

## CHAPTER 12 : Multiple Access

### Solutions to Selected Review Questions

#### Review Questions

1. In *controlled access methods*, the stations consult one another to find which station has the right to send. A station cannot send unless it has been authorized by other stations. We discuss three popular controlled-access methods: *reservation*, *polling*, and *token passing*.
2. In *random access* methods, there is no access control (as there is in controlled access methods) and there is no predefined channels (as in channelization). Each station can transmit when it desires. This liberty may create *collision*.
3. We do need a multiple access, because a channel in the CATV band is normally shared between several neighboring customers. The cable company uses the *random access* method to share the bandwidth between neighbors.
4. In a *random access* method, the whole available bandwidth belongs to the station that wins the contention; the other stations need to wait. In a *channelization* method, the available bandwidth is divided between the stations. If a station does not have data to send, the allocated channel remains idle.
5. In a *random access* method, there is no control; access is based on *contention*. In a *controlled access* method, either a central authority (in polling) or other stations (in reservation and token passing) control the access. Random access methods have less administration overhead. On the other hand, controlled access methods are collision free.
6. *Channelization* is a multiple-access method in which the available bandwidth of a link is shared in time, frequency, or through code, between different stations. The common protocols in this category are *FDMA*, *TDMA*, and *CDMA*.
7. In a *controlled access* method, the whole available bandwidth belongs to the station that is granted permission either by a central authority or by other stations. In a *channelization* method, the available bandwidth is divided between the stations. If a station does not have data to send the allocated channel remains idle.

8. The three categories of multiple access protocols discussed in this chapter are *random access*, *controlled access*, and *channelization*.
9. We do not need a multiple access method in this case. The local loop provides a dedicated *point-to-point* connection to the telephone office.
12. In *random access* methods, no station is superior to another station and none is assigned the control over another. Each station can transmit when it desires on the condition that it follows the predefined procedure. Three common protocols in this category are *ALOHA*, *CSMA/CD*, and *CSMA/CA*.