

**ANSWER KEY - LABORATORY EXERCISE 4
FLOW CONTROL LOOP CHARACTERISTICS**

3. FLOW CONTROL LOOP RESPONSE

- ... exhibit measurement noise? Yes
- ... reduce the amplitude of the noise? Yes
- ... tend to smooth out the noise? Yes
- Controller in Auto. SP = 30 gpm.
- ... overshoot of the set point? No
- ... time elapsed? 1 1/2 seconds

4. STICKY VALVE

- ... regular or irregular? Regular (but not sinusoidal)
- ... average period ... 8 1/2 seconds
- ... peak to peak ... controller output swing: 7 %
- Gain change: 1.0 to 0.5
- ... average period ... 15seconds
- ... peak to peak ... controller output swing: 6%
- Dead band = 0. Stick-Slip = 0. Gain = 10
- ... cure the problem? Yes
- ... response acceptable? Yes
- Add positioner. Change controller output by 10%.
- ... stem position response...? Underdamped
- Controller in Auto
- ... more oscillatory than before adding positioner? Yes
- Change gain 1.0 to 0.8. Set point change
- ... more acceptable response? Yes