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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. Discuss the design requirements for computer networks. (10 Marks)
 - b. Explain the following terms, with respect to computer networks :
 - i) Band width
 - ii) Latency
 - iii) Delay * bandwidth product. (06 Marks)
 - c. Consider a point – to – point link 2 KM in length at what a bandwidth would propagation delay (at a speed of 2×10^8 m/sec) equal to transmit delay for 512 byte packets. (04 Marks)
2. a. Draw a timeline diagram for the sliding window algorithm with $SWS = RWS = 3$ frames for the following two situations. Use a time out interval of about $2 * RTT$.
 - i) Frame 4 is lost. (08 Marks)
 - ii) Frames 4 – 6 are lost. (05 Marks)
 - b. An IEEE 802.5 token ring has five stations and a total wire length of 230 m. How many bits of delay must the monitor insert into the ring? Do this for both 4 and 16 Mbps. Use propagation rate of 2.3×10^8 m/sec. (07 Marks)
 - c. What are the various considerations concerning hardware building stocks such as nodes and links for constructing a computer network? (07 Marks)
3. a. Explain the spanning tree algorithm for extended LAN. Show how the algorithm is implemented. (12 Marks)
 - b. For the following network give the virtual circuit table for all the switches after each of the following connections is established. Assume that the square of connections still up while the second connection is established and so on. Also assume that the VCI assignment always picks lowest unused VCI on each link. String with 0.
 - i) Host A connects to Host B
 - ii) Host C connects to Host G. (08 Marks)

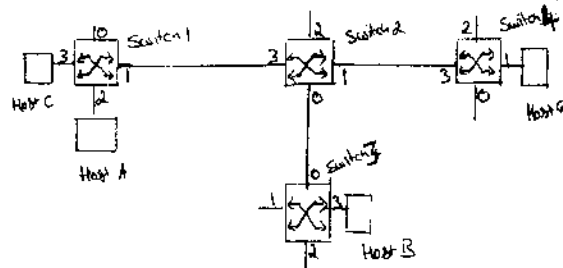


Fig. Q3(b)

4. a. With figure, explain IPV4 header format. (08 Marks)
- b. For a network given in Fig. Q4(b). Show how link state algorithm builds the routing table for node D. (12 Marks)

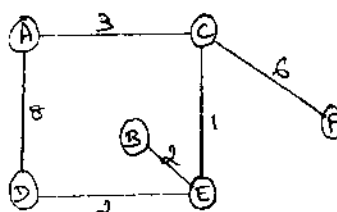


Fig. Q4(b)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

- 5 a. Discuss IPV6 packet header format, in detail. (10 Marks)
 b. For the network shown in Fig. Q5(b), using distance vector routing. Find the final routing table at node A. Explain all the steps (Assume cost of each link is set to 1). (10 Marks)

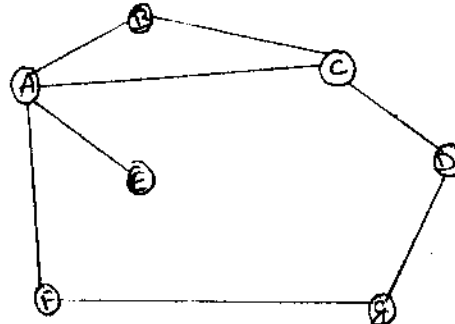


Fig. Q5(b)

- 6 a. Explain the TCP variant of sliding window protocol show how this algorithm ensures reliable delivery, ordered delivery and flow control between sender and receiver. (10 Marks)
 b. Show the structure of TCP segment header. Explain the functionality of each field. (10 Marks)
- 7 a. Briefly explain the taxonomy of resource allocation. (04 Marks)
 b. Explain in detail, RED mechanism of congestion avoidance. (08 Marks)
 c. Explain FIFO and fair queuing algorithms. (08 Marks)
- 8 Write short notes on : (20 Marks)
 a. SNMP
 b. DNS
 c. SOAP
 d. REST.
