(100 pts) CS 3843 Computer Organization Exam #3 Name/abc123:_____
(50 pts) Part 1

Fast Answer: (30 pts, 2 pts for most)

1. (8 pts) Show the truth tables for the NOR and Exclusive-NOR (NOT exclusive-or) logic functions.

A_{in}	B_{in}	Out

NOR

A_{in}	B_{in}	Out

XNOR

2. Which group of assembly instructions use edi and esi implicitly? You can list 2 examples but size cannot be the only thing that differentiates them.

3. What does the direction flag do with respect to these instructions?

4. What type of logic function is used to mask out bits by forcing them to one?

5. Before exiting an inline function, you must fix the stack for any stack changes you did inside your inline function. (True, False)

6. Write a single assembly instruction to multiply register cl by 8 without using mul.

7. Which register is used implicitly by the "rep" prefix?

8. What logic function would be used to determine the ZERO flag for an 8-bit result? You may show the circuit symbol(s) or describe it.

9. The increment instruction (ex: inc ecx) affects the carry flag (True, False)

10. Given that register dx contains a signed value, write the assembly instructions to get the 16-bit two's complement by using the xor instruction. Hint: Requires 2 instructions.

11. List two instructions that use esp implicitly.

12. Given eax = 0x3F8AC. You "inc ah". What is the new value of eax?

Brief Discussion: (20 pts)

13. (10 pts) Explain the modifications required to turn a full adder into a full adder/subtractor. You may use diagrams.

14. (10 pts) Compare and contrast debugging inline assembly with global variables vs. a debugger. You can briefly explain each approach and any advantages/disadvantages with either.