

CHAPTER 16: Cellular Telephone and Satellite Networks

Solutions to Selected Review Questions

Review Questions

1. **GPS** is a satellite system that provides land and sea navigation data for vehicles and ships. The system is also used for clock synchronization.
2. A **mobile switching** center connects cells, records call information, and is responsible for billing.
3. **CDMA** encodes each traffic channel using one of the rows in the Walsh-64 table.
4. The main difference between **Iridium** and **Globalstar** is the relaying mechanism. Iridium requires relaying between satellites. Globalstar requires relaying between satellites and earth stations.
5. **AMPS** is an analog cellular phone system using FDMA.
6. A **high reuse factor** is better because the cells that use the same set of frequencies are farther apart (separated by more cells).
7. A **GEO** satellite has an equatorial orbit since the satellite needs to remain fixed at a certain spot above the earth.
8. A satellite orbiting in a **Van Allen belt** would be destroyed by the charged particles.
9. A **footprint** is the area on earth at which the satellite aims its signal.
10. Transmission from the earth to the satellite is called the **uplink**. Transmission from the satellite to the earth is called the **downlink**.
11. The three orbit types are **equatorial**, **inclined**, and **polar**.
12. **D-AMPS** is a digital cellular phone system that is backward compatible with AMPS.

13. In a *hard handoff*, a mobile station communicates with only one base station. In a *soft handoff*, a mobile station communicates with two base stations at the same time.
14. A *mobile switching center* coordinates communications between a *base station* and a *telephone central office*.
15. *GSM* is a European standard that provides a common second-generation technology for all of Europe.