

Georgia Tech  
ChE 4400, Spring 2001  
Lee

Quiz #1  
Closed Book, Closed Notes  
Allowed Time: 10 minutes

1. Consider an arrangement of a heat exchanger and a control valve in series. At nominal flowrate 250 gal/min, it was measured that the pressure drop across the heat exchanger to be 60psi.
  - a. Calculate the pumping requirement in order to make the pressure drop across the control valve to be 1/3 of the total pressure drop at the nominal flowrate.
  - b. Size an equal percentage valve ( $R=50$ ) for the maximum flow rate of 300 gal/min.
  - c. Write the equation for the installed characteristic curve and plot the curve. You can leave the equation in implicit form.
  - d. Calculate the flowrate that results when the valve is half-open. Is it half of the maximum flowrate?