Name: **Id#**

ICS 233, Term 072

Computer Architecture & Assembly Language

Quiz# 3

Date: Saturday, March 15, 2008

Q.1. Fill the blanks in the following questions:

1. The MIPS processor is _____ computer.

2. The MIPS processor has _____ general purpose registers.

3. The MIPS instructions are _____ bit wide, and there are _____ instructions formats called: _____, _____, _____.

4. The difference between **add** and **addu** instructions is _____ _____.

5. The difference between **sll** and **sllv** instructions is _____ _____.

Q.2. Write the **minimum** required MIPS instructions to implement each of the following pseudo instructions:

1. **li $s1, 0x12345678**

2. **move $s1, $s2**

3. **bgt $s1, $s2, Next**

4. **bge $s1, $s2, Next**

5. **rol $s1, $s1, 4**

   Note that this instruction should rotate the content of register $s1 by 4 bits to the left. For example, if $s1=0x12345678, after executing the instruction the content of $s1 becomes $s1=0x23456781.

Q.3. Write the minimum required MIPS instructions to implement each of the following. Pseudo instruction can be used.

1. **Multiply** the content of register **$s1 by 30** without using multiplication instructions.

2. **if (($s1 > 0) && (($s2 < 100) || ($s2 > $s3))) {$s4++;}**