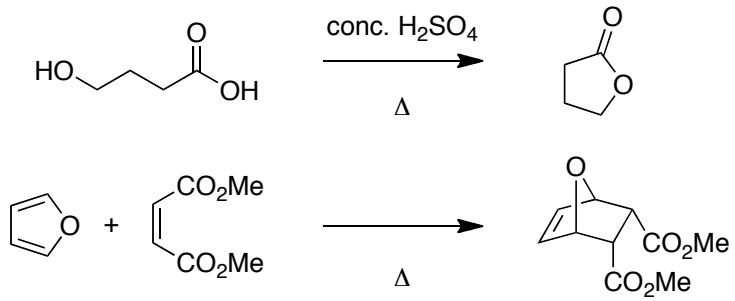
**NAME: Answer Key**
**TA: Robert**
**Section: 1E**

**Quiz #6**

1. **Please provide the major product for each. (4pts)**




2. **Why do we reflux the reaction pot? What rate principle is in effect here? (4pts)**
Because the reaction is very slow even if a catalyst is present, the reaction mixture has to be heated to obtain a reasonable yield in the allotted time. The Arrhenius equation exhibits the rate principle in effect: rate = $ke^{-\Delta G/RT}$. The rate of reaction increases by a factor of 1000.

3. **Since this reaction is an equilibrium reaction with a relative small equilibrium constant, how can we take advantage of Le Châtelier's Pinciple to increase the yield? (4pts)**
Add an excess of the alcohol to push the equilibrium to the right.

4. **What are the following substances used for in the experiment today: (4pts)**
   a. **Sodium Bicarbonate:** extraction
   b. **Sodium Sulfate:** drying agent

5. **A student observes a refractive index of $n_D$=1.4040 for his compound at 24.5°C. Calculate the refractive index at 20°C. (2pts)**
   **$n_D^X = n_D^T + (T-X)*0.00045$**
   $n_D^{20} = 1.4040 + (24.5-20)*0.00045 = 1.4060$

6. **Why are we performing a vacuum distillation instead of a normal distillation? (2pts)**
The ester decomposes at its normal boiling point temperature. In order to distill the ester without decomposing it, we need to reduce the pressure.