Name: **Id#**

COE 205, Term 061

Computer Organization & Assembly Programming

Quiz# 2

Date: Sunday, Oct. 8, 2006

Q1. Consider an **8-bit** register that has the binary number 11100100. Determine the decimal value of the number if it represents:

    i.   An **unsigned** number.

    ii. A signed number in **sign-magnitude** representation.

    iii. A signed number in **1's complement** representation.

    iv. A signed number in **2's complement** representation.

Q2. Perform the following arithmetic operations assuming that numbers are represented using **8-bit 2's complement** representation. Indicate in your answer when an *overflow* occurs. Also determine the **decimal** value of the operands and the result

    i. 7F + FF

ii. 1E – 90

Q3. Fill the blanks in the following questions:

(i) The binary number 01100111 represents character __**g**__, and uses an __**odd**__ parity bit. Note that the ASCII code of character **A** is 41H and that of character **a** is 61H.

(ii) Assuming **6-bit 2`s complement** representation, the smallest (negative) number is __**100000**__ in binary and __**−32**__ in decimal and the largest (positive) number is __**011111**__ in binary and __**31**__ in decimal.

(iii) If you type the characters **A8c** on your keyboard, the binary sequence sent to the computer using 8-bit ASCII code with the 8th bit being an **even parity** bit is __**01000001 10111000 01100011**__.
Note that the ASCII code for character 0 is 30H.