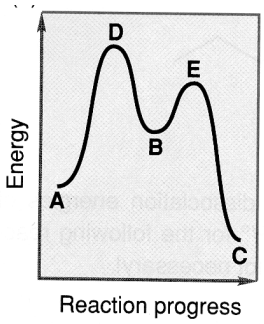
Chemistry 255 **Class Exercise-Energetics** **Summer 2014**
Prof. Loyd Bastin

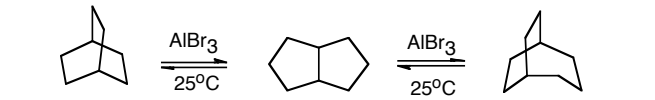
1. Answer the following questions for the reaction described by the Energy versus Reaction Progress diagram below:



   a. What compounds will be present at equilibrium?
   b. Which compound will be present in the largest amount? Which will be present in the smallest amount?
   c. What is the rate-determining step for the left-to-right reaction?
   d. Redraw the diagram and point out the activation energy for the reactions:

      A → B, A → C, C → B, and **C → A**

2. Under certain highly acidic conditions, the three bicyclooctanes shown below can be isomerized. Given the following ratios at equilibrium, calculate the relative energies of the three isomers at 25°C.



Bicyclo[2.2.2]octane (3.66%) **Bicyclo[3.3.0]octane** (32.95%) **Bicyclo[3.2.1]octane** (63.35%)