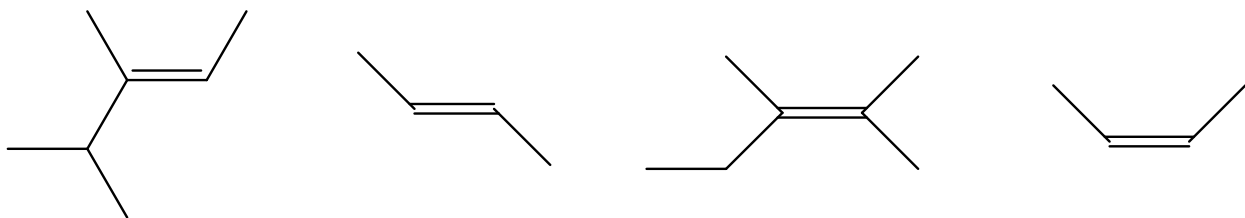
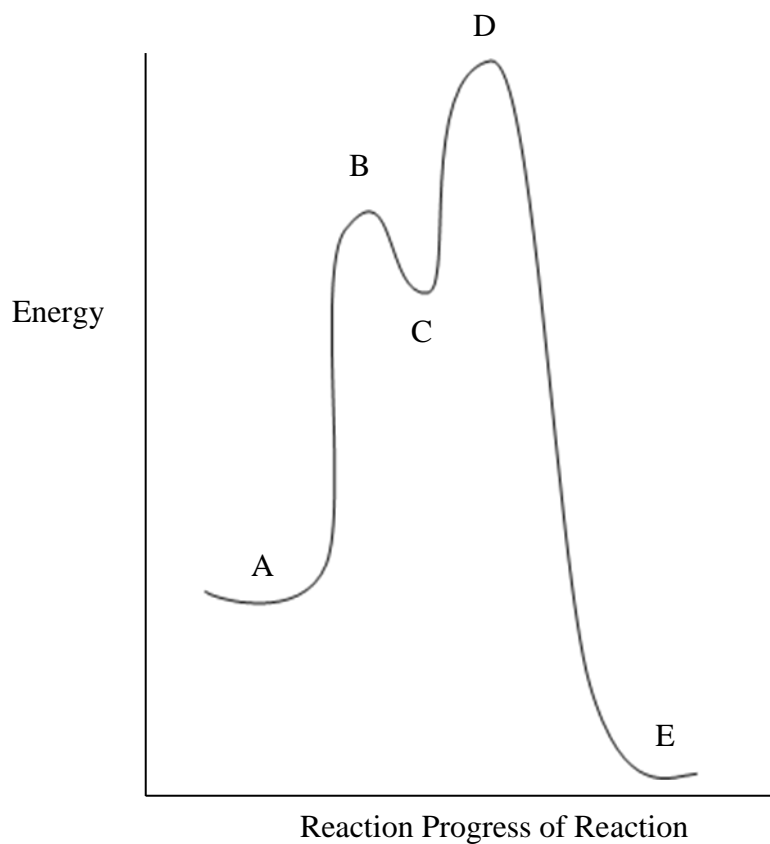


**Chemistry 2500 (Fall 2017): Assignment #12 – Kinetics and Thermodynamics**

1. List the following alkenes from in order of increasing amount of heat that would evolve upon hydrogenation:



2. a) For the following options, A, B, C, D, E, identify the transition state(s), intermediate(s), starting material and product.



- b) How many steps are there in this reaction?
- c) Which step is the slowest?
- d) Assuming the energy scale is free energy, is this reaction product-favoured or reactant-favoured?

3. Which would you expect to be more stable, *cis*-cyclopentene or *trans*-cyclopentene? Explain fully.