CISC450/CPEG419: Computer Networks I
Final Exam
May 24, 2019 10:30AM-12:30 PM

Open book, open note, close electronics and Internet

Name: **UD ID:** **Grade in Points:**

True or False (4 points each)

1. With the same length of sequence number, the maximum link utilization ratio of a Go-Back-N protocol is always higher than that of selective repeat protocol. (F)

2. Under the TCP, the retransmission timeout value increases as the variance in measured RTT values increases. (T)

3. During congestion avoidance, the value of `cwnd` is creased by one MSS every RTT. (F)

4. A 3600-byte datagram can be into transmitted over a link with an MTU of 600 bytes in six fragments.(F)

5. The efficiency of CSMA/CD approaches to one as the frame size approaches to infinity. (T)

6. Assume that N nodes contend a broadcast channel under the slotted Aloha. If the retransmission probability is set as $p = 1/N$, the channel utilization increases as N increases. (T)

Multiple Choice Single Answer (5 points each)

7. Consider a datagram network using 4-bit host addresses. Suppose a router uses longest prefix matching and has the following forwarding table:

Prefix Match	Interface
1	3
01	1
10	2
101	4
otherwise	2

What is the address range of destination host addresses for interface 2? ( )

- (A) $1000 \sim 1011$
- (B) $1000 \sim 1001$
- (C) $0000 \sim 0011$ and $1000 \sim 1001$
- (D) $0000 \sim 0111$ and $1000 \sim 1001$

8. Consider the operation of a learning switch in the context of a network in which 6 nodes labeled A through F are star connected into an Ethernet switch. Suppose that (1) A sends a frame to C, (2) C replies a frame to A, (3) F sends a frame to C, (4) C replies a frame to F. Suppose that the switch table is initially empty. How many frames are transmitted during this process? ( )

- (A) 8
- (B) 14
- (C) 16
- (D) 24