Name: Key Id#

COE 202, Term 132

Digital Logic Design

Quiz# 1

 Date: Sunday, Feb. 9

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# **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 quantization error.

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:

##  (10110111.011)2

= 183.275

## (3F.A)16

#

= 63.625

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

## (191.4)10

## = (10111111.0110)2

## (CE.5)16

## = (1100 1110.0101)2

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

## (01101011)2 + (00110101)2

## = (10100000)2

## (F8)16 - (AA)16

= (4E)16

## (3B)16 \* (29)16

= (973)16

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

1. The largest 2-digit hexadecimal number has the decimal value\_\_\_\_\_\_\_255\_\_\_\_\_\_\_\_.
2. The number **24** is represented in **BCD** as \_\_\_\_\_\_0010 0100\_\_\_\_\_\_\_\_\_\_\_\_.
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 \_\_’d’\_\_\_\_ and the parity 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.