Name: **Id#**

COE 202, Term 122
Digital Logic Design

Quiz# 1

Date: Monday, Feb. 11

Q1. Assume that a signal has a range of 0 to 8 volts. Suppose that we need to quantize the signal into a digital signal using only 5 different values. Determine these values and the maximum quantization error.

Q2. Determine the decimal value of the following numbers:

    i. $(10100100.011)_2$

    ii. $(5F.82)_{16}$

Q3. Represent the following numbers in **binary** and **hexadecimal**. Use as many bits as needed, and approximate the fraction to **4 <u>binary</u> digits**:

    i. $(500.8)_{10}$

ii. $(251.71)_8$

Q4. Perform the following arithmetic operations:

i. $(10011011)_2 + (01011111)_2$

ii. $(F0)_{16} - (B2)_{16}$

Q5. Fill in the Spaces: (Show all work needed to obtain your answer)

a. In binary system, the largest value that can be expressed using **n** integral digits and **m** fractional digits is _____.

b. Counting the number of hours in one week in BCD requires a minimum of _____(how many) bits.

c. Given that an 8-bit register stores the ASCII code of a character in the least significant 7 bits and a parity bit in the most significant bit. Assuming that the register contains the hexadecimal value E4 representing a character, the character stored in the register is _____ and the parity used is _____(i.e. even or odd parity). Note that the ASCII code of character 'A' is 41h and the ASCII code of character 'a' is 61h.