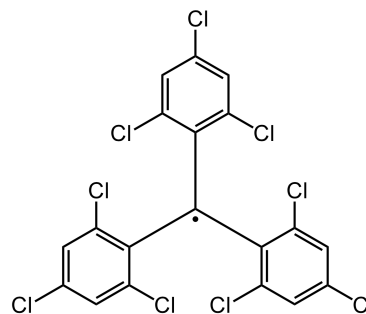
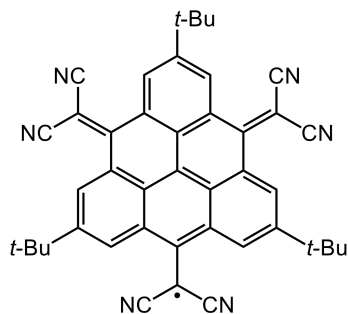


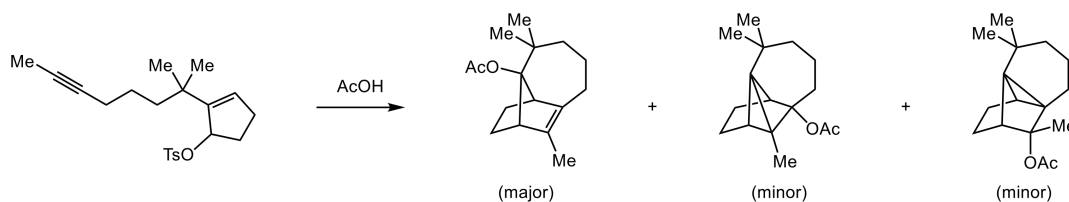
2 Reactive Intermediates

10/16: The questions pertain to the material covered from Cations (Sep 24) to Selectivity (Oct 8).

1. The radicals below are known to be **bench-stable**, meaning they don't readily dimerize or get quenched by oxygen. Rationalize this observation for each.



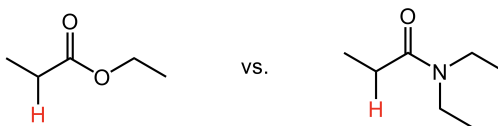
2. a) Propose a reasonable arrow-pushing mechanism that explains the formation of the major product in the reaction below.



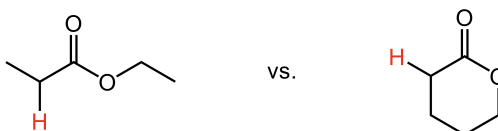
- b) Suggest how the minor products could be formed and draw the key intermediate(s) involved.

3. Which of the following two compounds is more acidic (lower pK_a)? Compare the acidity of the protons indicated red. Rationalize your answer.

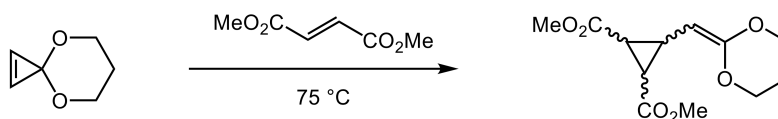
a)



b)



4. a) Suggest a reasonable mechanism for the following transformation.



- b) Discuss the stability of the intermediate(s) and predict the stereochemistry of the product.

5. Draw potential energy diagrams for each of the following situations. Use dashed horizontal lines to indicate equivalent energy levels.
- a) A single substrate can undergo two reactions with equal rates but different product stabilities. What reaction conditions would you use if you wanted a mixture of products? What reaction conditions would you use if you wanted a single product, and which product would you expect?
 - b) The formation of a kinetically stable radical from a precursor and dimerization of that radical.
 - c) The stereoselective protonation of a tertiary carbanion.
 - d) Starting from one pure diastereomer, the epimerization of the alpha position of a ketone under acidic conditions to form a mixture of products.