

**CS 3516 (A18) – Quiz 7 –
September 27, 2018**

Student Name: _____

WPI Username: _____

Please answer the following questions using only the front side of this sheet of paper. **This quiz is closed book. One page (two-sided) cheat-sheet is allowed.** *We will not grade the backside or any additional sheets of paper.* We will scan the quiz and return it electronically. To ensure it is properly scanned, please avoid wrinkling, folding, or otherwise distorting the paper. *You can use the back of the paper for any calculations you might have to perform.* Please mark exactly which question/sub-question you are answering. (In total 7 points.)

1. If a TCP host wants to send out a file containing 100,000 bytes. Assuming the MSS is 500 bytes, then what is the acknowledgement number received by the sender in response to the 5th segment it sends out (assume perfect network): (Suppose the first sequence number is 0.) (1 point)

The acknowledgment number received in response to the fifth segment would be **2500**. (1 points.)

2. Suppose Host A sends out two TCP segments to Host B. The first segment has sequence number 90 and the second segment has sequence number 110:

- a) How much data is in the first segment? (1 point)
- b) Suppose the first segment gets lost and the second segment arrived at Host B. In the acknowledgement sent back by Host B, what will be the acknowledgement number? (1 point)

1a) 20 bytes (1 point)

1b) ACKN = 90 (1 point)

3. Consider sending a 2400-byte datagram into a link that has an MTU of 700 bytes. Suppose the original datagram is stamped with the identification number 422. What are values of Identification number, flag and offset (fields in the IP header), and the fragment size? (4 points)

2400-20=2380 bytes data;

Frag 1: 680 bytes; Frag 2: 680 bytes; Frag 3: 680 bytes; Frag 4: 340 bytes

Offset 1: 0; Offset 2: 680/8=85; Offset 3: 1360/8=170; Offset 4: 255;

Fragment 1 → ID# = 422, Size = 700, offset = 0, flag = 1 (0.25 points for each, total 1 point)

Fragment 2 → ID# = 422, Size = 700, offset = 85, flag = 1 (0.25 points for each, total 1 point)

Fragment 3 → ID# = 422, Size = 700, offset = 170, flag = 1 (0.25 points for each, total 1 point)

Fragment 4 → ID# = 422, Size = 360, offset = 255, flag = 0 (0.25 points for each, total 1 point)