

C7-R3: ADVANCED COMPUTER NETWORKS

NOTE:

1. Answer question 1 and any FOUR questions from 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) State and explain Kleinrock independence approximation in networks of queues.
- b) What are the various user interfaces in the ISDN reference models?
- c) Compare the performance of 1-Persistent CSMA and P-Persistent CSMA.
- d) What are different PDU's in SNMP V2 protocol?
- e) Explain ATM cell header at UNI and NNI.
- f) For what purpose pseudo Bayesian algorithm is used.
- g) "Distributed queue dual bus (DQDB) protocol is unfair." Comment

(7x4)

2.

- a) Explain Pollaczek-Khinchin (P-K) formula for M/G/1 queues. Under what condition(s) delay can be infinite in M/G/1 queue?
- b) Show and explain Markov state diagram for slotted ALOHA. Why is slotted ALOHA inherently unstable?

(8+10)

3.

- a) Explain the tree algorithm used for collision avoidance. Draw the tree for feedback Pattern e, 0, e, e, 1, 1, 0.
- b) How is synchronous and asynchronous capacities allotted in FDDI protocol?

(10+8)

4.

- a) How subscriber access is performed in ISDN. Differentiate between B channel, D channel and H channel.
- b) Encode the bit pattern 011110111111 in 2BIQ.
- c) Explain various X.25 protocol layers.

(6+6+6)

5.

- a) Can a RR Packet at the network layer be encapsulated in an I frame at the data link layer. Explain your answer.
- b) Explain the following bit field of AAL2 layer of ATM networks: Convergence Sub layer, Identifier, Sequence Counter, Information type, Length indicator, CRC.
- c) A router using distance Vector Routing has following routing table.

Net 2	6	A
Net 3	4	E
Net 2	3	A
Net 2	2	D

Net 2 1 B

the router receives the following packet from router C.

Net 2	4
Net 3	5
Net 4	2
Net 6	3
Net 7	2

Show the updated routing table for router.

(6+6+6)

6.

- a) Obtain an expression for maximum possible throughput for a TCP connection in terms of Window Size (W), data rate (R bps) and propagation delay (D Secs).
- b) What is mail gateway? What are the jobs of user agent and mail transfer agent with respect to SMTP?

(9+9)

7.

- a) Write short notes on any **two** of the following:
 - i) FDDI-II
 - ii) GFR traffic management
 - iii) IPv6

(9+9)