

## **CHE 321**

### **HOMEWORK SHEET # 4\_A**

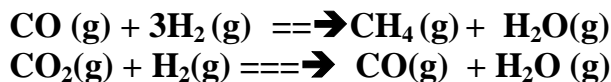
#### **Question one**

(Solve, using CHEMCAD, problem 1 of Homework sheet #1 stated below)

A petroleum gas mixture containing 65% propane, 25% propylene, and 10% butane (all in mole %) is burned with 40% excess air. All butane and propylene and 90% of the propane are consumed and no CO is found in the product gas. Calculate the stack gas composition on a dry basis assuming the air moisture content is negligible.

#### **Question two**

A catalytic reactor is charged with a feed consisting of 5 mols H<sub>2</sub> to 1 mol CO<sub>2</sub> at 400° C and 5 bars. In the reactor, the reactions



take place with 90% conversion of CO<sub>2</sub>. If the reactor operates adiabatically, Find the exit stream temperature and composition.