C2-R4: ADVANCED COMPUTER NETWORKS

NOTE:

1. **Answer question 1 and any FOUR from questions 2 to 7.**
2. **Parts of the same question should be answered together and in the same sequence.**

Time: 3 Hours **Total Marks: 100**

1.

a) What are the features of IPv6 protocol?

b) Streaming Protocol is a network protocol designed to control streaming media servers. List and explain protocols used in Streaming Protocol.

c) Draw Only: Flow chart of Random Early Detection (RED) algorithm.

d) Multi-Protocol Label Switching (MPLS) provides a mechanism for forwarding packets for any network protocol. How does it work?

e) Weighted fair queuing (WFQ) is a data packet scheduling technique allowing different scheduling priorities to statistically multiplexed data flows. How does it differ from normal Fair Queue?

f) Write the differences between Classical Aloha and Slotted Aloha.

g) Protocol-Independent Multicast (PIM) is a family of multicast routing protocols. Why PIM Sparse and Dense modes are opposite of each other?

(7x4)

2.

a) In ATM, Connection Admission Control is the set of actions taken by the network during the call set-up phase to establish if a virtual path or virtual channel can be accepted by the network. How does it perform traffic control procedure, Network Resource Management and Connection Admission Control Mechanism?

b) By taking suitable example, explain Open and Closed Queuing Network.

(10+8)

3.

a) Traffic shaping is a computer network traffic management technique which delays some or all datagrams to bring them into compliance with a desired traffic profile. How is it achieved in ATM Networks?

b) Multicast (point-to-multipoint) is a communication pattern in which a source host sends a message to a group of destination hosts. List and explain in short Multicast Routing algorithms: Spanning Tress, Reverse Path Broadcasting and Truncated Reverse Path Broadcasting.

(9+9)

4.

a) How data are passed through one network to another network in ATM network using their virtual path and virtual channel?

b) How does TCP manage congestion which exists in network?

c) List down the properties of Real time Streaming Protocol.

(4+6+8)

5.

a) In telecommunications and computer networks, multiplexing is a method by which multiple analog message signals or digital data streams are combined into one signal. What are the types of it?

b) Remote Procedure Call (RPC) is an inter-process communication that allows a computer program to cause a subroutine or procedure to execute in another address space. List the sequence of events during RPC.

c) Why Quality of Service (QoS) of IPv6 is better than IPv4?

(6+6+6)

6.

a) What are the services provided by ATM AAL2?

b) How can MPLS make use of existing ATM network or Frame Relay Infrastructure? What is the biggest advantage of MPLS over ATM?

c) What are the implementation issues of VoIP?

(4+7+7)

7.

a) Voice over Internet Protocol (VoIP) is a methodology and group of technologies for the delivery of voice communications and multimedia sessions over Internet Protocol (IP) networks. How does it work in co-ordination with existing PSTN network?

b) What is the Distance Vector Multicast Routing Protocol (DVMRP) and how does it work with managed switch?

c) TCP is connection oriented protocol which establishes connection before data transfer. Explain steps of TCP three way handshakes.

(6+6+6)