**Chapter 11**

Q1. Compare and contrast byte-stuffing and bit-stuffing. Which technique is used in byte-oriented protocols? Which technique is used in bit-oriented protocols?

Q2. Compare and contrast flow control and error control.

Q3. Byte-stuff the data in Figure



Q4. Bit-stuff the data in Figure



Q5. A sender sends a series of packets to the same destination using 5-bit sequence  
numbers. If the sequence number starts with 0, what is the sequence number after  
sending 100 packets?  
Q6. Using 5-bit sequence numbers, what is the maximum size of the send and receive  
windows for each of the following protocols?  
a. Stop-and-Wait ARQ  
b. Go-Back-N ARQ  
c. Selective-Repeat ARQ

Q7. The timer of a system using the Stop-and-Wait ARQ Protocol has a time-out of 6 ms. Draw the flow diagram for four frames if the round trip delay is 4 ms. Assume no data frame or control frame is lost or damaged.  
Q8. Repeat Q7 if the time-out is 4 ms and the round trip delay is 6.  
Q9. Repeat Q7 if the first frame (frame 0) is lost.  
Q10. A system uses the Stop-and-Wait ARQ Protocol. If each packet carries 1000 bits of data, how long does it take to send 1 million bits of data if the distance between the sender and receiver is 5000 K and the propagation speed is 2 x 108 m? Ignore transmission, waiting, and processing delays. We assume no data or control frame is lost  
or damaged.  
Q11. Repeat Q 10 using the Go-back-N ARQ Protocol with a window size of 7. Ignore the overhead due to the header and trailer.  
Q12. Repeat Q 10 using the Selective-Repeat ARQ Protocol with a window size of 4. Ignore the overhead due to the header and the trailer.

**Chapter 13**

3. What is the difference between a unicast, multicast, and broadcast address?  
4. What are the advantages of dividing an Ethernet LAN with a bridge?  
5. What is the relationship between a switch and a bridge?

7. Compare the data rates for Standard Ethernet, Fast Ethernet, Gigabit Ethernet, and  
Ten-Gigabit Ethernet.

12. What is the hexadecimal equivalent of the following Ethernet address?  
01011010 00010001 01010101 00011000 10101010 00001111  
13. How does the Ethernet address lA:2B:3CAD:5E:6F appear on the line in binary?  
14. If an Ethernet destination address is 07:01:02:03:04:05, what is the type of the  
address (unicast, multicast, or broadcast)?  
15. The address 43:7B:6C:DE: 10:00 has been shown as the source address in an Ethernet  
frame. The receiver has discarded the frame. Why?  
16. An Ethernet MAC sublayer receives 42 bytes of data from the upper layer. How  
many bytes of padding must be added to the data?

19. Suppose the length of a lOBase5 cable is 2500 m. If the speed of propagation in a  
thick coaxial cable is 200,000,000 m!s, how long does it take for a bit to travel  
from the beginning to the end of the network? Assume there are 10 /ls delay in the  
equipment.

**Chapter 19 + MCQs**

3. What are the differences between classful addressing and classless addressing in IPv4?

4. List the classes in classful addressing and define the application of each class (unicast,  
multicast, broadcast, or reserve).  
5. Explain why most of the addresses in class A are wasted. Explain why a medium-size  
or large-size corporation does not want a block of class C addresses.  
6. What is a mask in IPv4 addressing? What is a default mask in IPv4 addressing?  
7. What is the network address in a block of addresses? How can we find the network  
address if one of the addresses in a block is given?

10. What is NAT? How can NAT help in address depletion?

II. What is the address space in each of the following systems?  
a. A system with 8-bit addresses  
b. A system with 16-bit addresses  
c. A system with 64-bit addresses

14. Change the following IP addresses from dotted-decimal notation to binary notation.  
a. 114.34.2.8  
b. 129.14.6.8  
c. 208.34.54.12  
d. 238.34.2.1  
15. Change the following IP addresses from binary notation to dotted-decimal notation.  
a. 01111111 11110000 01100111 01111101  
b. 10101111 11000000 11111000 00011101  
c. 11011111 10110000 00011111 01011101  
d. 11101111 11110111 11000111 00011101  
16. Find the class of the following IP addresses.  
a. 208.34.54.12  
b. 238.34.2.1  
c. 114.34.2.8  
d. 129.14.6.8  
17. Find the class of the following IP addresses.  
a. 11110111 11110011 10000111 11011101  
b. 10101111 11000000 11110000 00011101  
c. 11011111 10110000 00011111 01011101  
d. 11101111 11110111 11000111 00011101  
18. Find the netid and the hostid of the following IP addresses.  
• a. 114.34.2.8  
b. 132.56.8.6  
c. 208.34.54.12

19. In a block of addresses, we know the IP address of one host is 25.34.12.56/16.  
What are the first address (network address) and the last address (limited broadcast  
address) in this block?  
20. In a block of addresses, we know the IP address of one host is 182.44.82.16/26.  
What are the first address (network address) and the last address in this block?

**Chapter 25 + MCQs**

I. What is an advantage of a hierarchical name space over a flat name space for a system  
the size of the Internet?  
2. What is the difference between a primary server and a secondary server?  
3. What are the three domains of the domain name space?  
*SECTION* 25.14 *PRACTICE SET 815*4. What is the purpose of the inverse domain?  
5. How does recursive resolution differ from iterative resolution?  
6. What is an FQDN?  
7. What is a PQDN?  
8. What is a zone?  
9. How does caching increase the efficiency of name resolution?  
10. What are the two main categories ofDNS messages?  
11. Why was there a need for DDNS?

**Chapter 26 + MCQs**

1. What is the difference between local and remote log-in in TELNET?  
   2. How are control and data characters distinguished in NVT?  
   3. How are options negotiated in TELNET?  
   4. Describe the addressing system used by SMTP.  
   5. In electronic mail, what are the tasks of a user agent?  
   6. In electronic mail, what is MIME?  
   7. Why do we need POP3 or IMAP4 for electronic mail?  
   8. What is the purpose of FTP?  
   9. Describe the functions of the two FTP connections.  
   10. What kinds of file types can FTP transfer?  
   11. What are the three FTP transmission modes?  
   12. How does storing a file differ from retrieving a file?  
   13. What is anonymous FTP?

**Chapter 27 +MCQs**

1. How is HTTP related to WWW?  
2. How is HTTP similar to SMTP?  
3. How is HTTP similar to *FTP?*4. What is a URL and what are its components?  
5. What is a proxy server and how is it related to HTTP?  
6. Name the common three components of a browser.  
7. What are the three types of Web documents?  
8. What does HTML stand for and what is its function?  
9. What is the difference between an active document and a dynamic document?  
10. What does CGI stand for and what is its function?  
11. Describe the relationship between Java and an active document.