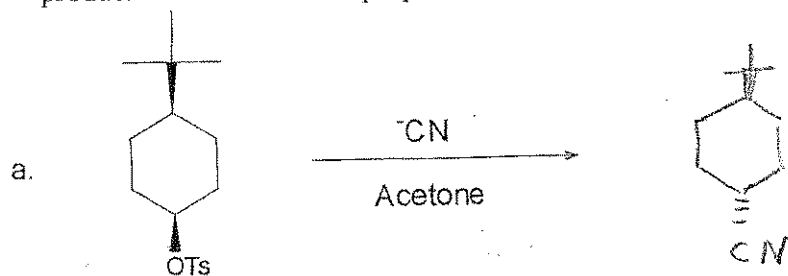


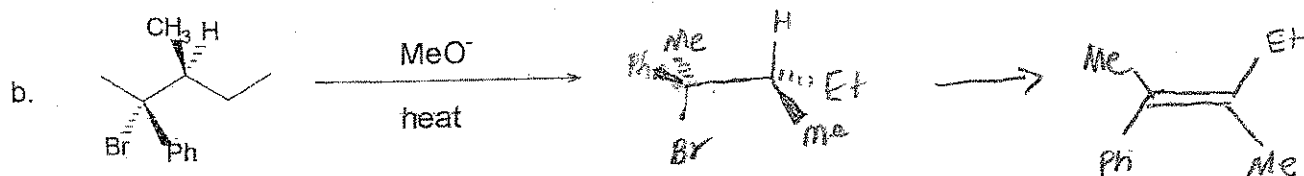
1. Show the **major** product or products of each of the following reactions. Do not show **minor** products. Be sure to show proper stereochemistry. (6 points each, 4 minutes each).

Ch 9

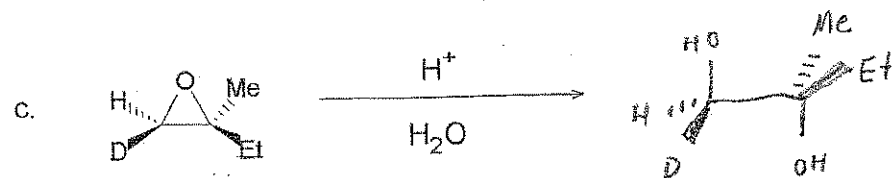


NOTE:
-OTs is a good leaving group

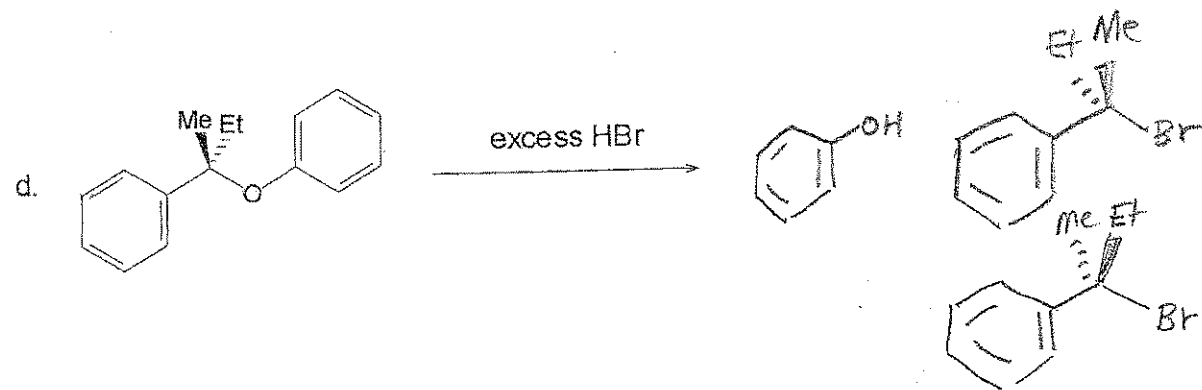
Ch 9



OMIT
Ch 11



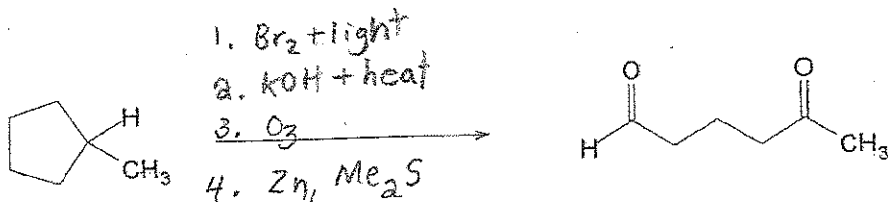
Ch 9



2. Give the reagent or reagents necessary to accomplish each of the following transformations. Number each step so it is clear when reagents must be added **together** or **separately**. Do not show **intermediates**. (7.5 points each, 5 minutes each)

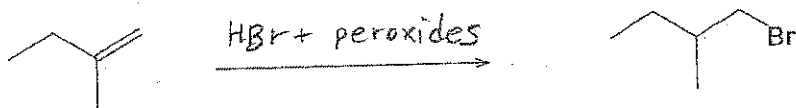
Ch. 6/8

a.



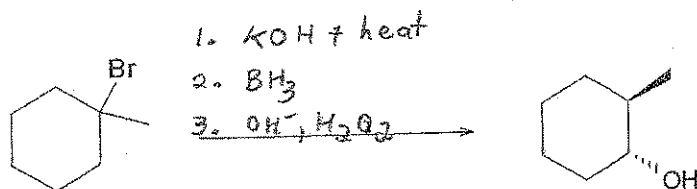
Ch. 6/8

b.

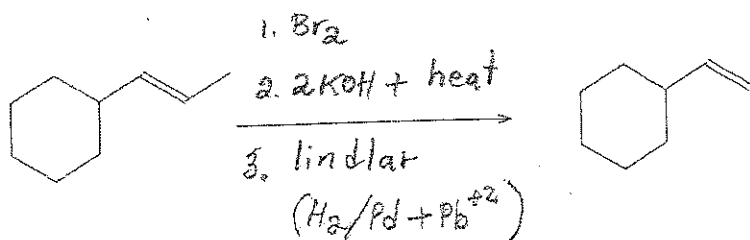


Ch. 6/4

c.

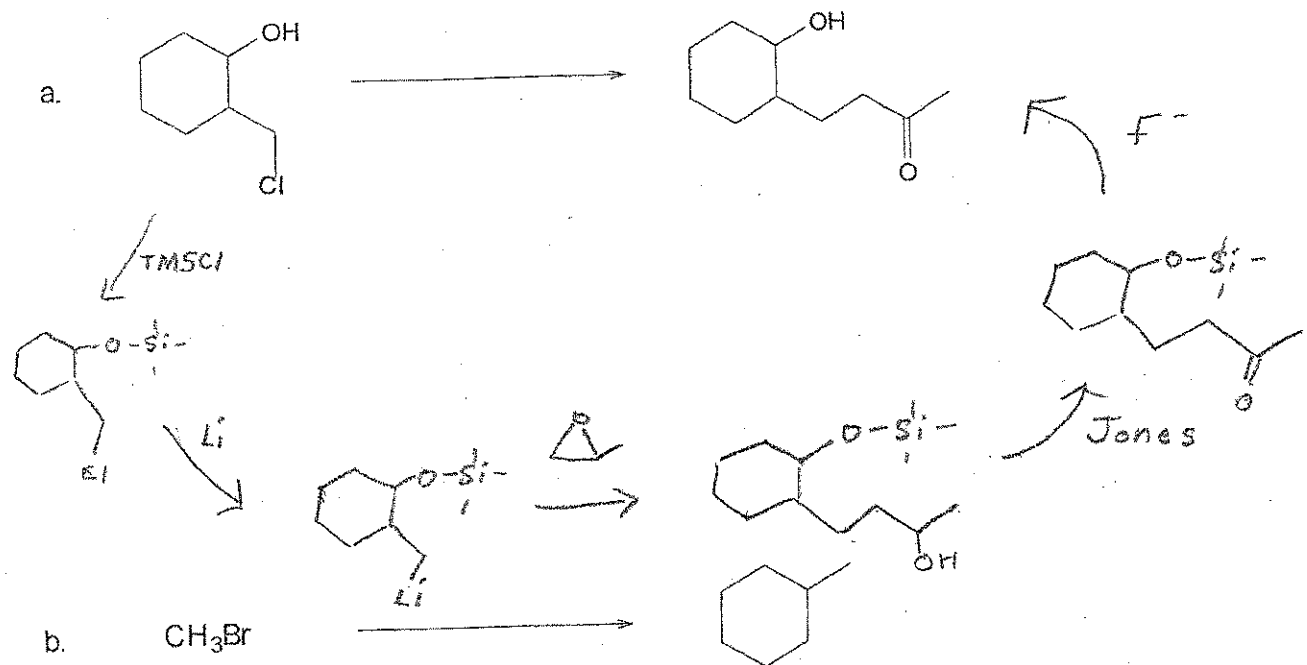


Ch. 6/7/9d.

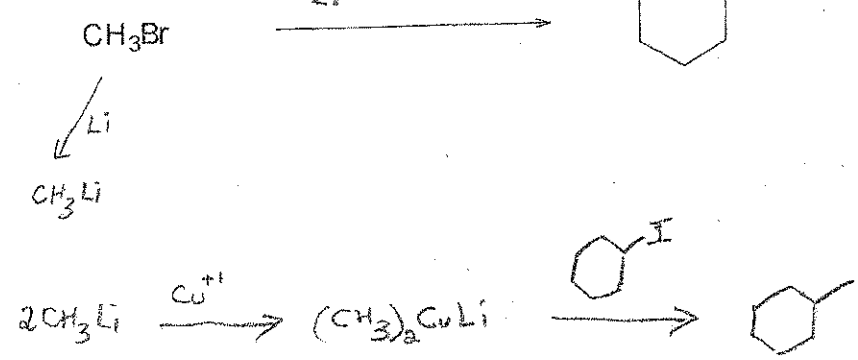


3. Give the reagent or reagents necessary to accomplish each of the following synthetic transformations. Any needed carbon based reagents are allowed. Show all intermediates. (7.5 points each, 5 minutes each)

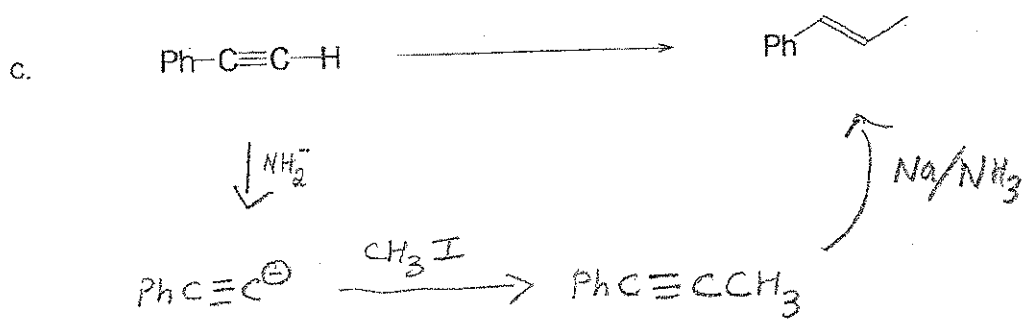
OMIT
Ch. 10/11



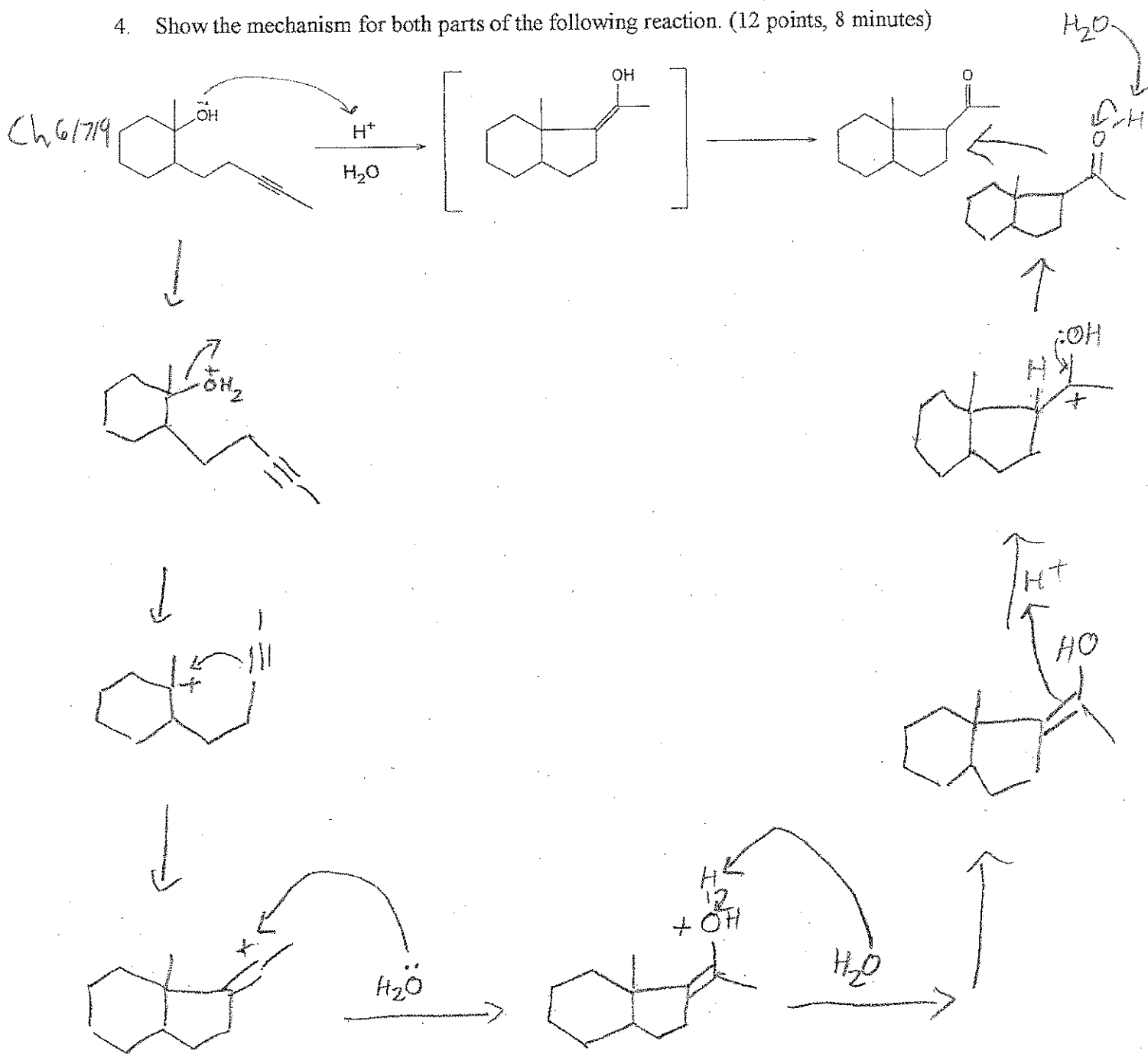
Ch. 15



Ch. 7

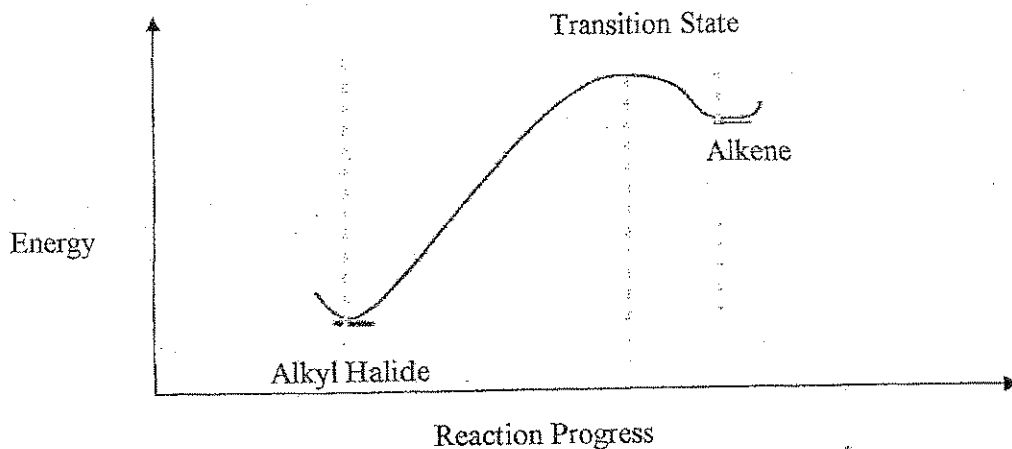


4. Show the mechanism for both parts of the following reaction. (12 points, 8 minutes)



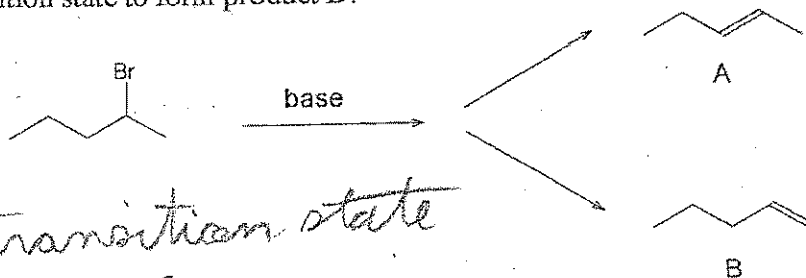
5. (12 points, 8 minutes)

- a. The following energy diagram depicts energy versus reaction progress for an E2 elimination reaction. Use the Hammond Postulate to explain what is known about the structure of the transition state for this reaction.



(because the reaction is endothermic) the transition state looks like the product (looks more like product than starting material)

- Given the above energy diagram
- b. How would the energy of the transition state to form product A be different than the energy of the transition state to form product B?



the transition state for A is lower in energy

