
PRACTICE SET

Questions

- Q1-1.** The five components of a data communication system are the *sender*, the *receiver*, the *transmission medium*, the *message*, and the *protocol*.
- Q1-3.** Advantages of a multipoint over a point-to-point configuration (type of connection) include *ease of installation* and *low cost*.
- Q1-5.** We can divide line configuration in two broad categories:
- a. *Point-to-point*: mesh, star, and ring.
 - b. *Multipoint*: bus
- Q1-7.** We give an advantage for each of four network topologies:
- a. *Mesh*: secure
 - b. *Bus*: easy installation
 - c. *Star*: robust
 - d. *Ring*: easy fault isolation
- Q1-9.** The general factors are *size*, *distances* (covered by the network), *structure*, and *ownership*.
- Q1-11.** A protocol defines what is communicated, in what way and when. This provides accurate and timely transfer of information between different devices on a network.
- Q1-13.** Each LAN should be connected to $(n - 1)$ LANs, which means that we will have $n \times (n - 1)$ connections. However, if each connection can be used in both directions, we need only $[n \times (n - 1)]/2$ connections.

- Q1-15.** The telephone company acts as an ISP. The connection from the resident to the telephone company is a *point-to-point* access WAN that connects the premises to the Internet. At the same time, the telephone company needs to provide the necessary services such as e-mail.
- Q1-17.** An *Internet draft* is a working document with no official status and a six-month lifetime; an Internet draft may become a *proposed standard* after six months if it has received enough attention in the Internet community.
- Q1-19.** The **IETF** is responsible for identifying operational problems and recommending solutions; the **IRTF** focuses on long-term research topics.

Problems

- P1-1.** Unicode uses 32 bits to represent a symbol or a character. We can define 2^{32} different symbols or characters.
- P1-3.**
- Cable links: $n(n-1)/2 = (6 \times 5)/2 = 15$
 - Number of ports: $(n-1) = 5$ ports needed per device
- P1-5.** This is a LAN. The Ethernet hub creates a LAN as we will see in Chapter 13.
- P1-7.** In a bus topology, no station is in the path of the signal. Unplugging a station has no effect on the operation of the rest of the network.
- P1-9.** In this case, the communication is only between a caller and the callee. A dedicated line is established between them. The connection is point-to-point.