

Name:

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COE 202, Term 131
Digital Logic Design

Quiz# 1

Date: Thursday, Sep. 19

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 **5** different values. Determine these values and the maximum quantization error. How many bits are needed to transmit one of these 5 values?

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

i. $(11111100.101)_2$

ii. $(2A.4)_{16}$

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

i. $(160.1875)_{10}$

ii. $(57.33)_8$

Q4. Perform the following arithmetic operations:

i. $(01101111)_2 + (00111111)_2$

ii. $(A0)_{16} - (99)_{16}$

iii. $(5A)_{16} * (12)_{16}$

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

- a. In **binary** system, the largest decimal value that can be expressed using **4** integral digits and **2** fractional digits is _____.
- b. Representing the number **95** 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 **C6** 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.