**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ID: \_\_\_\_\_\_\_\_\_\_\_ Section: \_\_\_\_**

**Department of Computer Science and Engineering**

**CSE340: Computer Architecture   
Fall 2015**

**Quiz-4, A**

**Full Marks: 15 Time: 20 Mins**

1. Draw a complete single cycle datapath. In the datapath highlight portion used for **lw/sw** instruction/ flow control. **15**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ID: \_\_\_\_\_\_\_\_\_\_\_ Section: \_\_\_\_**

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Fall 2015**

**Quiz-4, B**

**Full Marks: 15 Time: 20 Mins**

1. Draw a complete single cycle datapath. In the datapath highlight portion for R-type instruction/ flow control. **15**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ID: \_\_\_\_\_\_\_\_\_\_\_ Section: \_\_\_\_**

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**Quiz-4, C**

**Full Marks: 15 Time: 20 Mins**

1. Draw a complete single cycle datapath. In the datapath highlight portion for branch instruction/ flow control. **15**

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**Quiz-4, D**

**Full Marks: 15 Time: 20 Mins**

1. Draw the block diagram of a multi-cycle datapath. Mention the purpose of various internal registers in this datapath. **10**
2. Compare single cycle and multi cycle datapath control units.**5**

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ID: \_\_\_\_\_\_\_\_\_\_\_ Section: \_\_\_\_**

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**Quiz-3, E**

**Full Marks: 15 Time: 20 Mins**

1. Design single cycle datapaths for the below instructions: **15**
   1. **Sub $10,$11,$12**
   2. **Jump 1000**
2. A Program is running on a specific machine with the following parameters: 7

**Total executed instruction count, I: 8,000,000 instructions, Average CPI for the program: 2.9 cycles/instruction. CPU clock rate: 230 MHz.** using the same program with these changes:

**A new compiler used: New instruction count 9,500,000, New CPI: 3.2, Faster CPU implementation: New clock rate = 310 MHZ.** What is the speedup with the changes?