

Computer Networks Comprehensive Exam Spring 2006

Answer each of the following questions. Write your answers and show any required work in the space provided on the test.

1. In each of the following blanks the answer is either Ethernet Hub (EH), Ethernet LAN Switch (LS), and/or IP Router (R). This means that exactly one, exactly two, or all three may be correct in each case. Fill in the blanks with the most correct selection(s) from EH, LS, R.
 - a. Typically performs the CRC _____.
 - b. Primarily works at the physical layer _____.
 - c. Primarily works at the network layer _____.
 - d. Forwards packets _____.
 - e. Forwards frames _____.
 - f. Terminates Ethernet broadcasts _____.
 - g. Supports multiple collision domains _____.
 - h. Forwarding primarily uses MAC address _____.
 - i. Defines/configures VLANs _____.
 - j. Uses ICMP _____.

2. An organization has been given the network address 133.163.0.0. The network administrator needs to set up 60 IP subnets so that each subnet will support 1000 IP addresses.
 - a. What subnet mask should the network administrator use for this purpose?

 - b. List the lowest (numerical value) five subnet addresses that should be used in this case.

3. In the space provided (if it doesn't fit, I won't grade it) give the most important difference between each of the following:
- a. IP vs. ATM service type _____

 - b. Router vs. Bridge _____

 - c. IPV4 vs. IPV6 _____

 - d. TCP vs. UDP _____

 - e. Flow control vs. congestion control (purpose) _____

4. A channel has a bit rate of 100 kbps and a propagation delay of 20ms. Assuming that the channel uses a stop-and-wait protocol, for what range of frame sizes (bits) is the channel efficiency between 40% and 60%? **SHOW HOW YOU OBTAIN THE ANSWER.**