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

Conversions: (50 pts)

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

   a. -55 _____

   b. 152 _____

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

   a. 0x86 Signed: _____ Unsigned: _____

   b. 0xFE Signed: _____ Unsigned: _____

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

   a. 1110010101001_2 _____

   b. 0xB15 _____

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**
	0xAC	0xAC	0xAC	0xAC
	0x92	0x92	0x92	0x92
Results:				

5. (4 pts) For the ADD instruction, what is the value of the following flags after the operation: (Assume 8 bits.)

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

6. (2 pts) What hex number would you add to 0x3D to set the ZERO flag? _____

7. (8 pts) For each number below, perform two arithmetic right shifts (X ≫ 2) and show the results in hex and decimal after the shift.

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

   b. 0xFB SAR:: hex:_____ decimal: _____

8. (8 pts) Given 9 address lines:

   a. How many possible addresses can be represented?

   b. What is the range of address values?

   c. What would be the signed range of values if it represented a two's complement number?

9. (2 pts) What is 64K * 32K? Express in a power of 2. _____