Reg. No. : | | | | | | | | | | | |

Question Paper Code : Q 2839

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Eighth Semester

Computer Science and Engineering

EC 1008 — HIGH SPEED NETWORKS

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Mention any four important features of frame relay networks.
2. What is meant by virtual circuit?
3. Write short notes on Little's Formula.
4. What is the role of end-to-end probe packets in congestion control?
5. Write about any one retransmission policy followed by TCP briefly.
6. What are the observations made by Karn in the estimation of RTT in TCP?
7. What are the QoS parameters recommended by ATM forum for ATM networks?
8. Distinguish between elastic traffic and inelastic traffic.
9. RSVP is receiver initiated rather than sender initiated. Justify this statement.
10. State whether RTP is a transport layer protocol or an application layer protocol. Justify your answer.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Describe the various service categories proposed by ATM forum for ATM networks. (8)

(ii) Discuss the necessity of ATM Adaptation layer. Also discuss about the necessity of different types of ATM Adaptation layers. (8)

Or

(b) (i) Explain the various elements and protocols of fiber channel. (8)

(ii) Discuss the topology of the nodes and networking devices usually followed in fiber channel. (8)

12. (a) (i) Discuss the features and parameters of M/M/1 queues. (8)

(ii) At an ATM machine in a supermarket the average length of a transaction is 2 minutes and on average, customers arrive to use the machine once every 5 minutes. How long is the average time that a person must spend waiting and using the machine? What is the 90th percentile of residence time? Assume M/M/1. (8)

Or

(b) (i) Explain the congestion control methods of backpressure and choke packets followed in computer networks. (8)

(ii) Consider the frame relay network depicted in figure 1. C is the capacity of a link in frames to destination node. Node A presents a constant load of 0.8 frames per second destined for A'. Node B presents a load λ destined for B'. Node S has a common pool of buffers that it uses for traffic both to A' and B'. When the buffer is full, frames are discarded and are later retransmitted by the source user. S has a throughput capacity of 2. Plot the total throughput as a function of λ. What fraction of the throughput is A-A' traffic for $\lambda > 1$? (8)

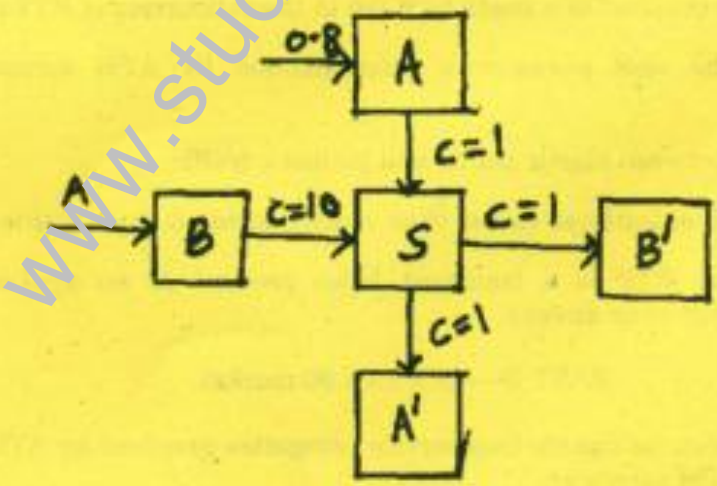

Figure 1

13. (a) (i) Explain the adaptive timer management of TCP in detail. (8)

(ii) If the TCP Round Trip Time is currently 30 msec and the following acks come in after 26, 32 and 24 msec, respectively, what is the new RTT estimate using the Jacobson's algorithm? Use $\alpha = 0.9$. (8)

Or

(b) (i) Explain the AIMD congestion control behaviour of TCP. (8)

(ii) Consider the effect of using slow start on a line with 10 msec RTT and no congestion. The receiver window is 24KB and the maximum segment size is 24KB. How long does it take before the first full window can be spent? (8)

14. (a) Discuss the architecture and functional components of Integrated Services Network. (16)

Or

(b) Discuss the architecture and functional components of Differentiated Services Network. (16)

15. (a) (i) Describe the design characteristics namely receiver initiated reservation and soft state of RSVP. (8)

(ii) Explain the reservation style of wild card filter in RSVP. (8)

Or

(b) (i) Draw the RTP header and explain its various fields. (8)

(ii) Explain how RTCP function like an adjunct protocol of RTP. (8)