University of Maryland
MS in Telecommunications Program
Sample Placement Exam

ENTS 640: Networks and Protocols I

1. The Go-Back-N reliable data transfer protocol
    a) uses a single timer for the newest (most recent) sent, but unacknowledged packet.
    b) uses multiple timers, one for each sent, but unacknowledged packet.
    c) uses a single timer for the oldest (least recent) sent, but unacknowledged packet.
    d) does not use timers at all.

2. The receive window size field in the TCP segment header contains
    a) the number of correctly received data bytes.
    b) the number of erroneously received packets.
    c) the amount of available space in the receive buffer.
    d) the difference between the index of the last byte read from the receive buffer and the index of the last byte received in the receive buffer.

3. How does the header of an IP datagram change while a router processes the IP packet?
    a) The IP datagram header does not change.
    b) The time-to-live field is decremented and the header checksum is recalculated.
    c) The destination IP address field is replaced by the IP address of the next-hop router, and the header checksum is recalculated.
    d) The source IP address field is replaced by the IP address of the next-hop router, and the header checksum is recalculated.

4. The link state routing algorithm
    a) distributes network topology information.
    b) does not require global network knowledge.
    c) is an iterative algorithm.
    d) is less robust than the distance vector routing algorithm.

5. Which of the following problems may occur in protocols that implement the distance vector routing algorithm?
    a) Count to infinity
    b) Slow convergence
    c) Routing loops
    d) All of the above

6. Which of the following statements is correct when comparing the link state and distance vector routing protocols implemented in the same communication network?
   a) The link state protocols converge faster, but they require more communication than the distance vector protocols.
   b) The link state protocols converge more slowly, and they need more communication than the distance vector protocols.
   c) The link state protocols converge faster, and they need less communication than the distance vector protocols.
   d) Link state protocols converge more slowly, and they need less communication than the distance vector protocols.

7. In TCP packets, which of the fields is/are used by the operating system to distinguish packets belonging to different applications?
   a) Sequence number
   b) Acknowledgement number
   c) Source port or destination port number
   d) Destination IP address

8. Which of the following statements is true about the function of the time-to-live field in IP packets in the Internet?
   a) Its purpose is to prevent forwarding packets forever if a packet is trapped in a routing loop.
   b) Its purpose is to help route packets faster.
   c) Its purpose is to handle inter-domain routing where the maximum transmission unit does not match.
   d) Its purpose is to provide end-to-end delay measurements.

9. Which of the following conditions will cause immediate termination of a TCP session?
   a) A FIN packet is sent by any of the two communicating parties.
   b) A FIN packet is sent by both of the two communicating parties.
   c) An RST packet is sent by any of the two communicating parties.
   d) A PSH packet is sent by both of the two communicating parties.

10. Which is a correct sequence of fields (in transmission order) in an Ethernet (IEEE 802.3) frame?
   a) Preamble, destination MAC address, source MAC address, type, CRC, data
   b) Preamble, destination MAC address, source MAC address, type, data, CRC
   c) Destination MAC address, preamble, source MAC address, type, data, CRC
   d) None of the above is correct.

Solutions:
1. c, 2. c, 3. b, 4. a, 5. d, 6. a, 7. c, 8. a, 9. c, 10. b