Name: Id#

COE 202, Term 122

Digital Logic Design

Quiz# 1

Date: Monday, Feb. 11

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# **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:

## (10100100.011)2

## (5F.82)16

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

## (500.8)10

## (251.71)8

# **Q4.** Perform the following arithmetic operations:

## (10011011)2 + (01011111)2

ii. (F0)16 - (B2)16

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

1. In binary system, the largest value that can be expressed using **n** integral digits and **m** fractional digits is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Counting the number of hours in one week in BCD requires a minimum of \_\_\_\_\_\_\_\_(how many) bits.
3. 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.