

(50 pts) CS3843 Computer Organization Exam #1 Name/abc123:_____

Conversions: (50 pts)

1. (2 pts) Convert the following decimal numbers to hexadecimal. Assume 8-bits.

a. -75 _____

b. 208 _____

2. (4 pts) Convert the following hexadecimal value to decimal. Assume 8-bits and show the signed and unsigned values.

a. 0xB4 Signed: _____ Unsigned: _____

3. (4 pts) Convert the binary number to hex and the hex number to binary.

a. 100101111101001₂ _____

b. 0x4ACE _____

4. (8 pts) For the numbers below, perform the operations as dictated by the table.

Operations:	<u>ADD</u>	<u>OR</u>	<u>AND</u>	<u>XOR</u>
	0xB3	0xA9	0xA7	0x5E
	0x4D	0xB6	0xF0	0xB5
Results:				

5. (8 pts) For the ADD instruction, what is the value of the following flags after the operation: (Assume 8 bits.)
< *** NOTE: -1 for a wrong answer so don't guess. *** >

a. CF: _____ SF: _____ OF: _____ ZF: _____

6. (2 pts) What hex number would you add to 0xA4 to set the ZERO flag? _____
7. (2 pts) What hex number would you add to 0x72 to set the OVERFLOW flag? _____
8. (8 pts) Perform an arithmetic right shift on #a. and a logical right shift on #b. below. Show the results in hex and decimal after the shift.
- a. 0x97 (-105) SAR:: hex:_____ decimal: _____ * Doing Arithmetic Shift Right, so signed
- b. 0x97 (+151) SHR:: hex:_____ decimal: _____ * Doing Logical Shift Right, so unsigned!
9. (6 pts) Given 12 bits:
- a. How many possible values can be represented?
- b. What is the unsigned range of values?
- c. What is the signed range of values if it represented a two's complement number?
10. (6 pts) Show the three logical operations and values needed to effect the following changes on a 16 bit number: Clear bits 7 and 12, set bits 2, 4, and 6, and invert bits 1 and 14. All other bits to remain unchanged.