

First Semester M.Tech. Degree Examination, Dec.2013/Jan.2014

Computer Networks

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- 1 a. Explain the following terms with examples:
 - i) Bandwidth
 - ii) Latency
 - iii) Delay \times Bandwidth product (06 Marks)
- b. Discuss the requirements of computer networks. (08 Marks)
- c. Suppose a 128-Kbps point-to-point link is setup between Earth and a rover on Mars. The distance from Earth to Mars is approximately 55×10^9 m, and data travels over the link at the speed of light 3×10^8 m/sec.
 - i) Calculate the minimum RTT for the link.
 - ii) Calculate the delay \times bandwidth product for the link. (06 Marks)
- 2 a. Explain the working of sliding window algorithm. (06 Marks)
- b. Discuss how token ring maintenance takes place in 802.5 standard. (04 Marks)
- c. Suppose we want to transmit the message 1011001001001011 and protect it from errors using the CRC-8 polynomial $x^8 + x^2 + 1$.
 - i) Use polynomial long division to determine the message that should be transmitted.
 - ii) Suppose the leftmost bit of the message is inverted due to noise on the transmission link. What is the result of the receiver's CRC calculation? How does the receiver know that an error has occurred? (10 Marks)
- 3 a. With an example, explain how signalling is used by a host to establish virtual circuit. (06 Marks)
- b. Explain the ATM-cell format for AAL 3/4 layer. (04 Marks)
- c. Discuss how bridges use spanning algorithm to handle loops. Give an example. (10 Marks)
- 4 a. Explain datagram forwarding in IP. (08 Marks)
- b. Explain how routing takes place using routing table. (06 Marks)
- c. For the network given in Fig.Q4(c), give global distance-vector table, when
 - i) Each node knows only the distances to its immediate neighbors.
 - ii) Each node has reported the information it had in the preceding step to its immediate neighbors.

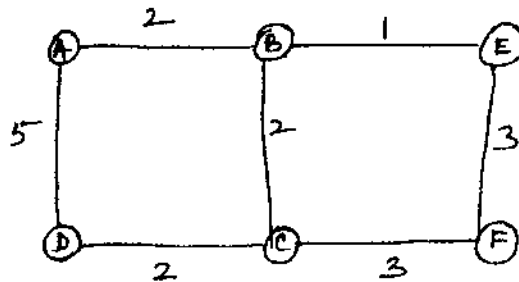


Fig.Q4(c)

(06 Marks)

- 5 a. Explain how TCP establishes connection with the help of TCP state-transition diagram. (10 Marks)
- b. What is Silly widow Syndrome? Explain. (04 Marks)
- c. What is UDP? Explain the format for UDP header. (06 Marks)
- a. Explain in detail FIFO queuing algorithm. Distinguish between FIFO and Fair queuing. List the drawbacks of FIFO. (10 Marks)
- b. Discuss the different congestion avoidance mechanisms. (10 Marks)
- 7 a. Explain the sequence of mail gateways store and forward email messages, with a neat diagram. (06 Marks)
- b. What is SOAP? Explain the SOAP message structure. (04 Marks)
- c. Explain the working of DNS. (10 Marks)
- 8 Write short notes on:
- a. Virtual networks and Tunnels
- b. IPV6
- c. SNMP network management
- d. FDDI (20 Marks)