

King Fahd University of Petroleum & Minerals
Chemical Engineering Department
CHE 303 – Chemical Engineering Thermodynamics II
2008 - 2009 (082)

HW#8

Due: Mon. 4-May-2009

Q1. (20 points)

One mole of benzene (1) is mixed with 3 moles of toluene (2) at 102 °C and 1 bar. If **Raoult's law** is adequate to describe the VLE of this system, perform the following:

- (a) Show that this solution forms a two phase system.
- (b) Calculate the fraction of vapor.
- (c) Calculate the composition of the vapor phase.

Q2. (20 points)

A 10 mol/s equimolar mixture of *Benzene*(1)/*Toluene*(2) is brought to 90 °C to form a two phase system then flashed in a flash drum. Assuming that **Raoult's law** is adequate to describe the VLE of this system and if 45% of the feed is evaporated, calculate the following:

- (a) The pressure of the drum.
- (b) The composition of the vapor.
- (c) The composition of the liquid.