NAME (Print): _____

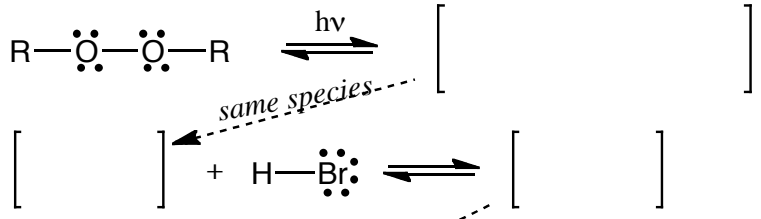
SIGNATURE: _____

Chemistry 320M/328M
Dr. Brent Iverson
8th Homework
November 1, 2022

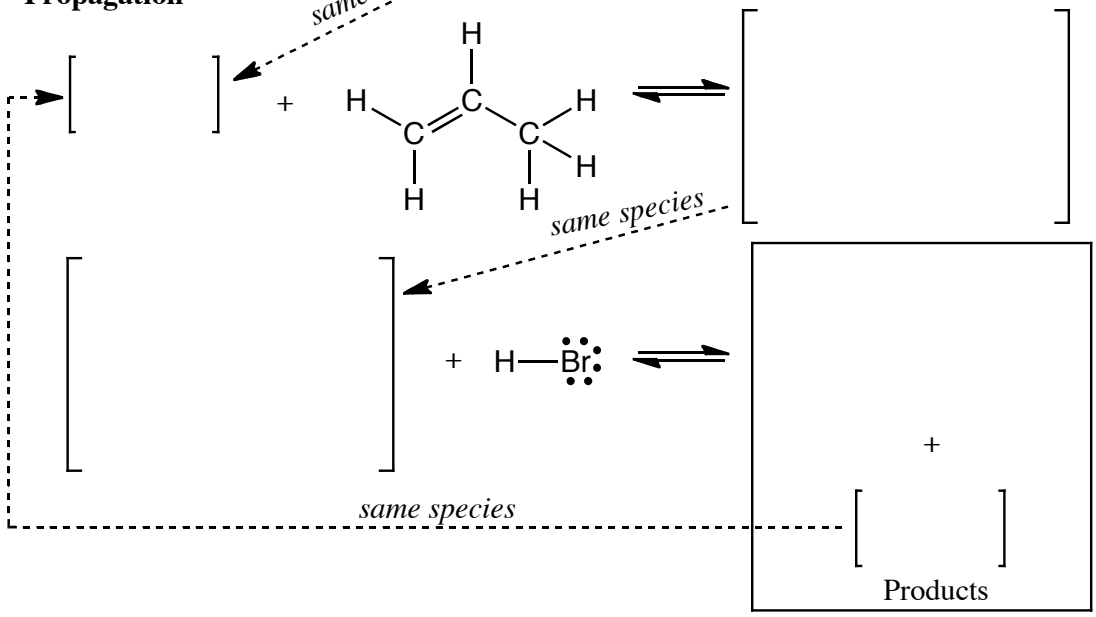
Please print the first three letters of your last name in the three boxes

1. Complete the following intiation and propagation steps for the addition of HBr via a free radical chain reaction mechanism. Use appropriate arrows to show movement of electron density, and show all non-bonding electrons as dots and show any formal charges. **If any of the species are really a racemic mixtures of enantiomers, you only need to draw one stereoisomer and write "racemic"**

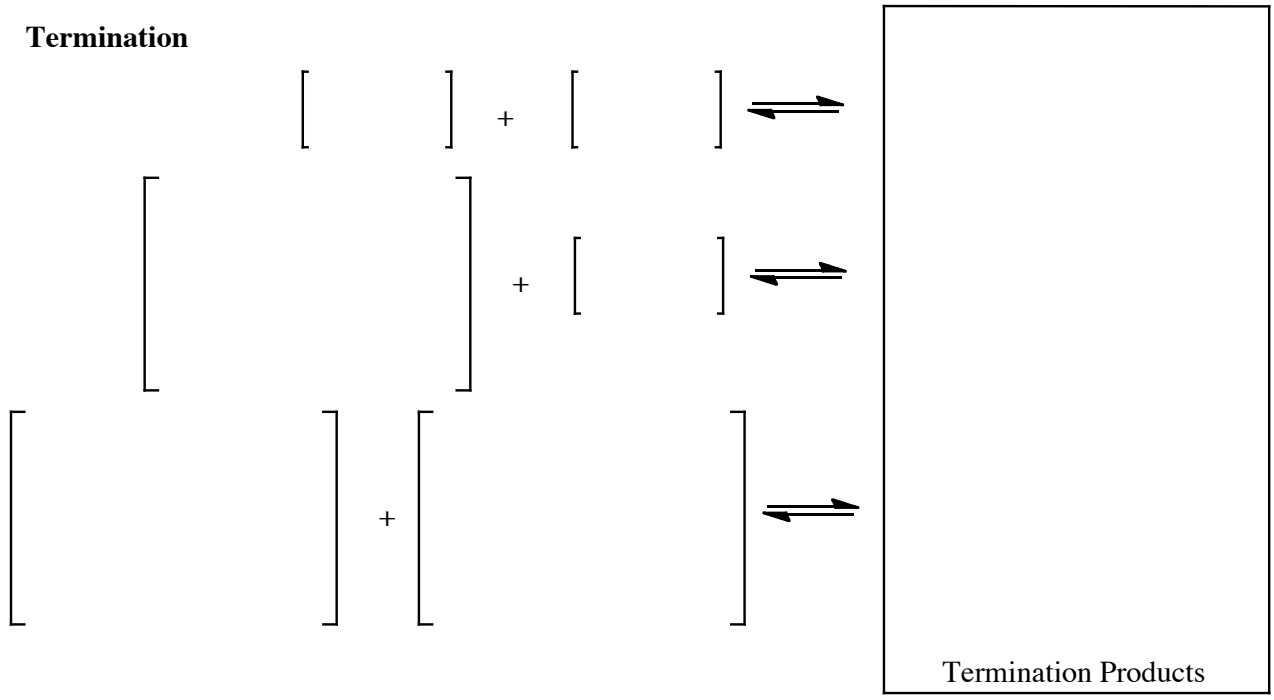
Initiation



Propagation

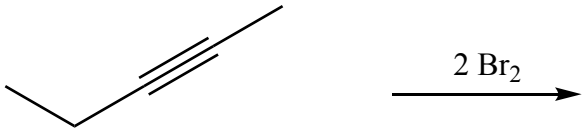


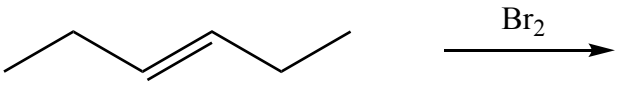
Termination

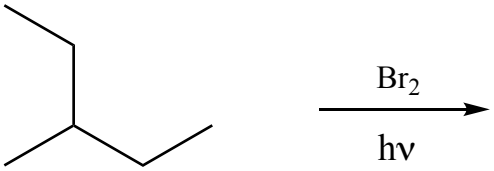


2. Explain how you think about radicals and how they are stabilized by alkyl groups.

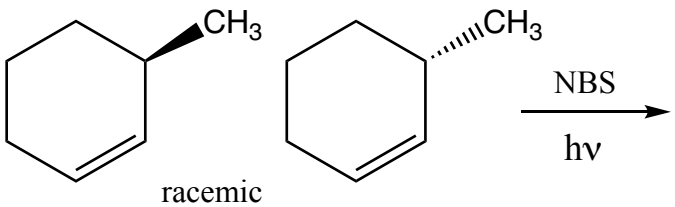
3. For the following, complete the reactions with the predominant product or products. You must indicate stereochemistry with wedges and dashes. If a racemic mixture is created, you must write "racemic" under the structures.





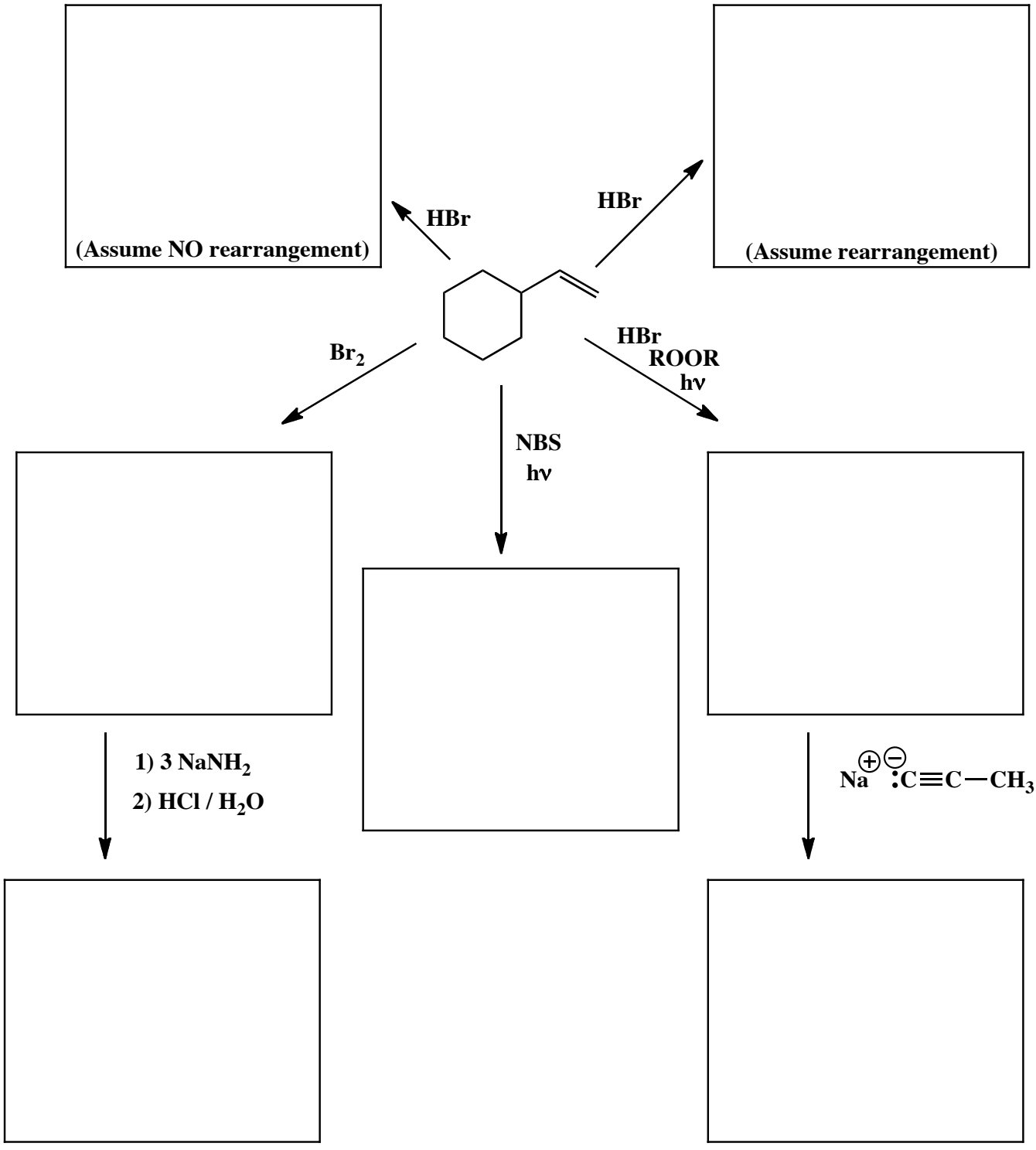


Think about this one!!

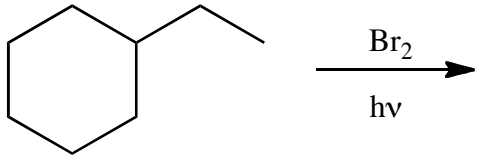


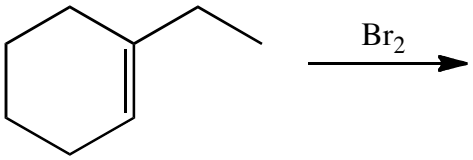
racemic

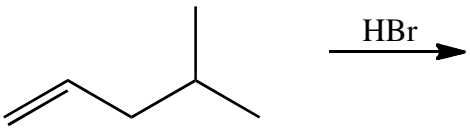
4. For the following, complete the reactions with the predominant product or products. You must indicate stereochemistry with wedges and dashes. If a racemic mixture is created, you must write "racemic" under the structures.

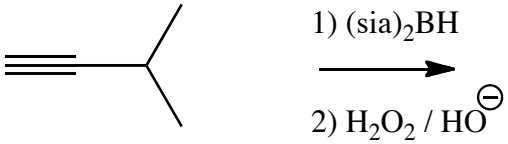


5. For the following, complete the reactions with the predominant product or products. You must indicate stereochemistry with wedges and dashes. If a racemic mixture is created, you must write "racemic" under the structures.

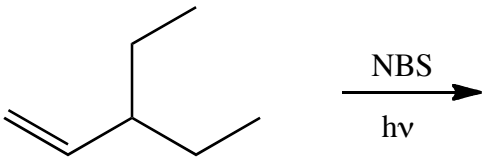


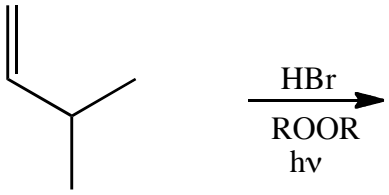


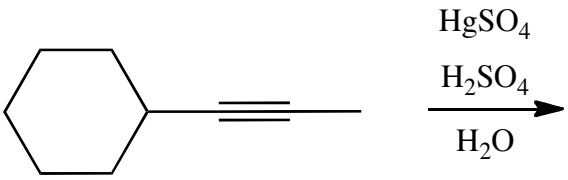


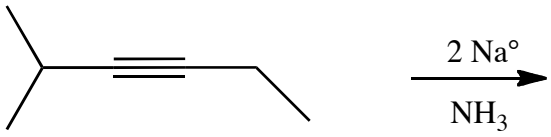


6. For the following, complete the reactions with the predominant product or products. You must indicate stereochemistry with wedges and dashes. If a racemic mixture is created, you must write "racemic" under the structures.

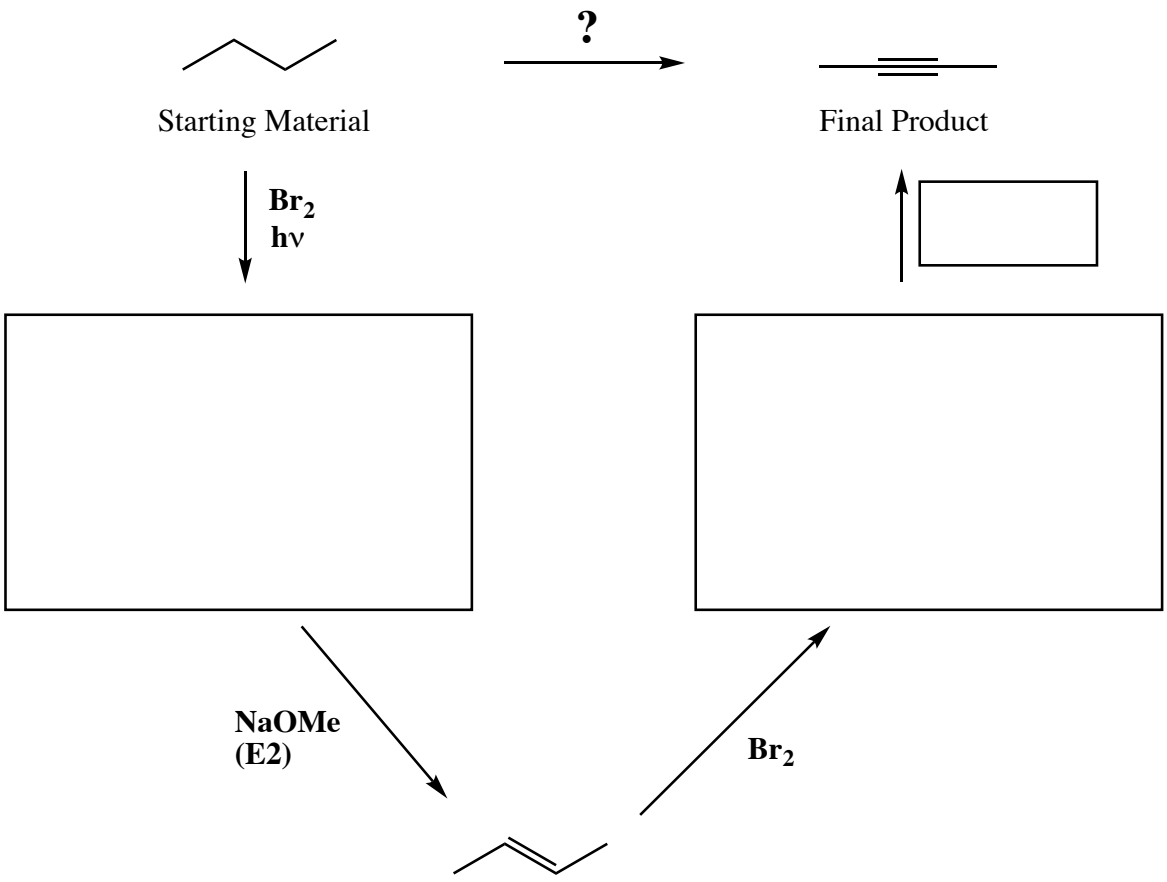








7. The point of organic chemistry is synthesis, the conversion of starting molecules into different ones with a new structure and function. Each reaction you are learning should be thought of as a "tool" that allows you to create a desired type of molecule. These tools can be used in an almost infinite number of combinations to create truly interesting molecules. **In the large boxes provided, draw the structures of the molecules indicated in this synthesis scheme. For smaller boxes next to the arrow, write the reagents needed to carry out the appropriate reaction.** You may use any reactions we have learned provided that the product(s) you draw for each step is/are the predominant one(s). Show all the reagents you need. Show each molecule synthesized along the way and be sure to pay attention to the regiochemistry and stereochemistry preferences for each reaction. You must draw all stereoisomers formed, and use wedges and dashes to indicate chirality at each chiral center. Write racemic when appropriate. **All the carbons of the product must come from carbons of the starting material.**



8. In the large boxes provided, draw the structures of the molecules indicated in this synthesis scheme. For smaller boxes next to the arrow, write the reagents needed to carry out the appropriate reaction. You may use any reactions we have learned provided that the product(s) you draw for each step is/are the predominant one(s). Show all the reagents you need. Show each molecule synthesized along the way and be sure to pay attention to the regiochemistry and stereochemistry preferences for each reaction. You must draw all stereoisomers formed, and use wedges and dashes to indicate chirality at each chiral center. Write racemic when appropriate. **All the carbons of the product must come from carbons of the starting material.**