Homework Questions on Transport Layer Part 1

Q1. Which protocol – Go-Back-N or Selective-Repeat - makes more efficient use of network bandwidth? Why?

Q2. Consider a reliable data transfer protocol that uses only negative acknowledgements. Suppose the sender sends data only infrequently. Would a NAK-only protocol be preferable to a protocol that uses ACKs? Why? Now suppose the sender has a lot of data to send and the end-to-end connection experiences few losses. In this second case, would a NAK-only protocol be preferable to a protocol that uses ACKs? Why?

Q3. If the RTT from London to Cape Sydney is 120ms and all links in the network have a 155 Mbits/second data-rate, how much data can fit in the "pipe"? Express your answer in bytes.

Q4. A reliable transport protocol is using Selective Repeat with 8-bit sequence numbers. What is the largest allowable sender window that will prevent the risk of accepting duplicate data as new in the receiver?

Q5. Two 16-bit words 1011 0101 1010 1000 and 0101 1001 0000 0101 are received, along with another 16-bit word, 1101 0001 0101 0001, which is the UDP checksum of the first two words. Will the receiver detect an error?

Q6. Is it possible for an application to enjoy reliable data transfer even when the application runs over UDP? If so, how?

Q7. Suppose that the UDP receiver computes the Internet checksum for the received UDP segment and finds that it matches the value carried in the checksum field. Can the receiver be absolutely sure that no bit errors have occurred? Explain. Would things be different with TCP?

End of homework