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

Conversions: (50 pts)

1. (4 pts) Convert the following decimal numbers to hexadecimal. Assume 8-bits.

   a. -23   _____

   b. 194   _____

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

   a. 0x92   Signed: _____   Unsigned: _____

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

   a. 111000111010011_2 _____

   b. 0xD2A   _____

4. (8 pts) For the numbers below, perform the operations as dictated byte the table. (Hint: last 3, use binary)

Operations:	ADD	OR	AND	XOR
	0x96	0xE5	0x95	0xA5
	0x6A	0x16	0xF0	0x55
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 wrong answer – don't guess. ***>

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

6. (2 pts) What hex number would you add to 0x58 to set the ZERO flag? _____

7. (2 pts) What hex number would you add to 0x58 to set the OVERFLOW flag? _____

8. (8 pts) For 7.a perform an arithmetic right shift and for 7.b a logical right shift. Show the results in hex and decimal after the shift.

    a. 0x8F   SAR:: hex:_____   decimal: _____

    b. 0x8F   SHR:: hex:_____   decimal: _____

9. (6 pts) Given 7 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. (4 pts) What is 256K * 64K? Express in a power of 2. _____