**Midterm Review Notes**

* 32 points (from syllabus)
* Part I 18 points (tentative)
* Part II 14 points (tentative)
* Part I: Concepts (40 minutes in classroom)
  + Multiple Choices (5 pts for 10 problems)
  + True/False (3 pts for 6 problems)
  + Filling in Blanks (4 pts for 4 problems)
  + Analysis of scenarios (6 pts for 2-3 problems, mostly in chapter 3)
* Part II: Short Problems and Comprehensive Problems (35 minutes in the class)
* Short problems (7-8 pts for 3 problems)
* Comprehensive problems (6-7 pts for 2 problems)
* Important Topics for Part II
* Delay: 4 components **(SLIDES 10-17)**
* Probability for packet switching **(pg 31, SLIDE 8)**
* Throughput: limited by bandwidth **(pg 35 & 44-47, SLIDES 18-20)**
* P2P: Gnutella and KazaA, analysis of performance **(SLIDES 28-39)**
* Internet checksum (example) **(SLIDES 86-87)**
* Congestion control, GBN and SR **(SLIDES 106-109, 77-80, 81-85)**
* Utilization for pipelining **(Pg. 215)**
* Throughput and other calculation based on congWin **(Pg. 269)**
* Important Concepts
* circuit switching vs. packet switching (probability) **(pg 31, SLIDE 8)**
* bandwidth (bottleneck), throughput calculation, delay (4 reasons), loss **(SLIDES 10-20)**
* C/S and P2P (centralized, distributed pure, distributed hybrid) **(Pg 86-88)**
* Compare pure and hybrid (limited scope flooding) **(pg 405)**
* Why P2P achieves very low delay for a large number of users (peers)? **(Pg 145-151)**
* Socket **(SLIDES 21, 41-46)**
* What uniquely identifies UDP and TCP? **(SLIDE 26)**
* Multiplexing and demultiplexing **(SLIDES 47-52)**
* RDT protocol (**SLIDES 53-74)**
  + rdt 1.0
  + rdt 2.0 - Data bit flipping
  + rdt 2.1 - ACK bit flipping
  + rdt 2.2 - Removal of NAK
  + rdt 3.0 - Packet Loss
  + utilization calculation
* Pipelining **(SLIDES 75-85)**
  + Go Back N vs. Selective Repeat
  + Work on scenarios
* TCP **(SLIDES 88-120)**
  + What are inherited from GBN and SR?
  + What are the new details?
  + Byte ID as sequence number
  + Fast Recovery
  + Delay of ACK if packets are received in-order
  + Flow Control
  + Congestion Control
    - Slow Start and Congestion Avoidance
    - TCP Tahoe and Reno