Instructions: Submit your answers to these questions to the Curator as OQ5 by the posted due date and time. No late submissions will be accepted.

All questions refer to the following MIPS datapath diagram:

The datapath supports the following instructions: add, sub, and, or, slt, beq, lw and sw.

For questions 1 through 12, use the following choices:

1) 0  2) 1  3) doesn’t matter

1. [5 points] If a sub instruction is being executed, how should the control signal RegDst be set?
2. [5 points] If a sub instruction is being executed, how should the control signal MemtoReg be set?
3. [5 points] If a sub instruction is being executed, how should the control signal ALUSrc be set?
4. [5 points] If a sub instruction is being executed, how should the control signal MemWrite be set?
5. [5 points] If a sw instruction is being executed, how should the control signal RegDst be set?
6. [5 points] If a sw instruction is being executed, how should the control signal MemtoReg be set?
7. [5 points] If a sw instruction is being executed, how should the control signal ALUSrc be set?
8. [5 points] If a sw instruction is being executed, how should the control signal MemWrite be set?
9. [5 points] If a beq instruction is being executed, how should the control signal RegDst be set?

10. [5 points] If a beq instruction is being executed, how should the control signal MemtoReg be set?

11. [5 points] If a beq instruction is being executed, how should the control signal ALUSrc be set?

12. [5 points] If a beq instruction is being executed, how should the control signal MemWrite be set?

For questions 13 through 16, use the following choices:

1) All the R-type  
2) beq  
3) lw  
4) sw  
5) All of them  
6) 1 and 2 only  
7) 3 and 4 only  
8) 1, 2 and 3 only  
9) 1, 2 and 4 only  
10) None of these

13. [10 points] Suppose that the MemWrite signal was stuck at 0. Which instruction(s) would still execute correctly?

14. [10 points] Suppose that the MemtoReg signal was stuck at 0. Which instruction(s) would still execute correctly?

15. [10 points] Suppose that the ALUSrc signal was stuck at 1. Which instruction(s) would still execute correctly?

16. [10 points] Suppose that the RegDst signal was stuck at 1. Which instruction(s) would still execute correctly?