CS670 Fall 2001 Quiz 2 NAME_____

1. (3 pts) What does CSMA/CD stand for?

2. (3 pts) How is the "CD" in CSMA/CD different from the "CA" used in the IEEE 802.11 wireless protocol?

3. (8 pts) Draw the IEEE 802.3 frame format. Label and show the size of each field.

4. (8 pts) A hypothetical Ethernet implementation has a slot time of 100 microseconds, a maximum length of 5000m, and transmits data at 25Mbps. List the possible wait times in the second round of the Exponential Backoff algorithm for this Ethernet.

5. (5 pts) Briefly explain how the IEEE 802.11 protocol resolves the "hidden node problem."

6. (2 pts) At what level of the OSI protocol stack do bridges operate?

7. (2 pts) At what level of the OSI protocol stack do routers operate?

8. (7 pts) List the operating rules for a "learning bridge".

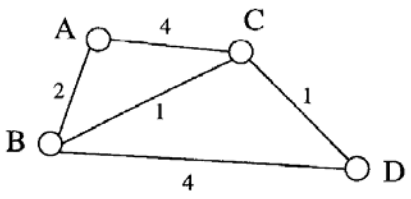
9. (7 pts) Briefly explain how bridges support Virtual LANs.

10. (4 pts) List two good points ("Pro's") and two bad points ("Con's") of Datagram networks.

11. (4 pts) Repeat (10) for Virtual Circuit networks.

12. (6 pts) Name the two classes of routing algorithms that we discussed in class and briefly explain how routing decisions are made in each class.

13. (9 pts) Use Dijkstra's Shortest Path Algorithm to determine the shortest path from A to D. Redraw the graph to show the state at each iteration of the algorithm, showing the current label for each node. Identify permanent and tentative labels.



14. (5 pts) List and explain the steps in Distance Vector routing.

15. (5 pts) List and explain the steps in Link-State Routing

16. (5 pts) Explain how a packet is routed to a mobile host.

17. (4 pts) Explain how the leaky bucket algorithm helps perform congestion control.

18. (4 pts) In what way is the Token Bucket algorithm more "fair" than the leaky bucket algorithm?

19. (5 pts) A particular network node has two inputs, 1 and 2. The node uses WFQ with weights 2 for input 1 and 3 for input 2. Assume both internal queues are full at time "t". Show the order of the first 10 packets that are released from the node after "t". Label the packets from input 1 "1" and the packets from input 2, "2". Assume queue 1 goes first.

20. (4 pts) Explain how hierarchical routing reduces the size of routing tables.