Name: Key   **Id#**

COE 202, Term 132
Digital Logic Design

Quiz# 1

Date: Sunday, Feb. 9

Q1. Assume that an analogue signal has a range of **0 to 5 volts**. Suppose that we need to quantize the analogue signal into a digital signal using only **4** different values. Determine these values and the maximum <u>quantization error</u>.

Step = 5/4; Maximum quantization error = 5/8

Values: 5/8, 15/8, 25/8, 35/8

Q2. Determine the **decimal** value of the following numbers:

   i. $(10110111.011)_2$

      $= 183.275$

   ii. $(3F.A)_{16}$

      $= 63.625$

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

   i. $(191.4)_{10}$

      $= (10111111.0110)_2$

ii. $(CE.5)_{16}$

$= (1100\ 1110.0101)_2$

Q4. Perform the following arithmetic operations:

     i.   **$(01101011)_2 + (00110101)_2$**

          $= (10100000)_2$

     ii.   **$(F8)_{16} - (AA)_{16}$**

          $= (4E)_{16}$

     iii.   **$(3B)_{16} * (29)_{16}$**

          $= (973)_{16}$

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

  a. The largest 2-digit hexadecimal number has the decimal value_____255_____.

  b. The number **24** is represented in **BCD** as _____0010 0100_____.

  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 __'d'____ and the <u>parity</u> used is ___even____(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.