EE4204 Computer Networks Quiz 2 Practice/Sample Questions

1. Which of the following does UDP guarantee? Briefly explain your choice.
   a) reliable data transmission
   b) end-to-end connection
   c) secure data transmission
   d) none of the above

2. Explain in which applications you would use TCP and in which applications you would use UDP.

3. In type A routing, each node constructs an array containing the costs to all other nodes and distributes that array to its immediate neighbors, whereas in type B routing, each node constructs an array containing the costs to all other nodes using knowledge of the network topology and link costs. Please select the best choice for type A and type B routing.
   a) A=link state, B=distance vector
   b) A=link state, B=dynamic
   c) A=distance vector, B=link state
   d) A=distance vector, B=static

4. Give an example of a simple network in which link state routing returns a different path from distance vector routing.

5. Consider TCP running over fast links. Assume that the link capacity is 8 Gbps and the segment size is 1000 bytes/segment. If the round trip time (RTT) is 10ms, what is the window size required? Briefly explain your choice.
   a) 1000 segments.
   b) 8000 segments.
   c) 10000 segments.
   d) 80000 segments.

6. Explain how TCP handles (i) congestion control and (ii) flow control.

7. What are the first and last valid host IP addresses in the subnetwork 212.56.170.0/21? Briefly explain your choice.
   a) 212.56.170.0 and 212.56.175.255
   b) 212.56.170.0 and 212.56.175.254
   c) 212.56.168.1 and 212.56.175.254
   d) 212.56.168.1 and 212.56.175.255

8. Explain one advantage of classless IP addressing over class-based IP addressing.

9. Consider the TCP Reno algorithm with both SlowStart (SS) and Additive Increase Multiplicative Decrease (AIMD) phases, where the window size at the start of the SS phase is 2 MSS and the threshold (ssthresh) at the start of the first transmission is 8 MSS. Assume that a timeout occurs during the fifth transmission. What is the congestion window size at the end of the tenth transmission? Briefly explain your choice.
   a) 8 MSS
   b) 14 MSS
   c) 7 MSS
   d) 12 MSS

10. Explain what it means that the TCP AIMD algorithm is fair.