Name: KEY **Id#**

ICS 233, Term 142

Computer Architecture & Assembly Language

Quiz# 1

Date: Tuesday, Feb. 10, 2015

Q1. Fill the blanks in the following questions:

1. Assuming **8-bit 2`s complement** representation, the smallest (negative) number is 10000000 in binary and -128 in decimal and the largest (positive) number is 01111111 in binary and +127 in decimal**.**

2. Consider an **8-bit** register that has the binary number 10010110. The decimal value of this number as a signed number in sign-magnitude representation is -22 while in 1's complement representation it is -105 and in 2's complement representation it is -106.

3. Assuming **8-bit 2`s complement** representation, the hexadecimal number A0 represents the decimal number -96.

4. The binary number 11100110 represents character 'f' and uses an odd parity bit. Note that the ASCII code of character **A** is 41H and that of character **a** is 61H.

5. The instruction pointer (IP) register is the register in the CPU that holds the address of the next instruction to be fetched from memory.

6. 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 0.5*60/7200*1000ms=4.17ms.

7. With a 36-bit address bus and 64-bit data bus, the maximum memory size than can be accessed by a processor is 2^{36}=64G Byte and the maximum number of bytes that can be read or written in a single cycle is 64/8=8 Bytes.

8. Two main advantages of programming in high-level language are: portability and simplicity of development and maintenance.

9. Two main advantages of programming in assembly language are: space and time efficiency and full accessibility to hardware resources.

10. The instruction set architecture of a processor consists of instruction set, programmer accessible registers and memory.