**Chapter 12**

How many connections are required for 30 nodes to be connected in a full mesh topology?

**Sol: The formula is**

**Number of connections = (Nodes)(Nodes-1)/2**

**30\*29/2 = 435**

**Chapter 13**

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

**Sol: (using Figure 13.5)**

**Preamble and start frame delimiter = 8**

**Destination and Source MAC addresses = 12**

**Number of data bytes = 2**

**Payload minimum = 46**

**CRC = 4**

**The minimum is 8 + 12 + 2 + 46 + 4= 72 bytes**

**Preamble and start frame delimiter = 8**

**Destination and Source MAC addresses = 12**

**Number of data bytes = 2**

**Payload maximum = 1500**

**CRC = 4**

**The maximum is 8 + 12 + 2 + 1500 + 4= 1526 bytes**

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.

**Sol: The goal is to send 12MB which must be broken down into Ethernet frames holding 1500 bytes of content each.**

**The file is 12 x 1,048,576 bytes = 12,582,912 bytes. So, 12582912 / 1500 = 8389 (rounded up) Ethernet frames are needed.**