

Name:

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**COE 202, Term 141
Digital Logic Design**

Quiz# 1

Date: Tuesday, Sep. 16

Q1. Assume that an analogue signal has a range of **0 to 10 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 quantization error.

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

i. $(11110011.111)_2$

ii. $(4A.C)_{16}$

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

i. $(250.6)_{10}$

ii. $(EF.2)_{16}$

Q4. Perform the following arithmetic operations:

i. $(01101111)_2 + (00100111)_2$

ii. $(8A)_{16} - (2B)_{16}$

iii. $(2F)_{16} * (15)_{16}$

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

- a. The largest decimal value that can be expressed using 4 binary integer digits and 4 binary fractional digits is _____.
- b. The number **59** is represented in **BCD** as _____.
- 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 **C5** 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.