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10SCN12

First Semester M.Tech. Degree Examination, June/July 2011
Computer Networks

Time: 3 hrs. Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. With a neat block diagram, explain the internet architecture. **(06 Marks)**

b. Write a program for the implementation of client/server program that uses the socket interface to send messages over a TCP connection. **(09 Marks)**

c. Calculate the total time required to transfer a 1,000 kB file in the following cases, assuming an RTT of 100 ms, a packet size of 1 kB data and an initial 2xRTT of handshaking before data is sent.

i) The bandwidth is 1.5 Mbps and data packets can be sent continuously.

ii) The bandwidth is 1.5 Mbps, but after we finish sending each data packet we must wait one RTT before sending the next.

iii) The bandwidth is infinite meaning that we take transmit time to be zero and upto 20 packets can be sent per RTT. **(05 Marks)**

2 a. Explain the spanning tree algorithm, with a suitable diagram. **(08 Marks)**

b. Discuss the different types of switch fabrics. **(06 Marks)**

c. Give the virtual circuit tables for all switches after each of the connection is established. Assume that connections are cumulative and the VCI assignment always picks the lowest unused VCI on each link, starting with 0 for the Fig.Q2(c).

i) Host D connects to host H.

ii) Host B connects to host G.

iii) Host F connects to host A.

iv) Host H connects to host C. **(06 Marks)**

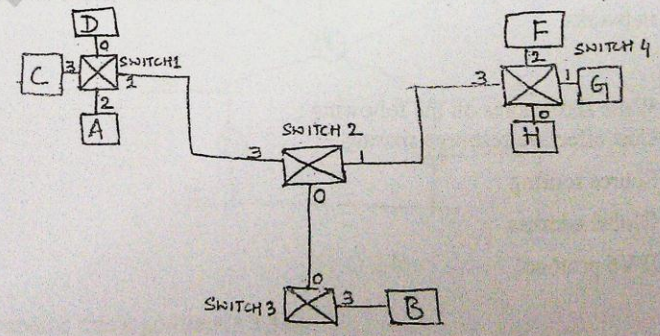

Fig.Q2(c)

3 a. Describe the datagram forwarding algorithm in IP, with an example network. **(08 Marks)**

b. Explain how routing process is done in mobile hosts. **(08 Marks)**

c. For the network given in Fig.Q3(c), give the global distance vector tables.
   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 neighbours. (04 Marks)

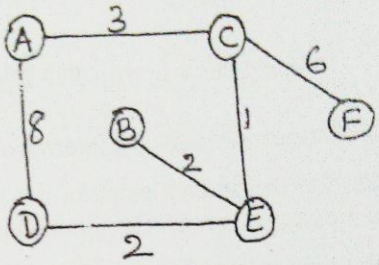

Fig.Q3(c)

4 a. Write a note on protocol independent multicast (PIM) (10 Marks)

b. Explain the concept of destination based forwarding. (10 Marks)

5 a. With a neat state transition diagram, explain how the connection is established and terminated in TCP. (12 Marks)

b. Explain the header format for SUNRPC request and reply operations. (08 Marks)

6 a. Explain the taxonomy of resource allocation mechanism. (08 Marks)

b. Explain the different congestion avoidance mechanisms. (12 Marks)

7 a. Explain the oldest network application Electronic Mail with respect to message format, message transfer and mail reader. (10 Marks)

b. What are the peer-to-peer networks? Explain the different design approaches to these networks. (10 Marks)

8 Write short notes on the following :
a. Cost effective resource sharing
b. Source routing
c. Global address
d. IPV6 protocol (20 Marks)

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