

## Digital Systems Midterm Review (4/9/2008)

### Chapter 2 (5-10%)

- Number systems (binary, octal, hex)
- BCD code, Gray code
- Parity method for error detection

### Chapter 3 (5-10%)

- Basic logic gates (AND, OR, NOT, NOR, NAND)
- Truth table
- Timing diagram
- Boolean theorems, DeMorgan's theorems
- Universality of NAND gates and NOR gates

### Chapter 4 (15-20%)

- Simplifying logic circuits (algebraic simplification, Karnaugh map)
- Designing combinational logic circuits (using truth table, by inspection)
- XOR, XNOR gates
- Basic characteristics of digital ICs

### Chapter 5 (20%)

- NAND, NOR latches
- Clocked S-C flip-flop (internal circuitry), J-K, D flip-flop
- D latch
- Applications of flip-flop, sequential circuit analysis

### Chapter 6 (15-20%):

- Signed integer (2's complement)
- Arithmetic (Full adder)
- BCD addition.

### Chapter 7 (20%):

- MOD X asynchronous counter
- Synchronous counters
- Up/down counter
- Decoding a counter

AHDL 10%