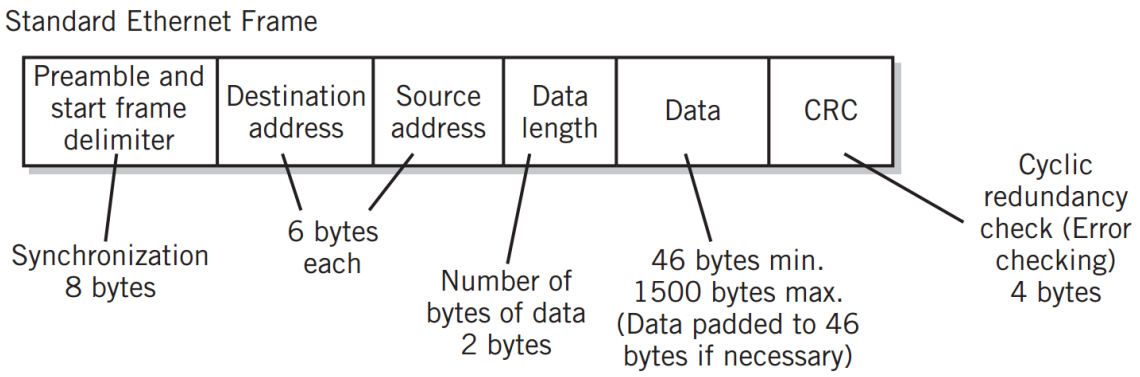
1. In the Ethernet frame described in the text (figure 13.5), what is the minimum and maximum number of bytes?

FIGURE 13.5



Minimum = 8 + 6 + 6 + 2 + 46 + 4 = 72 bytes

Maximum = 8 + 6 + 6 + 2 + 1500 + 4 = 1526 bytes

2. Suppose a higher layer application wants to send a file 12MB in size across an Ethernet LAN. How many Ethernet frames are needed? Assume the largest Ethernet payload is 1500 bytes.

Ethernet frames = 12 MB / 1500 bytes = 8000

3. What is the purpose of an IP address mask? Suppose an IP address is identified as 222.44.66.88/24. What is the network address in this case? What is the host address? How many hosts can this network address support? Repeat this exercise for the IP address 200.40.60.80/26.

Masks are used to separate the different parts of the address.

222.44.66.88/24

11011110/00101100/01000010/01011000

Network address: 11011110/00101100/0100

Host address: 1000

Hosts: 16

200.40.60.80/26

11001000/00101000/00111100/01010000

Network address: 11001000/00101000/0011

Host address: 0000

Hosts: 16