淡江大學 95 學年度轉學生招生考試試題

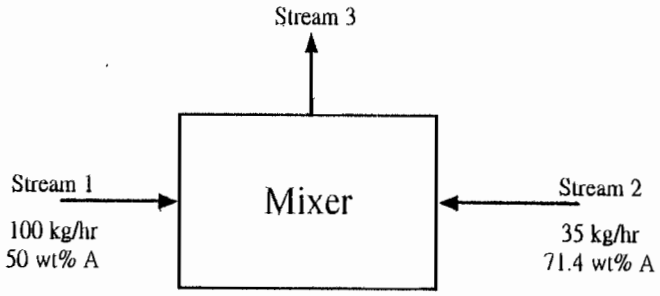
43-1

系別：化學工程與材料工程學系三年級　科目：質 能 均 衡

准帶項目請打「V」	
V	簡單型計算機

本試題共 1 頁

1. A mixer receives two streams, each containing substances A and B. What is the composition of the third stream? [25 pts]



2. When one mole of N_2 gas and 3 moles of H_2 gas are heated to 400 °C, and then allowed to come to equilibrium at 10 atm, 0.148 moles of NH_3 are formed. The reaction is

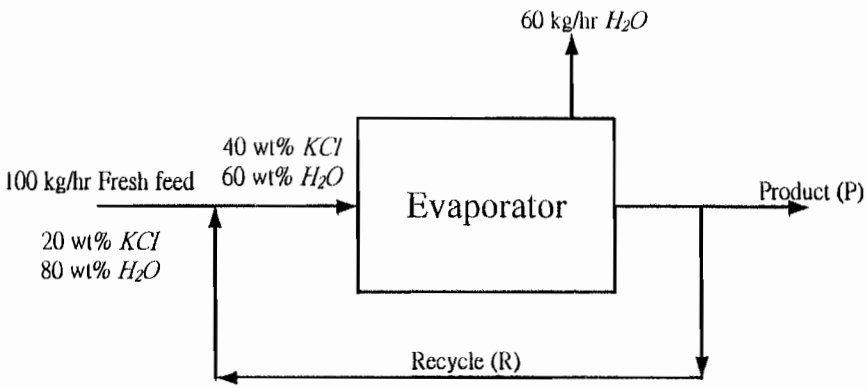
$$N_2 + 3H_2 \rightarrow 2NH_3$$

The equilibrium constant is

$$K_p = \frac{(P_{NH_3})^2}{(P_{N_2})(P_{H_2})^3}$$

P_i is the partial pressure (atm) of component i. What is the equilibrium constant? What is the partial pressure of H_2 in the mixture? [25 pts]

3. Find R and P in kg/hr. [25 pts]



4. Find the mass (in kg) of 100 °C steam which must be mixed with 180 kg of 25 °C water in order to make final liquid water temperature 100 °C. Heat losses during mixing amount to 2110 kJ. The latent heat of vaporization for water at 100 °C is 2252 kJ/kg. [25 pts]