Follow-Up Questions on Exam 1

• When do you start timing in order to get the dead time?
• Which causes a faster response in the controlled variable?
  – Manual control with step function to final value of controller
  – Properly tuned controller
• For a change in setpoint, does the final controller output for manual control equal the final controller output for a PI or PID controller?
• For a change in setpoint, does the controller output for a properly tuned PI or PID controller ever exceed the final controller output of a manual controller?
• For a setpoint change, when does the controller output start to change?
• For a setpoint change, how do you calculate the initial value of a PI controller output (at time $t = 0$)?
  – What is the governing equation?
  – What is the value of the error $e(t=0) = ?$
  – What is the value of $u_{bias}$?
  – What is the value of the integral?