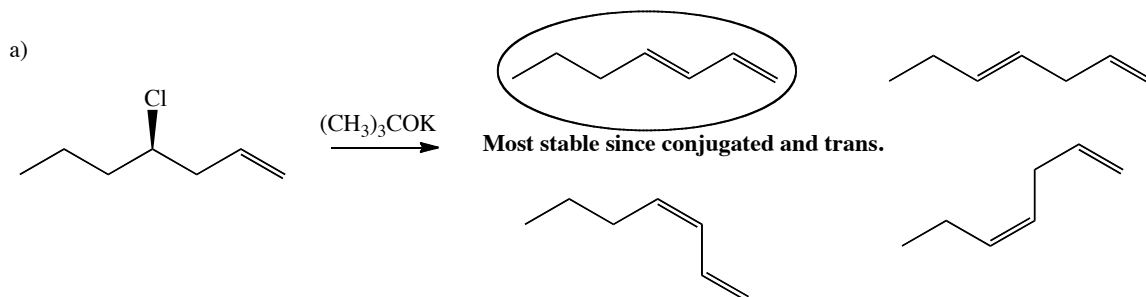


Name: \_\_\_\_\_ Answer Key \_\_\_\_\_

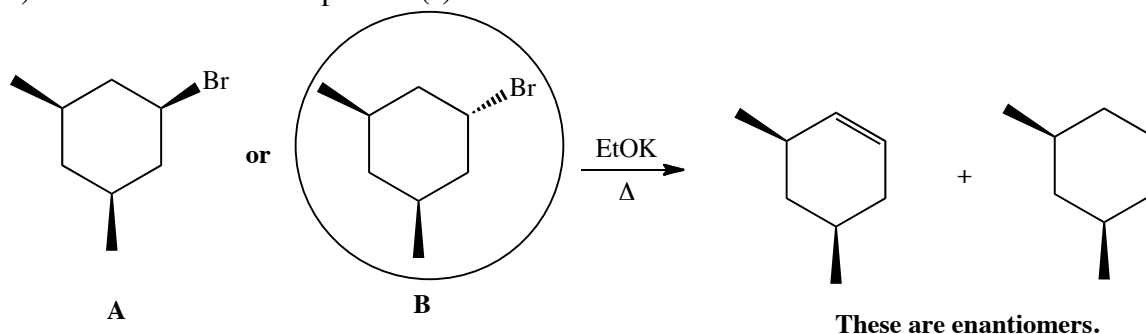
### Chemistry 250A -- October 29, 2009 -- HW/Quiz #6 Answer Key

1. (3 pts) The elimination reaction below could produce 4 possible elimination products. Show all 4 products. Circle the major product and explain why that one predominates.



2. (7 pts) The two molecules, **A** or **B**, undergo elimination when treated with ethoxide in ethanol.

a) Show the elimination product(s).



b) When one of the isomers (**A** or **B**) is treated with ethoxide, is what is isolated after the reaction optically active? (Circle the best answer.)

- a) Yes, one product is produced and it is chiral.
- b) No, one product is produced and it is not chiral.
- c) No, two products are produced, but they are a racemic mixture.**
- d) Yes, two products are produced, but they are not a racemic mixture.
- e) It is not possible to tell whether or not the product(s) are optically active.

c) Circle the molecule, **A** or **B**, that you would expect to react faster. Briefly explain your selection. As part of your explanation, *depict accurate 3D representations of the reacting conformation for both A and B and on this depiction show the arrow pushing mechanism for formation of the product(s).*

**The reactive conformation for compound B has all three groups axial, which is very unfavorable. So this molecule only has a very small amount present in the reaction mixture, so the reaction is slow. By contrast, compound A is in the reactive**

**conformation most of the time (since this puts the methyl groups equatorial) so it reacts much more rapidly.**

Axial groups are higher energy (less stable) than equatorial ones. Especially so in this case due to 1,3-diaxial interaction.

