P16:

* Suppose an application uses rdt 3.0 as its transport layer protocol. Then It stop-and-wait protocol is used very low utilization in the application.
* The application allows the receiver to send the acknowledgements and sends the next data packet. It is used as a pipelined data in the channel.
* There is a chance of missing data before it reaches the receiver.
* So the sender (who is using rtd 3.0 protocol) will not retransmit the data. The  missing or lost some data.
* Thus, designing of the application need to adopt some mechanism to over come this problem.

P24:

1. True.
2. True.
3. True.
4. True.

P27:

Given data:

* Host A and B are communicating over a TCP connection, and Host B has already received from A all bytes up through byte 126.
* The first and second segments contain 80 and 40 bytes of data, respectively.
* The first segment of sequence number is 127.
* The source port number is 302.
* The destination port number is 80

a)

Sequence number = first segment of sequence number+ destination port number

                                =127+80

                                  =207

So,  sequence number=207

Source port number = 302

Destination port number= 80

b)

Acknowledgement number= 207

Source port number = 80

Destination port number= 302

c)

Acknowledgement number=127

P28:

• As given that the link capacity is only 100 Mbps, so the sending rate of Host A can be almost 100 Mbps.

• Host A sends data into the TCP receive buffer at a rate as high as 120 Mbps.

• The receive buffer fills up at a rate of about 50Mbps.

• Host B removes data from the TCP receive buffer at a rate of 50 Mbps.

• When the TCP receive buffer is full, Host B sets the RcvWindow to 0. It is a signal to Host A to stop sending data.

• Host A stops sending the data into TCP receive buffer and waits till it receives a TCP segment with RcvWindow > 0.

• Host A will stop and start sending data depending on the value of the RcvWindow that Host A receives from Host B.

• Thus it can be determined that the on an average, the long-term rate at which Host A sends data to Host B can be no more than 50Mbps.

P34:

**Relationship between the variables, SendBase and LastByteRcvd:**

**SendBase-1 <=LastByteRcvd**

**Detailed Explanation:**

* SendBase-1 is used to find the ***sequence number***of the last byte(Refer Section 3.5.4 from the text book)
* LastByteRcvd is used to find the **number of the last byte** in the stream of data arrival from network to buffer. So, SendBase is the LastByteRcvd at the receiver end.

P35:

LastByteRcvd - LastByteRead ≤ RcvBuffer

y - 1 ≤ LastByteRcvd