Name: **Id#**

ICS 233, Term 063

Computer Architecture & Assembly Language

Quiz# 1

Date: Saturday, July 14, 2007

Q1. Fill the blanks in the following questions:

1. Assuming **6-bit 2`s complement** representation, the smallest (negative) number is _____ in binary and _____ in decimal and the largest (positive) number is _____ in binary and _____ in decimal**.**

2. Consider an **8-bit** register that has the binary number 10110100. The decimal value of this number as a signed number in sign-magnitude representation is _____ while in 1's complement representation it is _____ and in 2's complement representation it is _____.

3. Assuming **8-bit 2`s complement** representation, the number F0 represents the decimal number _____.

4. The binary number 01100100 represents character _____, and uses an _____ parity bit. Note that the ASCII code of character **A** is 41H and that of character **a** is 61H.

5. The _____ register is the register in the CPU that holds the address of the next instruction to be fetched from memory.

6. The _____ register is the register in the CPU that stores the machine language instructions, temporarily, after the instructions are fetched from memory.

7. Given that a wafer can be diced into 2000 dies, out of which 800 dies are defective. Then, the yield is _____.

8. Given a magnetic disk with Rotation speed = 7200 RPM (rotations per minute)**.** Then, the average rotation latency, i.e. time to locate needed sector is _____.

9. _____ is a specific interface that the hardware provides the low-level software which includes the instruction set, programmer accessible registers and memory.

10. _____ is a small fast memory that acts as a buffer for the main memory.

11. _____ is a program that manages the resources of a computer for the benefit of the programs that run on that machine.

12. _____ is a program that converts symbolic versions of instructions into their binary formats.

13. _____ is component of the processor that performs arithmetic operations.

14. Given and address bus of 32 bits and data bus of 32 bits, the maximum memory size that can be interfaced with the CPU is _____ bytes and the maximum number of bytes that can be read in a single read/write cycle is _____ bytes.

Q2. Perform the following arithmetic operations assuming that numbers are represented using **8-bit 2's complement** representation. Indicate in your answer when an _overflow_ occurs.

i. FC + AF

ii. 81 – 7D