CHAPTER 2

Network Models

Solutions to Odd-Numbered Review Questions and Exercises

Review Questions

1. The Internet model, as discussed in this chapter, include ***physical***, ***data link***, ***network***, ***transport***, and ***application*** layers.
3. The ***application*** layer supports the user.
5. ***Peer-to-peer processes*** are processes on two or more devices communicating at a same layer
7. ***Headers*** and ***trailers*** are control data added at the beginning and the end of each data unit at each layer of the sender and removed at the corresponding layers of the receiver. They provide source and destination addresses, synchronization points, information for error detection, etc.
9. The *data link layer* is responsible for
   a. ***framing data bits***
   b. ***providing the physical addresses of the sender/receiver***
   c. ***data rate control***
   d. ***detection and correction of damaged and lost frames***
11. The *transport layer* oversees the process-to-process delivery of the entire message. It is responsible for
    a. ***dividing the message into manageable segments***
    b. ***reassembling it at the destination***
    c. ***flow and error control***
13. The *application layer services* include ***file transfer***, ***remote access***, ***shared database management***, and ***mail services***.

Exercises

15. The ***International Standards Organization***, or the ***International Organization of Standards***, (**ISO**) is a multinational body dedicated to worldwide agreement on international standards. An ISO standard that covers all aspects of network communications is the ***Open Systems Interconnection*** (**OSI**) model.

17.

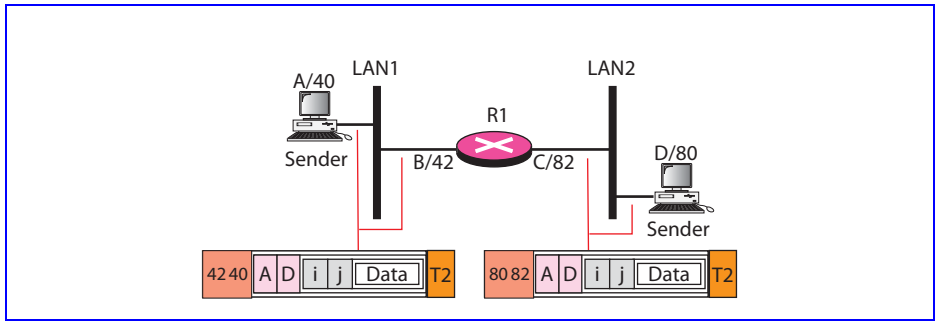
a. Reliable process-to-process delivery: **transport** layer
b. Route selection: ***network*** layer
c. Defining frames: ***data link*** layer
d. Providing user services: ***application*** layer
e. Transmission of bits across the medium: ***physical*** layer

19.

a. Format and code conversion services: ***presentation*** layer
b. Establishing, managing, and terminating sessions: ***session*** layer
c. Ensuring reliable transmission of data: ***data link*** and ***transport*** layers
d. Log-in and log-out procedures: ***session*** layer
e. Providing independence from different data representation: ***presentation*** layer

21. See Figure 2.1.

Figure 2.1 *Solution to Exercise 21*



23. Before using the destination address in an intermediate or the destination node, the packet goes through error checking that may help the node find the corruption (with a high probability) and discard the packet. Normally the upper layer protocol will inform the source to resend the packet.

25. The errors ***between*** the nodes can be detected by the data link layer control, but the error ***at*** the node (between input port and output port) of the node cannot be detected by the data link layer.