# 0907335 Computer Organization (Fall 2012)
## Quiz 2

الاسم: رقم التسلسل: رقم الشعبة: ١

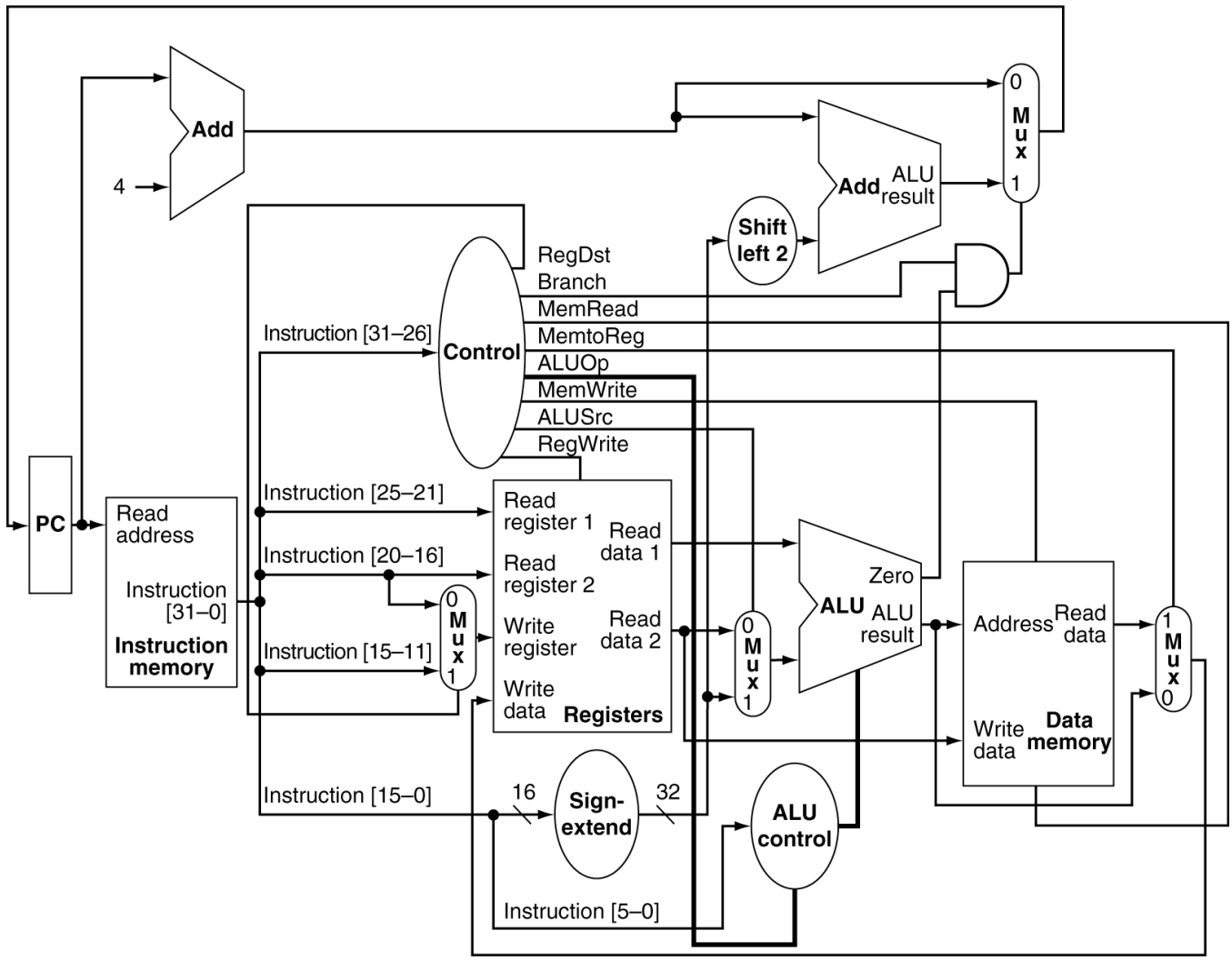
==========

**Instructions**: Time **30** minutes. Open books and notes. No calculators or mobile phones. **No questions are allowed**. Show your work clearly.

==========

**Q1.** Assume that the following processor is executing the instruction `addi $s0,$zero,7`. Answer the following five questions.

*<5 points>*




a) How many cycles are needed to execute this instruction? ____**1**_____

b) What is the stable result of the ALU? ____7+0=**7**_____

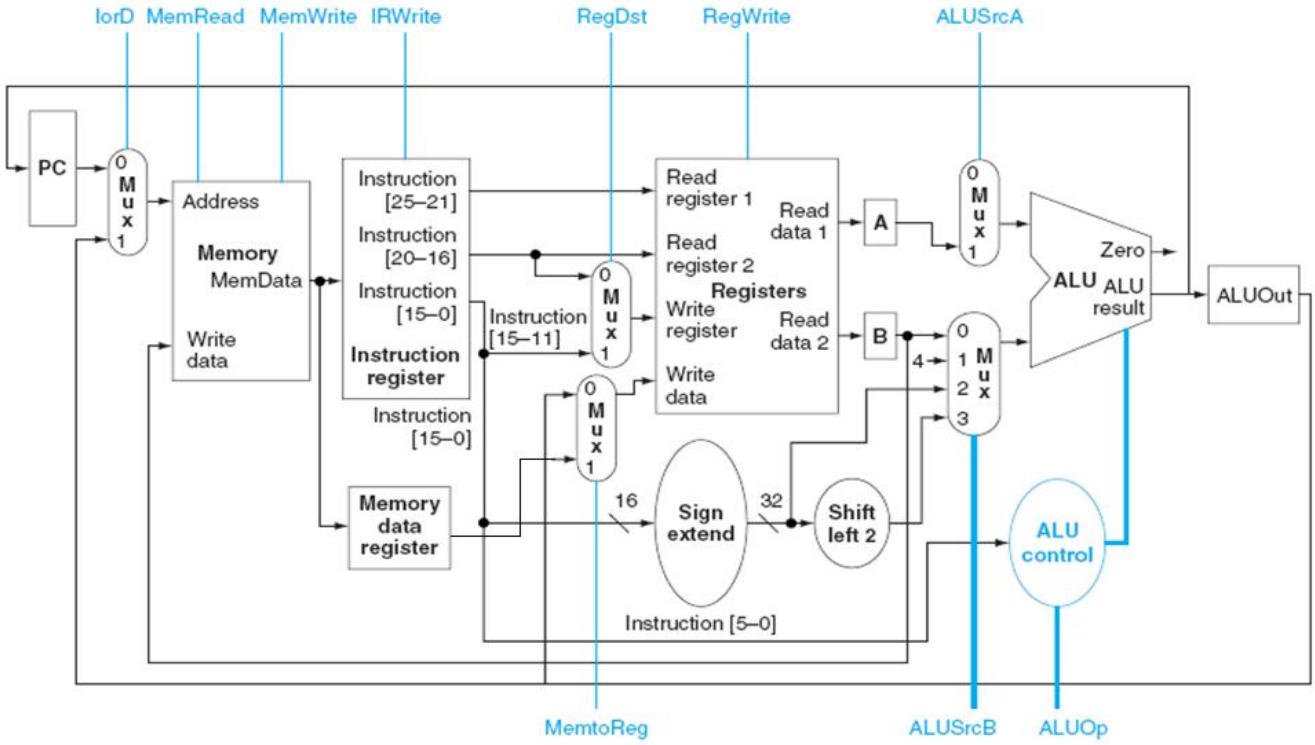
c) What should the ALUScr value be? ____**1** to select the immediate field_____

d) What should the RegDst value be? ____**0** to select the Rt field_____

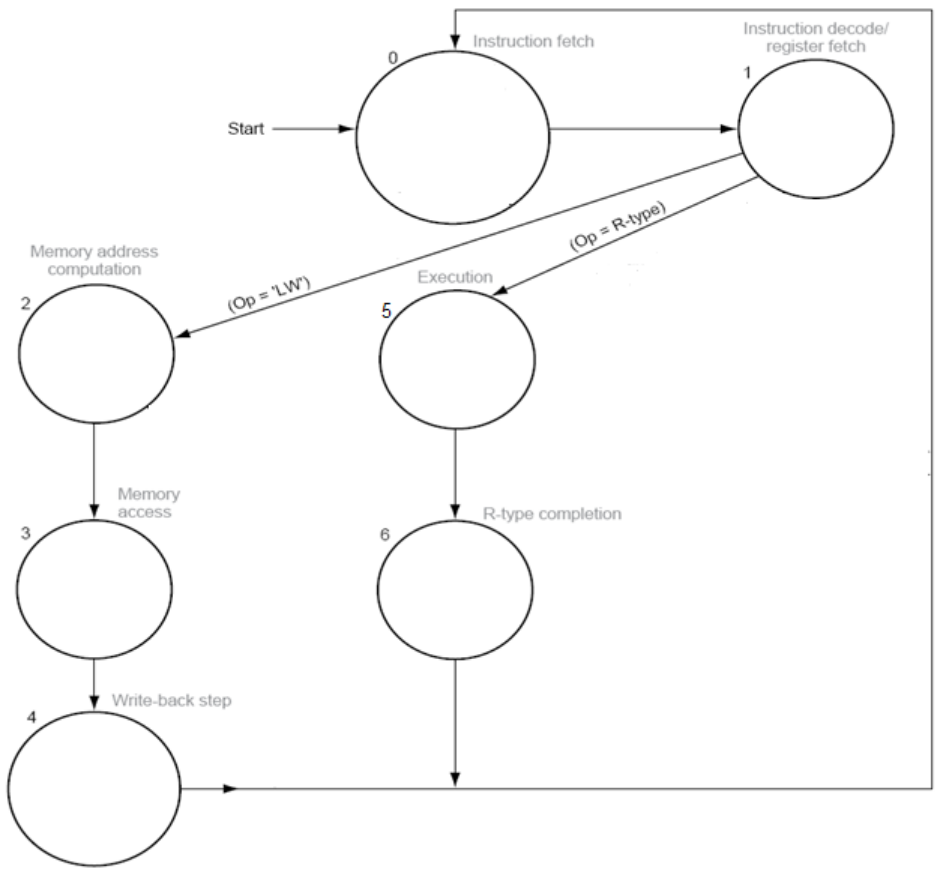
e) What should the MemtoReg value be? ___**0** to select the ALU output_____

**Q2.** Assume that you want to design a micro-programmed control unit for the following datapath and it is required that this datapath will execute only the **`lw`** and **`add`** instructions.

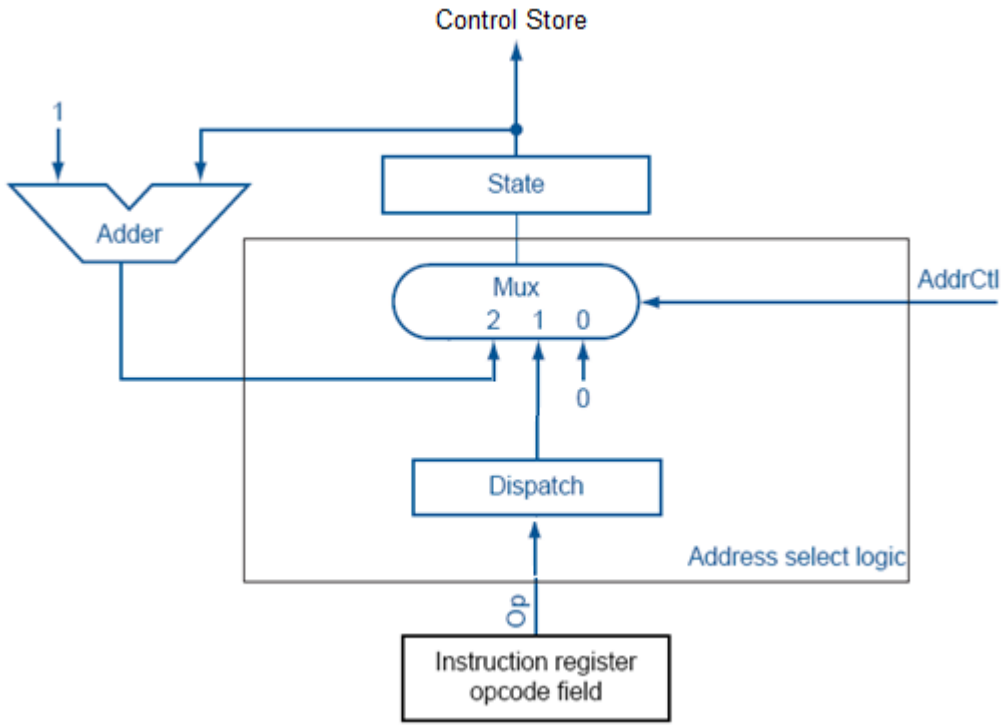
*<5 points>*




a) Draw the state diagram of the control unit for executing only these two instructions. You don't need to specify the needed control signals.



b) Design the sequencer of this control unit and implement any dispatch circuit used using basic logic gates.




**To design the Dispatch circuit,**

| Instruction | op code | address (a2:a0) |
|---|---|---|
| lw | 100011 | 010 |
| R type | 000000 | 101 |

**a2 = a0 = NOT(O)**

**a1 = O**

**where O can be op0, op1, or op5.**