive window for link and how are they related with (i) a selective repeat retransmission scheme (ii) a GO-back-N control scheme.

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3. What are the limitations of leaky bucket algorithm?

4. Differentiate between Link-state and Distance vector routing algorithm. How the flooding can be minimized?

5. Compare and contrast various Wireless networks.

6. Write short notes on (a) Circuit and Packet switching (b) E-mail.

SECTION – B (20 Marks)

Attempt any two questions out of three.
Each question carries 10 marks.

7. (a) Describe carrier sense multiple access protocol. What is difference between CSMA/CD and CSMA/CA?

(b) An organization is requires 8 subnet each having at least 63 hosts. If the allotted IP address is 193.1.1.0 determine the class of IP address, default mask, subnet mask, number of subnet id bits, and the broadcast address of the subnets.
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8. Write short notes on Dijkstra's routing protocols and illustrate with an example.

9. Describe various error detection and correction technique. The generator polynomial is $x^3+x+1$. A sender wants to send data 1001. Generate CRC code. Also, describe error checking process if 3rd bit is inverted from the left.

SECTION - C (20 Marks)

(Compulsory)

10. (a) Sixteen-bit messages are transmitted using a Hamming code. How many check bits are needed to ensure that the receiver can detect and correct single bit errors? Show the bit pattern transmitted for the message 1101001100110101. Assume that even parity is used in the Hamming code.

(b) Discuss the transport service primitives. What do you understand by 3 way hand shake Technique? Also, discuss the TCP connection management.

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(c) Draw the routing table for node A using hierarchical routing protocol for the given network.