

**NAME (Print):** \_\_\_\_\_

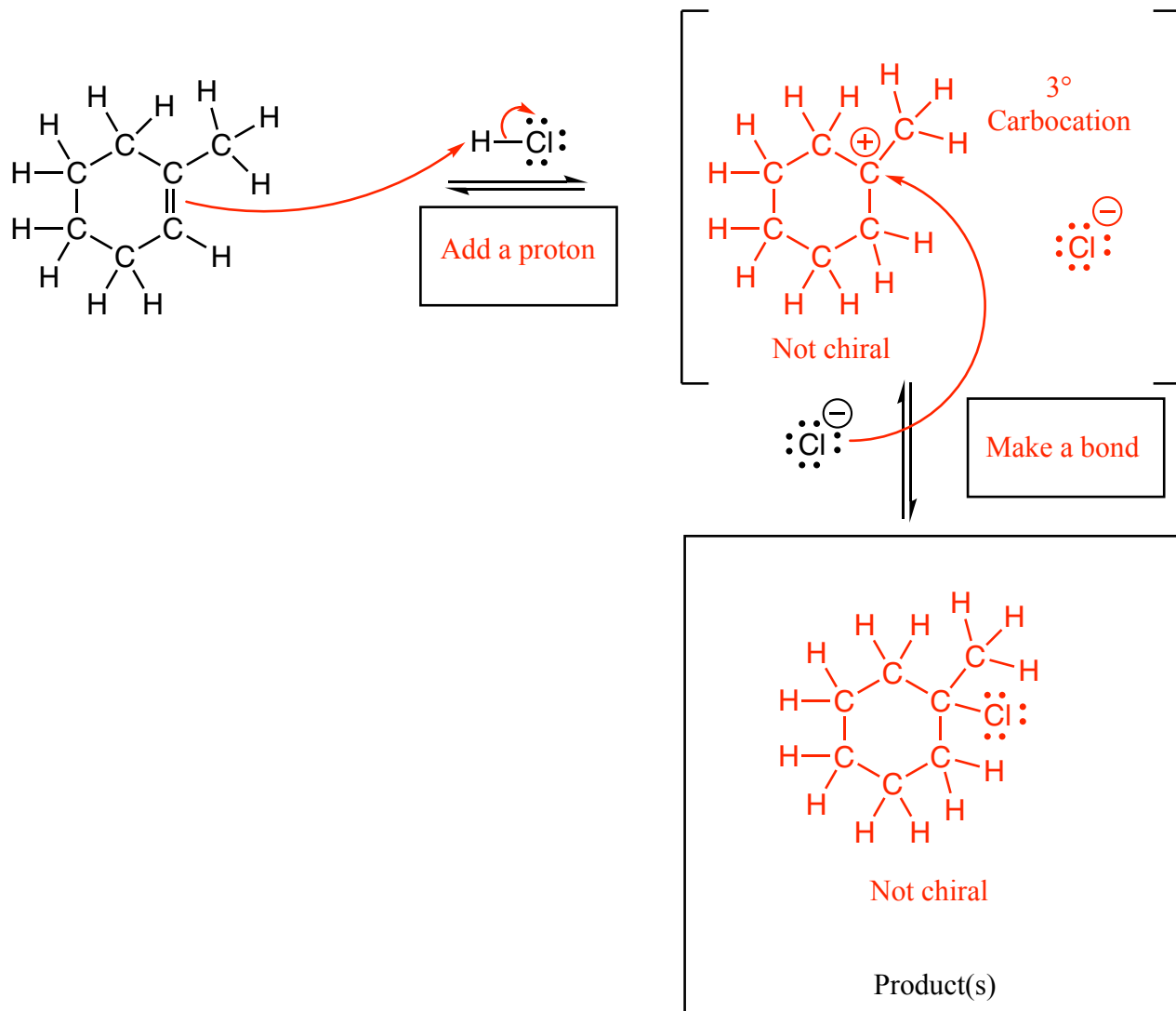
**SIGNATURE:** \_\_\_\_\_

**Chemistry 320M/328M  
Dr. Brent Iverson  
6th Homework  
October 9, 2024**

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

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1. (15 pts) Complete the mechanism for the following reaction of an alkene with HCl. **Be sure to show arrows to indicate movement of all electrons, write all lone pairs, all formal charges, and all the products for each step.** Remember, I said all the products for each step. **YOU ONLY NEED TO DRAW ONE STEREOISOMER OF A CHIRAL INTERMEDIATE OR PRODUCT (using wedges and dashes as appropriate) IF A NEW CHIRAL CENTER IS CREATED IN AN INTERMEDIATE OR PRODUCT, MARK IT WITH AN ASTERISK AND LABEL THE MOLECULE AS "RACEMIC" IF APPROPRIATE.** In the boxes provided under/ beside the arrows, write which of the 4 most common mechanistic elements describes each step (make a bond, break a bond, etc.). **Be sure to notice the questions at the end.**

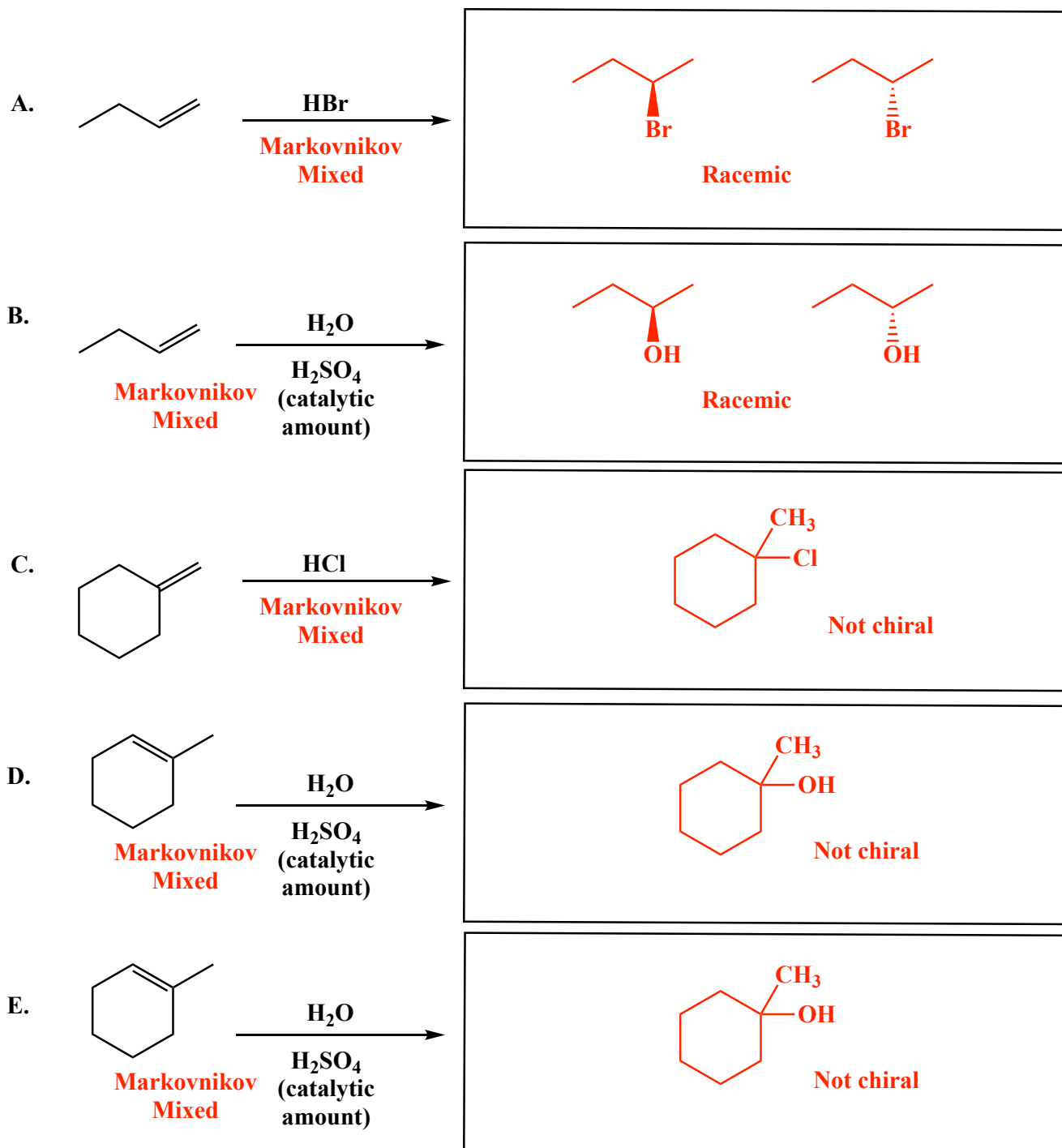


(2 pts) How many total stereoisomers are produced by this reaction? 1 (Not chiral)

(2 pts) As the reaction proceeds, does the pH of the solution increase, decrease, or stay the same?

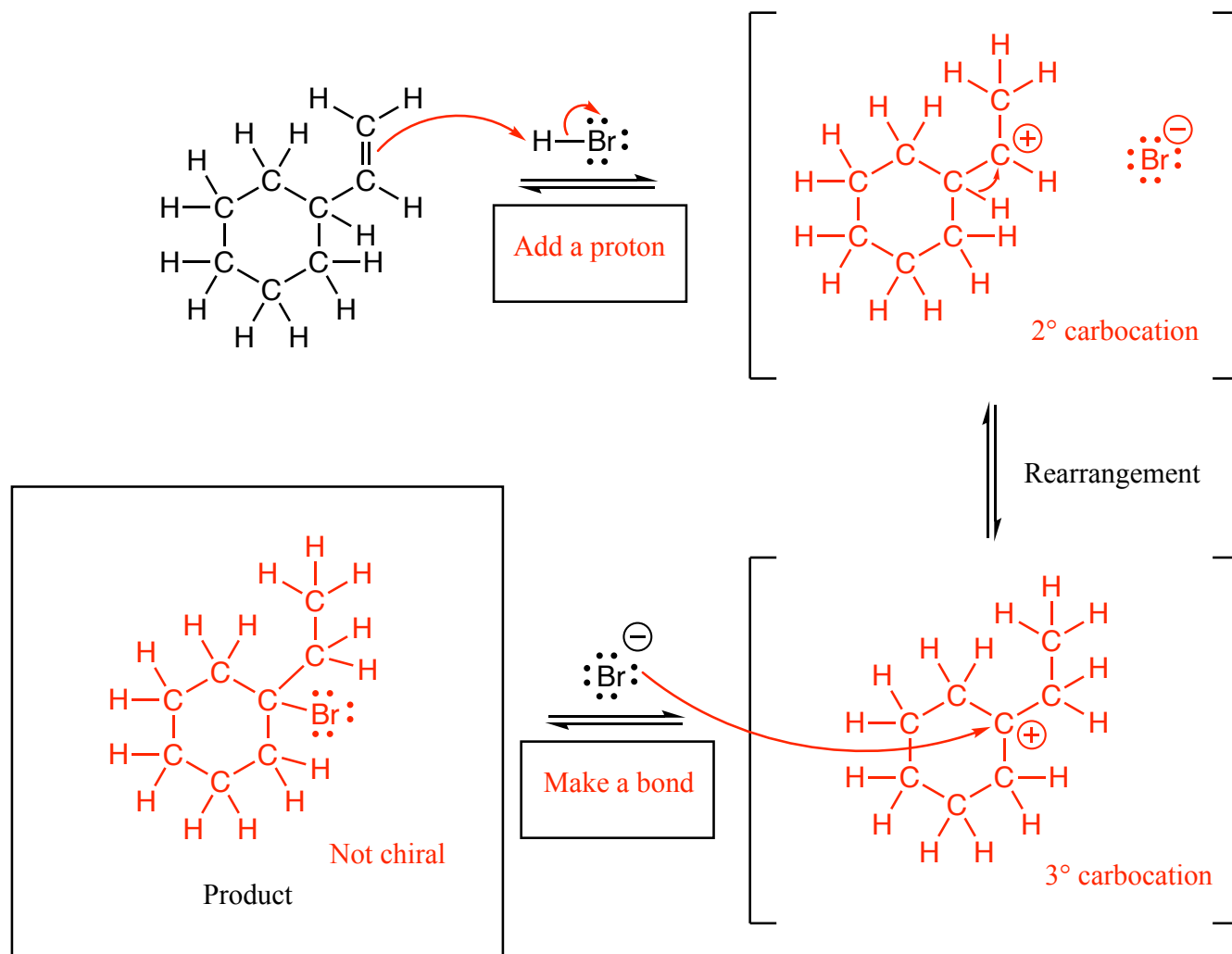
Increase (as HCl is used up)

2. (3 or 5 pts each) The following reactions all involve chemistry of alkenes. Fill in the box with the product(s) that are missing from the chemical reaction equations. Draw only the predominant regioisomer product or products and please remember that you must draw the structures of all the product stereoisomers using wedges and dashes to indicate stereochemistry as appropriate. When a racemic mixture is formed, you must write "racemic" under both structures EVEN THOUGH YOU DREW BOTH STRUCTURES.



Yep, D and E are the same. That was on purpose as it was intended to help you focus on the “case by case” nature of how to approach these reactions. Hopefully you predicted both of the answers as the same thing before you noticed it was the same problem!

3. (17 pts) Complete the mechanism for the following H-Br reaction with a rearrangement. **For this mechanism we will ONLY consider the rearranged product. Be sure to show arrows to indicate movement of all electrons, write all lone pairs, all formal charges, and all the products for each step.** Remember, I said all the products for each step. **YOU ONLY NEED TO DRAW ONE STEREOISOMER OF A CHIRAL INTERMEDIATE OR PRODUCT (using wedges and dashes as appropriate) IF A NEW CHIRAL CENTER IS CREATED IN AN INTERMEDIATE OR PRODUCT, MARK IT WITH AN ASTERISK AND LABEL THE MOLECULE AS "RACEMIC" IF APPROPRIATE.** In the two boxes provided under the arrows, write which of the 4 most common mechanistic elements describes each step (make a bond, break a bond, etc.). Be sure to notice the questions at the end.



(2 pts) How many total stereoisomers are produced by this reaction? 1