

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) RTP runs on top of Transport layer. Justify.
 - b) How estimation of the round trip time and its variation is calculated using Jacobson's algorithm?
 - c) What does Multicast Backbone (Mbone) mean?
 - d) What do you understand by Arrival Rate, Occupancy and Time in the System (Delay) with respect to Queuing system concept?
 - e) Briefly explain the difference between slotted ALOHA and pure ALOHA.
 - f) Briefly explain ISDN network and its different elements.
 - g) What are the characteristics of ATM?

(7x4)

2.
 - a) What are the top five critical functions of TCP/IP? Explain in detail.
 - b) Explain weighted fair queuing for IP network in detail.

(8+10)

3.
 - a) Explain how throughput is calculated in Pure and Slotted ALOHA.
 - b) Why UDP is preferred over TCP in VOIP? Explain in brief.
 - c) Explain Karn's algorithm in brief.

(6+6+6)

4.
 - a) Explain Leaky Bucket Algorithm in detail with example.
 - b) What are the different Congestion prevention policies for Transport layer, Network layer and Data Link layer? Explain.

(12+6)

5.
 - a) What are the implications of Burke's Theorem? Explain the theorem in detail.
 - b) What are the different functions of ATM Adaptation layer? Also state the sub layers of ATM Adaptation layer.

(9+9)

6.
 - a) What is the significance of Jackson's theorem for network of queues? Explain the theorem in detail.
 - b) What do you understand by Remote Procedure Call with respect to End-to-End Protocol? What are its different components? Explain.

(10+8)

7.
 - a) What do you understand by Protocol Independent Multicast (PIM)? Briefly Explain.
 - b) Explain the different VPN tunneling protocols in brief.
 - c) The Internet has worked so far with a *best effort* traffic model: every packet is treated (forwarded or discarded) equally. Why is there any need for QoS? Explain with appropriate reasons.

(6+6+6)