CHAPTER 21

Networking and Internetworking Devices

21.1 REVIEW QUESTIONS

1. An amplifier amplifies the signal, as well as noise that may come with the signal, whereas a repeater regenerates the signal, creating its copy bit for bit at the original strength.
3.
   a. The repeater operates in the physical layer.
   b. The bridge operates in the physical and data link layers.
   c. The router operates in the physical, data link, and network layers.
   d. The gateway operates in all seven layers.
5. Some of the factors that need to be considered in connecting networks are the distances between them, compatibility of protocols, frame format, data packet size, data rate, and the bit order of addresses in different protocols.
7. A network is two or more devices connected for the purpose of sharing data or resources.
9. Bridges have access to station addresses and can forward a packet to the appropriate segment of the network. In this way, they filter traffic and help control congestion.
11. In their simplest function routers pass packets from one connected network to another. If the packet is addressed to a network of which the router is not a member, it determines which of its connected networks is the best next point to relay the packet.
13. In routing shortest means either requiring the smallest number of hops, or the fastest, cheapest, most reliable, or secure. Usually it is a combination of all of the qualities that make a specific route more attractive than others for a particular transmission.
15. Each router that relays a packet subtracts one from its lifetime value and passes it on. When the value reaches 0 the packet is destroyed.
17. A multiprotocol router can route packets from different protocols.

19. Switches make the network more efficient by preventing collisions.
21. Knowledge about the whole network, sharing information only with the immediate neighbors, and sending the information at regular intervals.
23. Knowledge about the neighborhood, sending information to all the routers in the internetwork, and information sharing only when there is a change.

21.2 MULTIPLE CHOICE QUESTIONS

25. a 27. c 29. b 31. a 33. b 35. a 37. d 39. a 41. b 43. a
45. b 47. c

21.3 EXERCISES

49. There won't be any problem since no acknowledgment is required for 802.3.
51.
    a. Yes
    b. Yes
    c. Yes
    d. Not set
53. Some frames will be discarded.
55. A bridge acts as a station in the Ethernet network. So the collision should be handled normally.
57. See Table 21.1.

Table 21.1 *Exercise 57*

Destination	*Hop Count*	*Next Hop*
Net2	5	C
Net3	4	E
Net4	3	A
Net6	2	C
Net7	4	C

59. See Figure 21.1.

61. See Figure 21.2.

63. See Figure 21.3.

Figure 21.1 *Exercise 59*

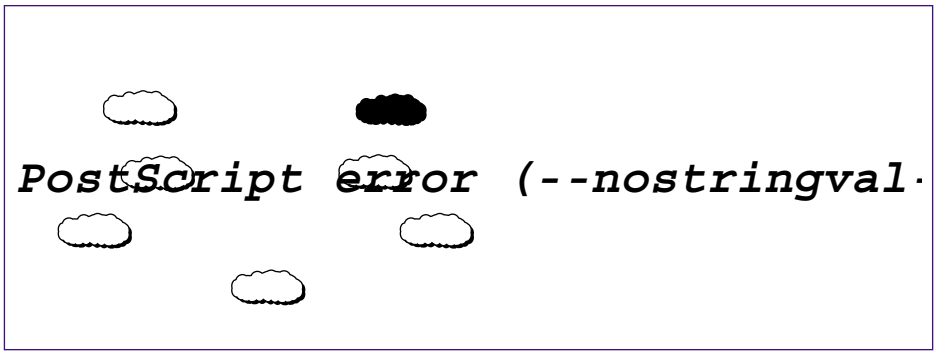

Figure 21.2 *Exercise 61*

Figure 21.3 *Exercise 63*