Name: **Id#**

COE 205, Term 993

Computer Organization & Assembly Programming

Quiz# 1

Date: Monday, June 19

Q1. Consider the following two numbers A=-1301 and B=747, and assume that these numbers will be represented using 12 bits:

      a. Express the two numbers in both sign-magnitude and 2`s complement notations.

      b. Perform the operation A-B twice, once for sign-magnitude notation and once for 2`s complement notation. Indicate in your answer when an overflow occurs.

 Q2. Indicate whether the following is true or false, and if it is false **correct it**:

      (1) (True, False) The instruction register is a register in the CPU that contains the address of the next instruction to be fetched from memory.

(2) _____ **(True, False)**   The instruction and operands are read from memory in the fetch phase of the fetch-execute cycle.

(3) _____ **(True, False)**   The program counter is the register in the CPU counting the number of instructions executed so far by the CPU.

(4) _____ **(True, False)**   The instruction set architecture includes the instruction set, the machine`s memory, and all the registers in the machine.

(5) (True, False)   Assuming 8-bit 2`s complement representation, the smallest (negative) number is 11111111 and the largest (positive) number is 01111111.

(6) (True, False)   Assembly programs written for the Intel 8086 family processors can run on the Motorola 68000 processors using the Motorola assembler and linker programs.

(7) (True, False)   A CPU with a 32-bit address bus and a 64-bit data bus can access a memory of size 4Mbyte, and read a maximum of 4 bytes in a read or write cycle.

(8) (True, False)   The number $(11.2)_3$ is equal to the hexadecimal number $(B.2)_{16}$.

(9) (True, False) The 16`s complement of the 4-digit hexadecimal number $(A1CE)_{16}$ is $(5E31)_{16}$ while the 15`s complement is $(5E30)_{16}$.

(10) (True, False) The 3-digit number $(111)_{2R}$ in base 2R is equivalent to the 3-digit number $(421)_R$ in base R.