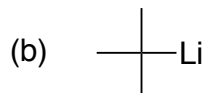
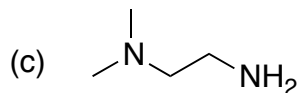
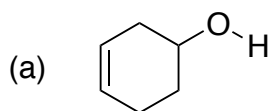


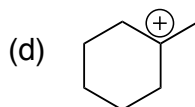
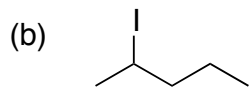
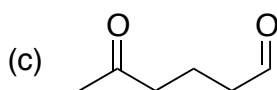
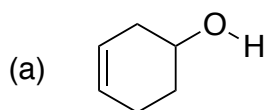
Chemistry 233
Chapter 6 Problem Set

Nucleophiles and Electrophiles

1) Identify all of the nucleophilic centers in each of the following compounds:

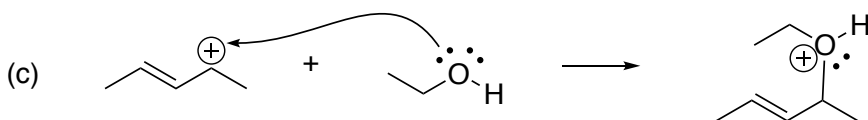
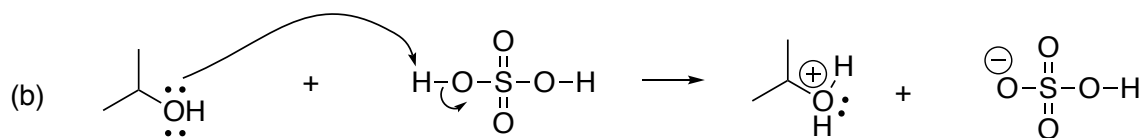
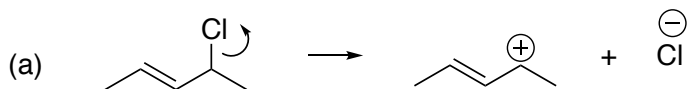


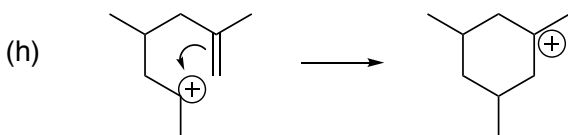
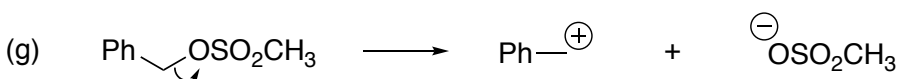
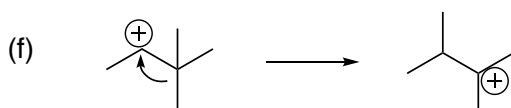
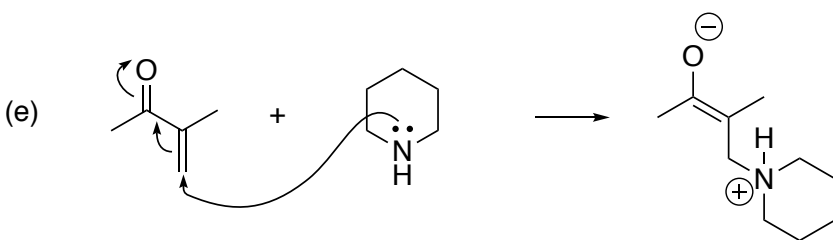
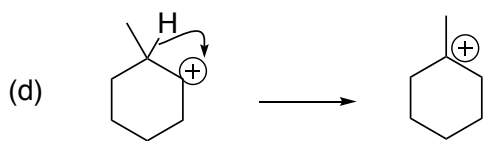
2) Identify all of the electrophilic centers in each of the following compounds:



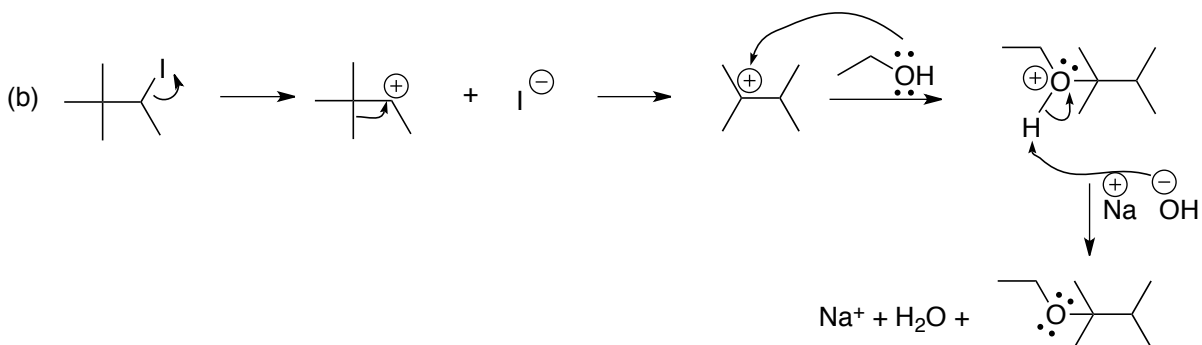
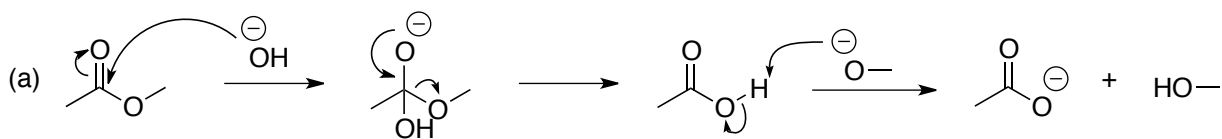
Arrow Pushing and Reaction Mechanisms

3) Identify which arrow pushing pattern is utilized in the following reactions:

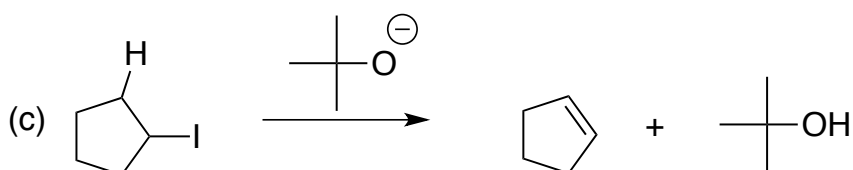
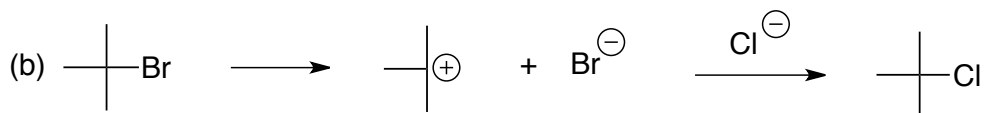
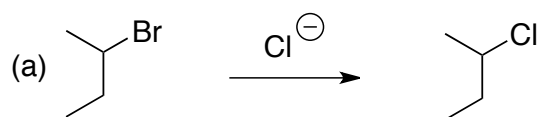




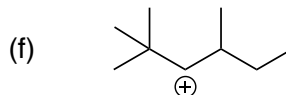
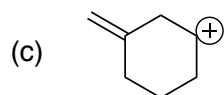
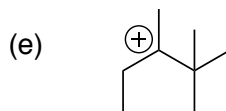
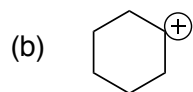
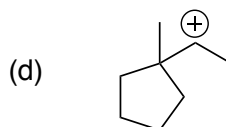
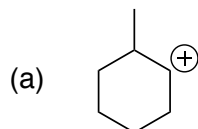
4) Identify the electron flow pattern in each step of the complete reaction mechanisms shown below.



5) Draw curved arrows to accomplish the following transformations. *Hint: it may help to draw in lone pairs.*

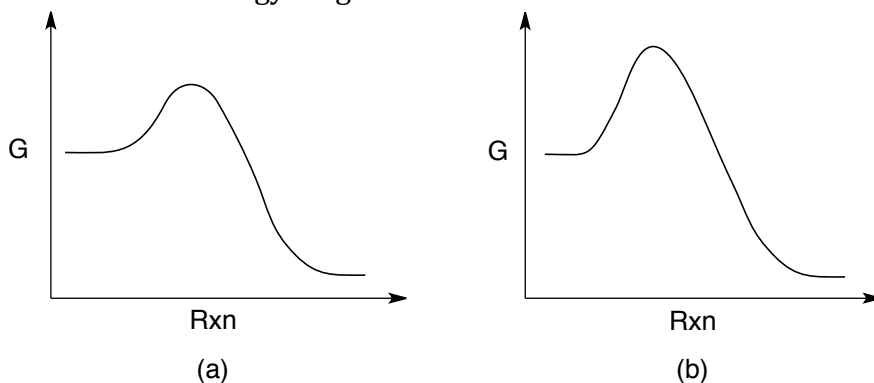


6) Predict if the following carbocations will rearrange. If so, draw the rearrangement product.



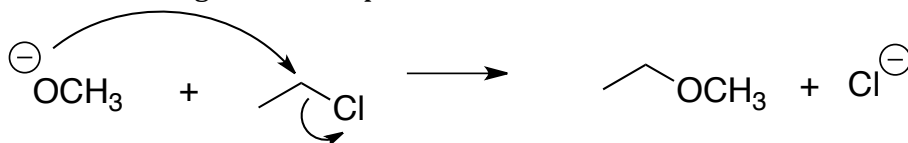
Reaction Coordinate Diagrams

7) Consider the two energy diagrams shown below:



- (a) Which of the two reactions will occur at a faster rate?
- (b) Compare the value of ΔG for both reactions.
- (c) At equilibrium, which reaction, if either, will favor product?
- (d) At equilibrium, which reaction, if either, will contain a higher concentration of product?

8) Consider the following reaction that is thermodynamically favored. Draw a reaction coordinate diagram that represents the reaction.



9) Draw a reaction coordinate diagram for a reaction that is exergonic (exothermic), has two intermediates, and the rate-determining step is the second step.