

Final Exam

Started: Mar 4 at 10:56pm

Quiz Instructions

McAfee Memorial Library

Question 1

5 pts

Describe the major components in computer architecture.

p

Question 2

5 pts

Describe the primary components of the Central Processing Unit.

B *I* U $\text{A} \downarrow$ $\text{A} \downarrow$ I_x $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\times^2$ $\times_2$ $\equiv$ $\equiv$

   π    Font Sizes $\downarrow$ Paragraph $\downarrow$

p

Question 3

5 pts

A signal has a frequency of 10 megahertz, what is its period?

B *I* U A ▾ A ▾ I_x ≡ ≡ ≡ ≡ ≡ ×² ×₂ ≡≡ ≡≡

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p

Question 4

5 pts

Suppose you have a digital signal with a period of 1500 milliseconds. What is the period in microseconds?

B *I* U A ▾ A ▾ I_x ≡ ≡ ≡ ≡ ≡ x² x₂ ≡ ≡

p



Question 5

10 pts

What is the 12-bit BCD binary code for 538_{10} ?

B *I* U A ▾ A ▾ *I*_x x^2 x_z π Font Sizes ▾ Paragraph ▾

p



Question 6

10 pts

Covert the 8-bit unsigned binary value 11100101_2 to its equivalent decimal value.

B *I* U A ▾ A ▾ *I*_x x^2 x_z π Font Sizes ▾ Paragraph ▾

p



Question 7

10 pts

Covert the 8-bit unsigned binary value 10111110_2 to its equivalent hexadecimal value.

B *I* U A ▾ A ▾ *I*_x x^2 x_z π Font Sizes ▾ Paragraph ▾

p



Question 8

10 pts

Simplify the following boolean expression.

$$A\bar{B} + AB + BC$$



B *I* U A ▾ A ▾ $\mathcal{I}_x$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\times^2$ $\times_2$ $\equiv$ $\equiv$
 $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ Font Sizes ▾ Paragraph ▾

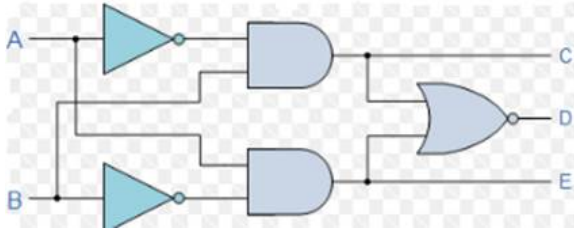
p



Question 9

10 pts

Write the Boolean algebra expression for outputs C, D, and E in the circuit below.



B *I* U A ▾ A ▾ $\mathcal{I}_x$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\times^2$ $\times_2$ $\equiv$ $\equiv$
 $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ Font Sizes ▾ Paragraph ▾

p



Question 10

10 pts

What is the decimal value for the following signed magnitude number, assuming the MSB is the sign bit?

01010011

B *I* U A ▾ A ▾ $\mathcal{I}_x$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\times^2$ $\times_2$ $\equiv$ $\equiv$
 $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ Font Sizes ▾ Paragraph ▾

p



Question 11

10 pts

Calculate the sum of the problem below and leave answer in binary form. Assume the numbers are unsigned magnitude.

01100111
+10001000

B *I* U A ▾ A ▾ $\mathcal{I}_x$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\times^2$ $\times_2$ $\equiv$ $\equiv$
 $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ $\equiv$ Font Sizes ▾ Paragraph ▾

p



Question 12

10 pts

Calculate the two's complement of the following unsigned binary number.

10001001₂

B *I* U **A** ▾ **A** ▾ *I*_x Font Sizes ▾ Paragraph ▾

p



Question 13

10 pts

Convert 10.5₁₀ to IEEE 754 format.

B *I* U **A** ▾ **A** ▾ *I*_x Font Sizes ▾ Paragraph ▾

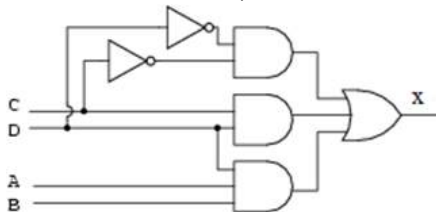
p



Question 14

10 pts

Write the Sum of Products expression of the circuit below.



B *I* U **A** ▾ **A** ▾ *I*_x Font Sizes ▾ Paragraph ▾

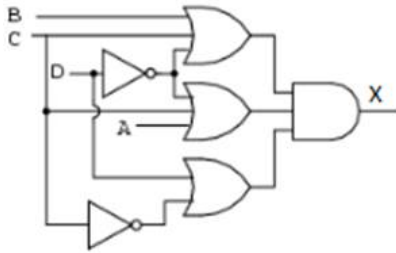
p



Question 15

10 pts

Write the Product of Sums expression of the circuit below.



B *I* U **A** ▾ **A** ▾ *I*_x ≡ ≡ ≡ ≡ ≡ ²x ₂x ≡ ≡
 ▢ ▣ ▤ ▥ ▦ ▧ ▨ ▩ Font Sizes ▾ Paragraph ▾

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Question 16

5 pts

Explain the purpose of a multiplexer.

B *I* U **A** ▾ **A** ▾ *I*_x ≡ ≡ ≡ ≡ ≡ ²x ₂x ≡ ≡
 ▢ ▣ ▤ ▥ ▦ ▧ ▨ ▩ Font Sizes ▾ Paragraph ▾

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Question 17

10 pts

Assume even parity is being used when transmitting 8-bit bytes. What is the value of the parity bit (either 0 or 1) for the byte below, and explain how you arrived at your answer?

11110001

B *I* U **A** ▾ **A** ▾ *I*_x ≡ ≡ ≡ ≡ ≡ ²x ₂x ≡ ≡
 ▢ ▣ ▤ ▥ ▦ ▧ ▨ ▩ Font Sizes ▾ Paragraph ▾

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Question 18

5 pts

Explain the difference in SRAM and DRAM.

B *I* U A ▾ A ▾ *I*_x  x^2 x_2 
    π    Font Sizes ▾ Paragraph ▾

p



Question 19

5 pts

Explain the different types of ROM.

B *I* U A ▾ A ▾ *I*_x  x^2 x_2 
    π    Font Sizes ▾ Paragraph ▾

p



Question 20

10 pts

Assume a computer has the capacity to hold up to 8 memory modules, with each module containing 512M bytes. How many bits are needed to address any byte in a module? How many total bits are needed in the memory address?

B *I* U A ▾ A ▾ *I*_x  x^2 x_2 
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Question 21

5 pts

Describe the difference in memory address and data lines.

B *I* U A ▾ A ▾ *I*_x  x^2 x_2 
    π    Font Sizes ▾ Paragraph ▾

p



Question 22**5 pts**

Explain the purpose of cache memory, also called cache RAM.

B *I* U **A** ▾ **A** ▾ *I*_x     x^2 x_2     π    Font Sizes ▾ Paragraph ▾

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**Question 23****10 pts**

Suppose you have a HDD with an average seek time of 8 msec and a rotational speed of 4800 RPM. How long would it take to transfer 102400 bytes. Assume 500 sectors on a track, and each sector contains 512 bytes.

B *I* U **A** ▾ **A** ▾ *I*_x     x^2 x_2     π    Font Sizes ▾ Paragraph ▾

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**Question 24****5 pts**

Describe the purpose of the Program Counter.

B *I* U **A** ▾ **A** ▾ *I*_x     x^2 x_2     π    Font Sizes ▾ Paragraph ▾

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**Question 25****5 pts**

Describe the purpose of the Instruction Register.

B *I* U **A** ▾ **A** ▾ *I*_x     x^2 x_2     π    Font Sizes ▾ Paragraph ▾

p



Question 26**5 pts**

Describe the differences in CISC and RISC processors.

B *I* U A ▾ A ▾ *I*_x      x^2 x_t  
 ▾    π    Font Sizes ▾ Paragraph ▾

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**Question 27****5 pts**

Describe the purpose of instruction pipelining in a processor.

B *I* U A ▾ A ▾ *I*_x      x^2 x_t  
 ▾    π    Font Sizes ▾ Paragraph ▾

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**Question 28****5 pts**

Describe how an I/O channel functions.

B *I* U A ▾ A ▾ *I*_x      x^2 x_t  
 ▾    π    Font Sizes ▾ Paragraph ▾

p



Quiz saved at 8:56pm

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