第五次作业：（英文版教材第四章 6, 13, 16, 17, 18, 20, 22, 24, 38, 39, 41, 42）

6. What is the length of a contention slot in CSMA/CD for (a) a 2-km twin-lead cable (signal propagation speed is 82% of the signal propagation speed in vacuum)?, and (b) a 40-km multimode fiber optic cable (signal propagation speed is 65% of the signal propagation speed in vacuum)?

13. What is the baud rate of classic 10-Mbps Ethernet?

16. Consider building a CSMA/CD network running at 1 Gbps over a 1-km cable with no repeaters. The signal speed in the cable is 200,000 km/sec. What is the minimum frame size?

17. (Minimum frame length) An IP packet to be transmitted by Ethernet is 60 bytes long, including all its headers. If LLC is not in use, is padding needed in the Ethernet frame, and if so, how many bytes?

18. Ethernet frames must be at least 64 bytes long to ensure that the transmitter is still going in the event of a collision at the far end of the cable. Fast Ethernet has the same 64-byte minimum frame size but can get the bits out ten times faster. How is it possible to maintain the same minimum frame size?

20. How many frames per second can gigabit Ethernet handle? Think carefully and take into account all the relevant cases. Hint: the fact that it is gigabit Ethernet matters.

22. In Fig. 4-27, four stations, A, B, C, and D, are shown. Which of the last two stations do you think is closest to A and why?

24. A wireless LAN with one AP has 10 client stations. Four stations have data rates of 6 Mbps, four stations have data rates of 18 Mbps, and the last two stations have data rates of 54 Mbps. What is the data rate experienced by each station when all ten stations are sending data together, and

(a) TXOP is not used?

(b) TXOP is used?

38. Consider the extended LAN connected using bridges B1 and B2 in Fig. 4-41(b). Suppose the hash tables in the two bridges are empty. List all ports on which a packet will be forwarded for the following sequence of data transmissions:

(a) A sends a packet to C.

(b) E sends a packet to F.

(c) F sends a packet to E.

(d) G sends a packet to E.

(e) D sends a packet to A.

(f) B sends a packet to F.

39. Store-and-forward switches have an advantage over cut-through switches with respect to damaged frames. Explain what it is.

41. To make VLANs work, configuration tables are needed in the bridges. What if the VLANs of Fig. 4-47 used hubs rather than switches? Do the hubs need configuration tables, too? Why or why not?

42. In Fig. 4-48, the switch in the legacy end domain on the right is a VLAN-aware switch. Would it be possible to use a legacy switch there? If so, how would that work? If not, why not?