CHAPTER 14

Wireless LANs

Solutions to Review Questions and Exercises

Review Questions

1. The ***basic service set (BSS)*** is the building block of a wireless LAN. A BSS without an AP is called an ad hoc architecture; a BSS with an AP is sometimes referred to as an infrastructure network. An ***extended service set (ESS)*** is made up of two or more BSSs with APs. In this case, the BSSs are connected through a distribution system, which is usually a wired LAN.
2. A station with ***no-transition*** mobility is either stationary or moving only inside a BSS. A station with ***BSS-transition*** mobility can move from one BSS to anther, but the movement is confined inside one ESS. A station with ***ESS-transition*** mobility can move from one ESS to another.
3. The ***orthogonal frequency-division multiplexing (OFDM)*** method for signal generation in a 5-GHz ISM band is similar to ***frequency division multiplexing (FDM)***, with one major difference: All the subbands are used by one source at a given time. Sources contend with one another at the data link layer for access.
4. Stations on wireless LANs normally use ***CSMA/CA***.
5. ***Network Allocation Vector (NAV)*** forces other stations to defer sending their data if one station acquires access. In other words, it provides the collision avoidance aspect. When a station sends an RTS frame, it includes the duration of time that it needs to occupy the channel. The stations that are affected by this transmission create a timer called a NAV.
6. A Bluetooth network is called a ***piconet***. A ***scatternet*** is two or more piconets.
7. The following shows the relationship:

Radio layer	→	**Internet physical layer**
Baseband layer	→	**MAC sublayer of Internet data link layer**
L2CAP layer	→	**LLC sublayer of Internet data link layer**

8. A Bluetooth primary and secondary can be connected by a ***synchronous connection-oriented (SCO)*** link or an ***asynchronous connectionless (ACL)*** link. An SCO link is used when avoiding latency (delay in data delivery) is more important than

integrity (error-free delivery). An ACL link is used when data integrity is more important than avoiding latency.

9. The primary sends on the ***even-numbered*** slots; the secondary sends on the ***odd-numbered*** slots.
10. In all types of frames, a duration of **259 μs** is used for hopping.

Exercises

11. In ***CSMA/CD***, the protocol allows collisions to happen. If there is a collision, it will be detected, destroyed, and the frame will be resent. ***CSMA/CA*** uses a technique that prevents collision.
12. See Table 14.1.

Table 14.1 *Exercise 12*

Fields	*802.3 field size (bytes)*	*802.11 field size (bytes)*
Destination Address	6	
Source Address	6	
Address 1		6
Address 2		6
Address 3		6
Address 4		6
FC		2
D/ID		2
SC		2
PDU Length	2	
Data and Padding	46 to 1500	
Frame Body	64-1518	0 to 2312
FCS (CRC)	4	4