Students Name: _____

CSC242, Spring 2018

Assignment: Final Exam Review

- Please follow these instructions EXACTLY.
- Print out this document. All of the answers will be hand-written on this document
- Put your name on the document.
- Write your answers legibly. If I can't read it, it's wrong.
- Show your work on these pages.. You may draw/scribble on them.
- The day of the Final Exam, physically hand in this document
- You may hand in this assignment early. Do so at my office.

1. Convert unsigned Decimal **86** to
    a. Binary _____
    b. Hex _____
2. Convert signed decimal value **-120** to
    a. Binary _____
3. Convert signed decimal value **200.0625**
    a. Binary _____ . _____
4. If a computer uses 8-bit two's complement as a signed integer representation, what is the
    a. Largest number (positive), in decimal _____
    b. Smallest number (negative), in decimal _____
    c. Largest number (positive), in binary _____
    d. Smallest number (negative), in binary. _____
5. How many bits are required to address a **32M x 16** main memory (this notation means the memory has **$32x2^{20}$** words and each word has 16 bits)
    a. Main memory is word-addressable. _____
    b. Main memory is byte-addressable. _____
6. Simplify: **F(x,y,z) = (x + y) (x + y') (xz')'**
    a. Answer: _____

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7. Simplify using a Karnaugh Map:

   x′y′z′ + xy′z′ + x′y′z + xyz′ + x′yz + x′yz′

X \ YZ	00	01	11	10
0	1	1	1	1
1	1	0	0	1

   Answer: _____

8. Write the Boolean expression in the Sum-of-products form

X	**Y**	**Z**	**F**
0	0	0	1
0	0	1	0
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

   Boolean Expression: _____

9. What is the 1 gate that is considered the Universal Gate? _____

10. List the two types of sequential Circuits?

    a. _____

    b. _____

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11. Assume you have a byte-addressable machine that uses 32-bit integers and you are storing the Hex value **`2B31`** at address 0.

    a. How is this value stored on a Big Endian machine?

    b. How is this value stored on a Little Endian Machine?

Address	00	01	10	11
Big Endian				
Little Endian				

12. If I want to design a two-byte register, how many D flip-flops do I need?

    a. _____

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13. Consider the MARIE program below. What is stored in the AC when the program completes?

Answer: _____

Hex Address	Label, Start	Instruction
100		LOAD A
101		LOAD B
102		STORE D
103		CLEAR
104		OUTPUT
105		ADDI D
106		STORE B
107		HALT
108	A,	HEX OOFC
109	**B,**	**DEC 266**
10A	C,	HEX 0108
10B	D,	HEX 0000