Midterm Exam Review

<u>One note sheet allowed</u>
- 8½"x 11", one side
- Hand written, not electronically produced

<u>Exam Rules, Structure (see syllabus)</u>
- No electronic devices other than approved calculator
- Show work for partial credit

<u>Ch 5 (Latches and Flip-Flops):</u>
- Combinational versus sequential logic
- Difference between latches and flip-flops
- Types of latches: S-R, D
- Types of flip-flops: J-K, D
- Latch / flip-flop timing diagrams
- Synchronous versus asynchronous operation
- Timing parameters: clock period, propagation delay, setup time, hold time
- Determine if a flip-flop circuit can be clocked at a certain frequency

<u>Ch. 6 (Digital Arithmetic)</u>
- Binary addition and subtraction
- One's complement
    - Invert bit by bit
- Two's complement
    - Take one's complement
    - Add one

Ch. 6 (cont'd)

- Signed numbers:
    - 8-bit example
    - First bit is the sign (0 = positive, 1 = negative)
    - Remaining bits are the number
        - Normal if positive
        - Two's complement if negative

Ch 7 (Counters and Registers):

- Binary / decade counters
    - Other count moduli
- Ripple versus synchronous counters
- Mobius counters
- Counter / register states
- Parallel versus serial shift registers
- Interpreting counter / register datasheets