
CHAPTER 14

Local Area Networks: Ethernet

Review Questions

1. The preamble is a 56-bit field that provides an alert and timing pulse. It is added to the frame at the physical layer and is not formally part of the frame.
3. The transceiver transmits signals over the medium, receives signals over the medium, and detects collisions.
5. A bridge can raise the bandwidth and separate collision domains.
7. In a full-duplex switched Ethernet LAN, each station can send data without the need to sense the line.
9. The common traditional Ethernet implementations are 10Base5, 10Base2, 10Base-T, and 10Base-FL.
11. Gigabit Ethernet implementations are 1000Base-SX, 1000Base-LX, and 1000Base-T.
13. The reconciliation sublayer in Fast Ethernet replaces the PLS sublayer in traditional Ethernet. It handles all the PLS sublayer tasks except for encoding and decoding.
15. The physical and data link layers are of concern to LANs.

Multiple-Choice Questions

17. b
19. d
21. c
23. a
25. d
27. b (almost 72 percent) not counting preamble and SFD field (less if included)
29. d

Exercises

31. Smallest: $46/64 = 71.87\%$ Largest: $1500/1518 = 98.81\%$ Average = 85.34%
 33. $2500 \text{ meters} / 200,000,000 \text{ mps} = 12.5 \text{ microseconds}$.
 35. $46 - 42 = 4$
 37. See Table 14.1.

Table 14.1 Exercise 37

<i>Characteristics</i>	<i>10Base5</i>	<i>10Base2</i>	<i>10Base-T</i>	<i>10Base-FL</i>
Type of cable	thick coaxial	thin coaxial	twisted pair	fiber optic
Type of transceiver	external	both	both	external
Need for cable end	yes	yes	no	no

39. See Table 14.2.

Table 14.2 Exercise 39

<i>Implementation</i>	<i>Media</i>	<i>Encoding Methods</i>
100BASE-TX	Two pair UTP or STP	4B/5B and MLT-3
100BASE-FX	Two pairs fiber optic cables	4B/5B and NRZ-I
100BASE-T4	Four pairs of UTP	8B/6T