CS 4760	**Operating Systems**	Test 1
Name:	Spring 2016	Max Pts: 54

Important: This is an open book test. You can use any books, notes, or paper but no electronic device. *Do not log into the computer during the test, or use any electronic or communications device. Change your cell phones to silent mode.* Any calculations and rough work can be done on the back side of the test pages. If there is a syntax error in any program segment, just write it down and you will get full credit for the problem. Please write legibly; if I cannot read what you wrote, I'll give you a zero. You will lose five points for not writing your name.

1. [10 pt] An I/O-bound program is one that, if run alone, would spend more time waiting for I/O than using the CPU. A CPU-bound program is the opposite. Suppose a short-term scheduling algorithm favors those programs that have used little CPU time in the recent past. Explain why this algorithm favors I/O-bound programs and yet, does not permanently deny CPU time to CPU-bound programs.

2. [10 pt] Is busy waiting always less efficient (in terms of using CPU time) than a blocking wait? Explain.

3. [10 pt] We have seen the use of semaphore to implement monitors. Assume that your system provides a monitor implementation built into the OS and you are required to implement semaphores using the monitor calls. How will you go about it? [Hint: Think about the integer to hold semaphore count as a critical resource.]