Midterm 24:370 Name:
March 1 Student Number:

Short Answers:

Part 1 Ethernet Bits:
1) What does full duplex mean?
a) Both parties communicating at the same time using the same carrier frequency and the same physical media for sending and recieving.
b) Both parties communicating at the same time using different carrier frequencies and the same physical media for sending and receiving.
c) Both parties communicating at the same time using the same carrier frequency and different physical media for sending and receiving.
d) Both parties communicating but with only one transmitting at any given time.
e) Both b) and c)

2) Is the ALOHA system full duplex?

3) If a station wanted to transmit its message in the ALOHA wireless system, what was the protocol.

4) Having sent a message in the ALOHA system, how did a station know the message was received?

5) If a message was not received, what happened?

6) As Ethernet evolved from ALOHA was it full duplex?

7) The first major Ethernet protocol improvement over ALOHA was Carrier Sense (CS). Now if a station wants to transmit an Ethernet frame what is the role of CS in the protocol.

8) Another major improvement in Ethernet is Collision Detection (CD). What is the role of a positive Collision Detection in the protocol. That is, if a transmitting station detects a collision, what happens?

9) Having sent a message in the Ethernet system, how does a station know the message was received?

10) If a collision is detected how is access medium access arbitrated. That is, after two stations recognize that a collision takes place, what happens to enable the resumption of communication.

11) If two stations detect a collision and the backoff windows are set to 2 equprobable time slots, what is the probabilty the two stations will experience another collision?

Part 2 Telephony and Modulation Bits

1) Is a traditional telephone call packet switched or circuit switched?
2) If the nominal bandwidth of voice is less that 4000Hz, why is voice sampled at 8000 per second.

3) Given that voice is sampled with 8 bits every 125 microseconds. What is the data rate required for a telephone channel?

4) Given that 24 voice channels are multiplexed on to a T1. What is the raw data rate required to carry 24 voice channels?

5) Given that T1 has a bit rate of 1.544 Mbps. Why is this different than the answer to the previous question?

6) Draw a sinusiodal carrier with 2 cycles per data symbol. Given a data stream 1 0 1 0, draw a ASK representation, FSK representation, and a PSK representation.

7) If a signal is measured in terms of power, the decibel system is usually used. If a transmitter on a cell phone has a requirement not to exceed 10dBm. What is the actual power?

8) If the signal from question above undergoes a 20 dB attenuation while propagating from the sender to the receivewr, what is the power level at the receiver?

9)For a CDMA phone if a spreading code or chip sequence is 1010111000. Assuming a bipolar code, what is the autocorrelation value at time shifts of 0, 1, 2 chips.

10) How is the pattern 101 modulated by the chip sequence from the above question? What is the spreading gain?

Part 3 Acronyms:

What do the following terms or acronyms mean:

1) BPSK

2) TDMA

3) FDMA

4) CDMA

5) Frequency Hopping Spread Spectrum

6) CRC

7) LFSR

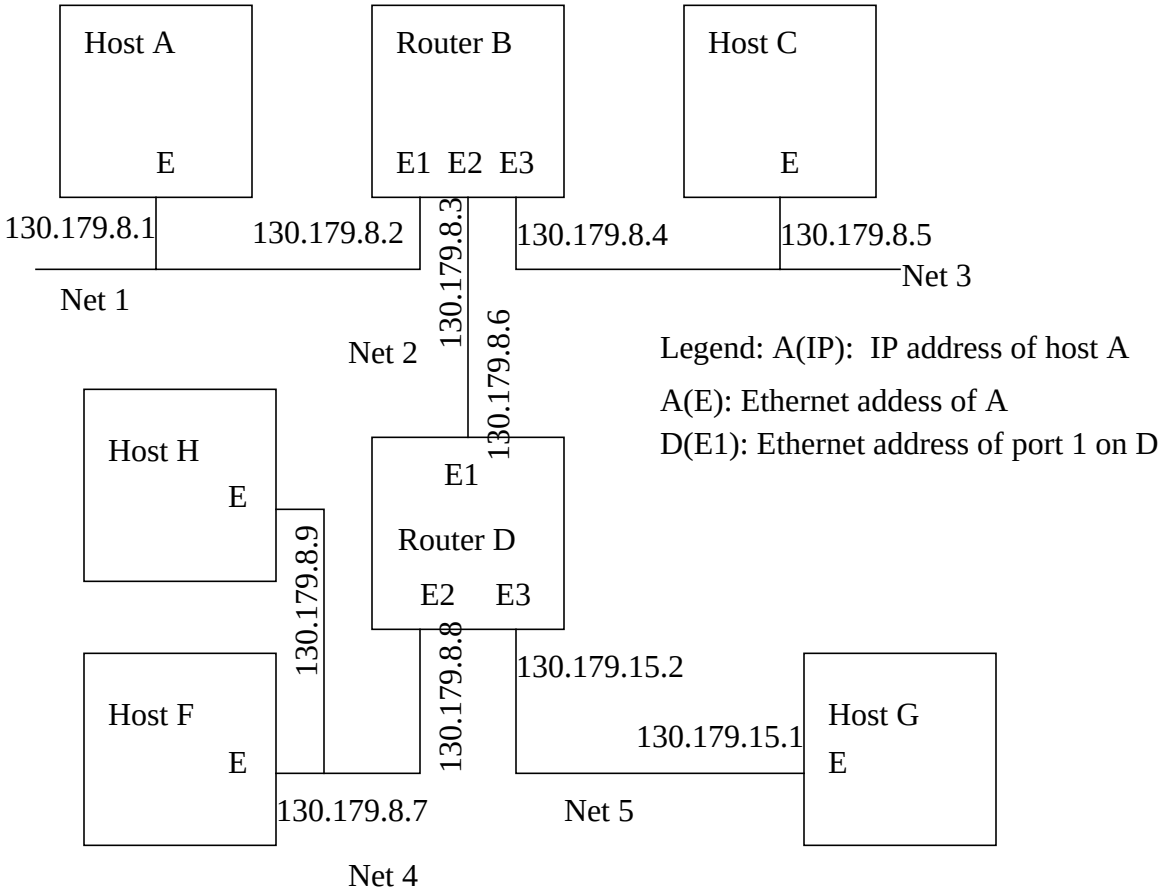
8) ARP

9) DNS

10) DHCP

11)MAC

Part4 Routing:



1) What does the routing table in Host H, and Routers B and D look like?

Routing Table in H

Destination Network	Next Router	Number of Hops