

## CSC 469/569 WEEK 8 TEST STUDY GUIDE

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### 1. OPEN BOOK

Be prepared to sketch out designs for multi-threaded TCP servers and clients using binary and /or text-based protocols. Also you should understand the principles of writing GUI network clients.

### 2. CLOSED BOOK

In addition to all the material already covered (see previous quiz and test study guides), there will be great focus on the transport layer, and some focus on the network layer.

Transport Layer: multiplexing and demultiplexing, The differences between TCP and UDP, The UDP segment structure and meanings of its fields, principles of reliable data transfer protocols, the role of finite state machines (FSMs) in the design of network protocols; concepts of reliable data transfer: retransmission, check sums, sequence numbers, acknowledgements, positive and negative acknowledgments, cumulative acknowledgements, individual acknowledgement, NAK-free protocols, alternating bit protocols, sliding window protocols, stop-and-wait protocols, pipelined protocols, Go-Back- $N$  and Selective Repeat.

Make sure you have understood the development of (FSMs of) the various RDT protocols in section 3.4.1 of the class text.

Be able to describe how Go-back- $N$  and Selective Repeat work, and how they differ from each other.

The TCP segment structure (section 3.5.2) and its various fields, TCP estimation of round-trip-time (RTT), TCP connection management (section 3.5.6) and the three-way handshake.

Denial of Service, Distributed Denial of Service and SYN flood attacks.

The Network Layer, different service models for individual packets and for packet flows, guaranteed delivery with and without bounded delay; service models for packet flows: in-order delivery, guaranteed minimal bandwidth, guaranteed maximum jitter, security services, virtual circuit and datagram networks, routing and forwarding, forwarding tables.