

**Chemical Engineering 201
Fall 2000**

Midterm # 4

Name _____

Problem # 1 _____

Problem # 2 _____

Problem # 3 _____

Problem #1 (35 points):

Liquid water is being sprayed through a 1 inch diameter hose vertically up into the air at a flowrate of $0.1893 \text{ m}^3/\text{min}$. How high can it go if it remains a liquid and does not change temperature?

Problem #2 (25 points):

If you add 5 kg of acetone to 10 kg of a 20 wt% mixture of water mixed with MIBK at 25°C, will it form a single phase or two phases? Clearly show all work and intermediate numbers. What is the minimum amount of acetone you could add to form a single phase system?

Problem 3 (45 points):

A mixture of benzene and toluene has 40 wt% benzene in the liquid phase. This mixture is placed into a sealed vessel and heated to 100 °F. An open-ended manometer with mercury as the manometer fluid is attached to the vapor phase of the vessel. Sketch the manometer and numerically solve for the height shown on it.