CHAPTER 24

TCP/IP Protocol Suite: Part I

24.1 REVIEW QUESTIONS

1. The physical address identifies individual devices within a physical network and is usually found on the NIC. The logical address on the other hand identifies the connection of a host to its network.
3. TCP/IP was originally developed as a protocol for networks connected to ARPANET (established by ARPA).
5. The TCP/IP application layer corresponds to the OSI model's top three layers.
7.
   a. Network layer: datagram
   b. Transport layer: segment (for TCP) or user datagram (for UDP)
   c. Application layer: message
9. No error checking or error tracking, and no guarantees
11. By looking at the first byte of an IP address the class of the address can be determined.
13. Three bytes of a class A address identify hosts, which means theoretically up to 2^{24} hosts. Two bytes of a class B address identify hosts, which means theoretically up to 2^{16} hosts. One byte of a class C address identifies hosts, which means theoretically up to 2^8 hosts.
15. A network address is an address with the hostid set to 0s.
17. If there is subnetting, masking extracts the subnetwork address from an IP address.
19. ARP finds the physical address of a device if the IP address is known.
21. ICMP handles control and error messages in the IP layer.
23. A host-to-host protocol delivers a packet from one physical device to another. A port-to-port protocol delivers a message from an application program (process) to another application program.
25. Connection establishment, data transfer, and connection termination

24.2 MULTIPLE CHOICE QUESTIONS

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

24.3 EXERCISES

49.

a. Class A: theoretically 2^7
b. Class B: theoretically 2^{14}
c. Class C: theoretically 2^{21}

51.

a. 01110010 00100010 00000010 00001000
b. 10000001 00001110 00000110 00001000
c. 11010000 00100010 00110110 00001100
d. 11101110 00100010 00000010 00000001
e. 11110001 00100010 00000010 00001000
f. 247.243.135.221

53.

a. Class C
b. Class D
c. Class A
d. Class B
e. Class E

55.

a. netid: 114; hostid: 34.2.8
b. netid: 19; hostid: 34.21.5
c. netid: 23; hostid: 67.12.1
d. netid: 126; hostid: 23.4.0

57.

a. netid: 192.8.56; hostid: 2
b. netid: 220.34.8; hostid: 9
c. netid: 208.34.54; hostid: 12
d. netid: 205.23.67; hostid: 8

59.

a. 23.0.0.0
b. 126.0.0.0
c. 190.12.0.0

d. 220.34.8.0
e. No network address; it is class D
f. No network address; it is class E
g. No network address; it is class E

61.
a. 11111111 11111111 11000000 00000000
b. 11111111 11111111 11100000 00000000
c. 11111111 11111111 11111111 11110000

63.
a. 11111111 11111111 11000000 00000000
b. 11111111 11111111 00000000 00000000
c. 11111111 11111111 11100000 00000000
d. 11111111 11111111 11111111 00000000

65.
a. Theoretically 1,024, but some of them are reserved.
b. Theoretically 4, but some of them are reserved.
c. Theoretically 2,048, but some of them are reserved.
d. Theoretically 65,536, but some of them are reserved.

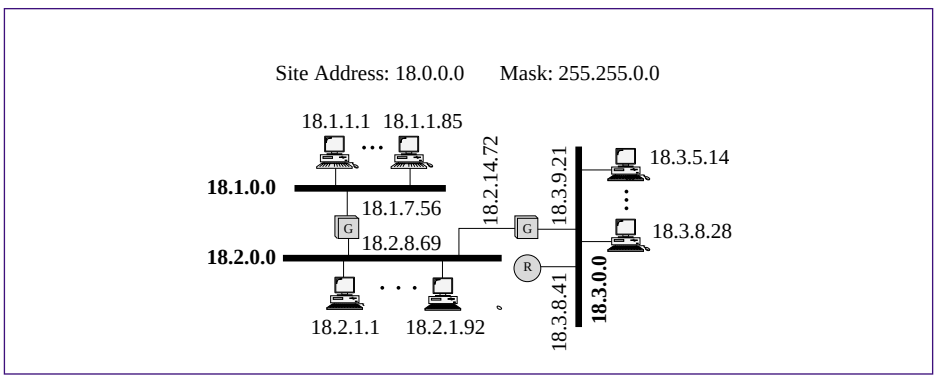
67.
a. Theoretically 4, but some of them are reserved.
b. Theoretically 8, but some of them are reserved.
c. Theoretically 16, but some of them are reserved.
d. 0

69. 120.14.0.0

71. 141.181.0.0

73. Figure 24.1 shows one solution.

Figure 24.1 *Exercise 73*



75. Figure 24.2 shows one solution.

Figure 24.2 *Exercise 75*