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) "Synchronous TDM is always better then asynchronous TDM", comment.

b) Give one algorithm to stabilize slotted-ALOHA.

c) Discuss how SIP used in the transmission of multimedia.

d) Show the relationship among user data, CS-PDU, SAR-PDU and ATM Cell in context of AAL protocols.

e) How does the Address Resolution Protocol (ARP) work?

f) Distinguish between Link State Multicast and Distance Vector Multicast.

g) Show and explain 3-way handshake in TCP.

(7x4)

2.

a) Obtain an expression for total waiting time in an M/G/1 queuing system.

b) Discuss subnetting and supernetting. How do the subnet mask and supernet mask differ from a default mask in classful addressing?

(10+8)

3.

a) Explain Integrated Services and Differentiated Services with examples and also mention the major differences between them.

b) Why is traffic shaping needed? Explain using a suitable example. How is it token bucket used for traffic shaping?

(9+9)

4.

a) Briefly explain Weighted Fair Queuing (WFQ) Algorithm and compare it with FIFO.

b) What are the features of MPLS? Show and discuss MPLS packet forwarding.

(9+9)

5.

a) What is the effect of RTT variance on TCP performance? Explain Jacobson's Algorithm in this context.

b) Describe the various fields in the IP datagram header. What is the purpose of the time to live field of the IP datagram header?

(10+8)

6.

a) Using suitable diagrams explain Real-Time and Non-Real-Time services in ATM.

b) How is data rate conformance testing accomplished b the Leaky Bucket Algorithm in ATM networks? Explain the above using an example.

(9+9)

7.

a) Explain the operation of Voice over IP (VoIP) protocol. How is delay jitter controlled in the above?

b) How is a data network modeled as network of queues? Discuss Jackson's theorem in this context.

(9+9)