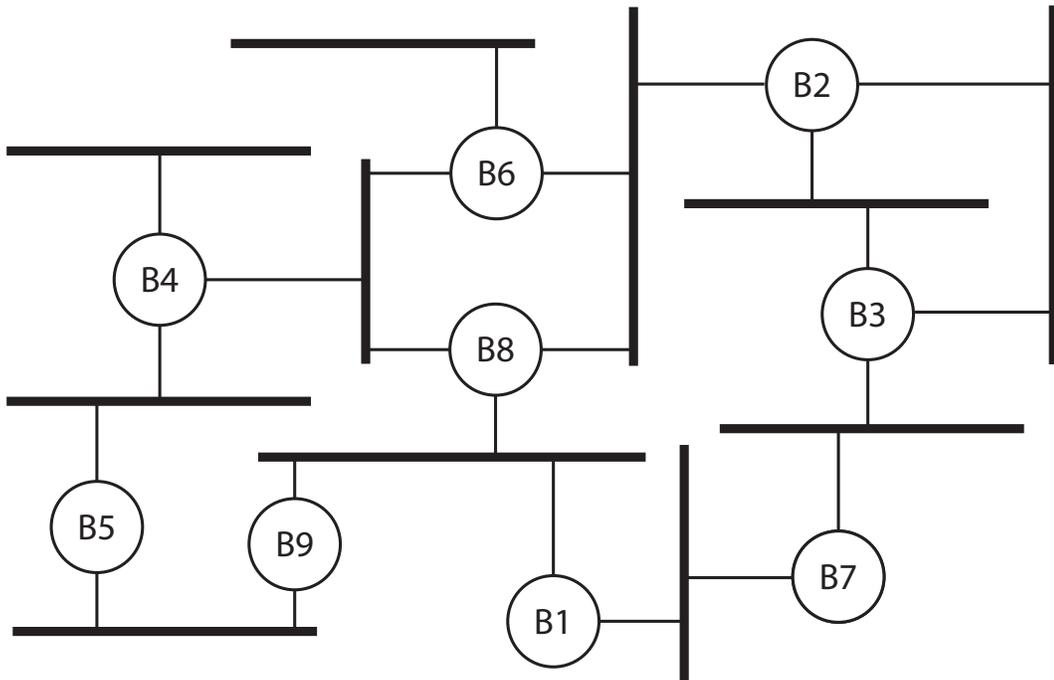
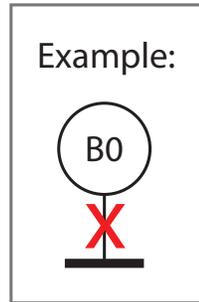


This homework is due at the beginning of class on March 7th, 2011.

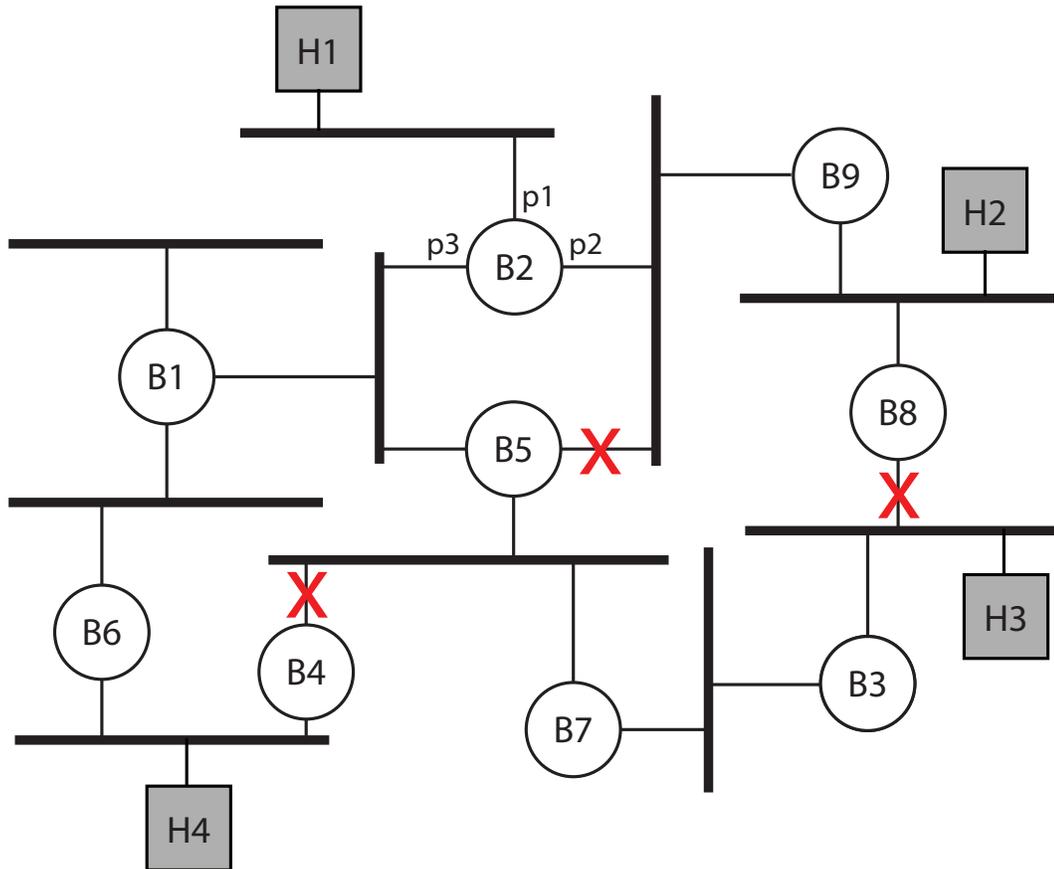
Name: _____

Problem	Possible	Score
1	40	
2	30	
3	20	
Total	100	

- 1a. Given the bridged Ethernet shown below, indicate which ports are blocked by the bridge spanning tree protocol by putting an X over the corresponding ports. The bridge IDs are the numeric values. (15 points)



- 1b. Consider another bridged Ethernet shown below. Assume the spanning tree protocol has already finished its computations. The ports not selected by the spanning tree protocol are marked by X. The ports of bridge B2 are labeled p1, p2, p3 respectively. There are 4 computers H1, H2, H3, and H4 in the network. Assume the forwarding tables of all bridges are currently empty. Suppose H1 transmits a single packet addressed to H3, and H2 transmits a single packet addressed to H4.



Questions on next page.

Explain how the Ethernet bridges forward these two packets and how they learn forwarding table entries. (15 points)

1c. (continuation of 1b) After the transmissions of the two packets have been completed and the network is idle, what is the content of the forwarding table at bridge B2? (10 points)

2a. Suppose an IP router doing CIDR (Classless Interdomain Routing) has the following initial routing table entries:

#	Address	CIDR Mask	Next Hop
1	129.10.112.0	255.255.255.0	R1
2	129.10.80.0	255.255.255.0	R1
3	129.10.0.0	255.255.0.0	R2
4	129.10.12.0	255.255.255.0	R4
5	129.10.13.0	255.255.255.0	R4
6	129.10.64.0	255.255.192.0	R3
7	129.10.14.0	255.255.255.0	R4

Identify the set(s) of table entries that can be aggregated to reduce the table size. (20 points)

2b. (continuation of 2a) Show the final routing table entries after aggregation has been performed. (10 points)

3a. Consider the following data bits that correspond to 2-byte words:

1100 0010 0001 0101
1100 0010 1111 0101

Compute the Internet Checksum for the data.

(8 points)

3b. (continuation of 3a) If the data bits and checksum are transmitted in a packet, then what is the value of the sum computed at the receiver assuming there were no bit errors in transmission? (6 points)

3c. (continuation of 3b) What is the value of the checksum computed at the receiver if there is an error in the third bit of the transmitted data and an error in the 12th bit of the transmitted checksum? Comment briefly on the result. (8 points)

3d. (continuation of 3c) What is the value of the checksum computed at the receiver if there is an error in the first bit of the transmitted data and an error in the first bit of the transmitted checksum? Comment briefly on the result. (8 points)