

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

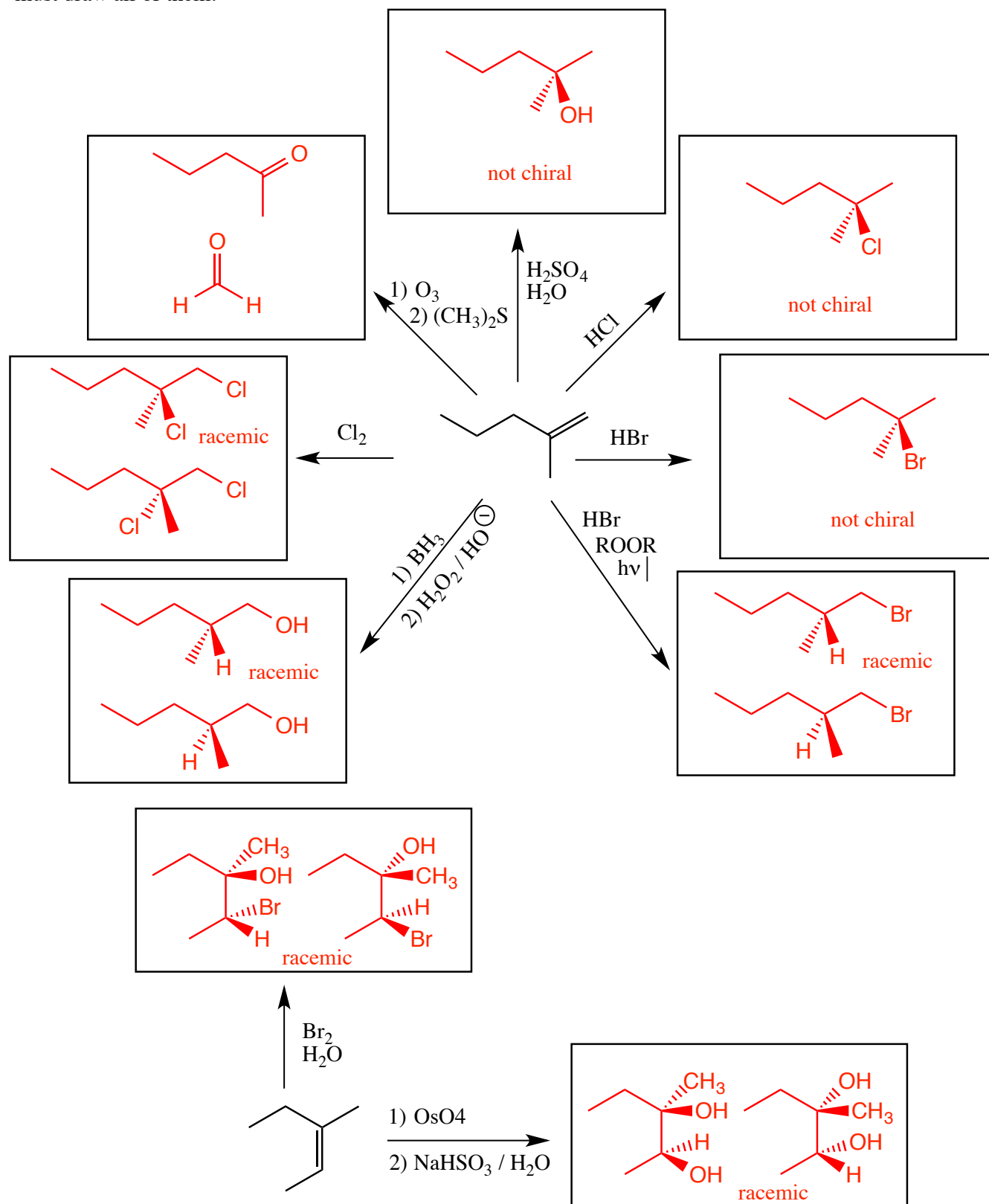
SIGNATURE: \_\_\_\_\_

**Chemistry 320N  
Dr. Brent Iverson  
1st Homework  
January 12, 2026**

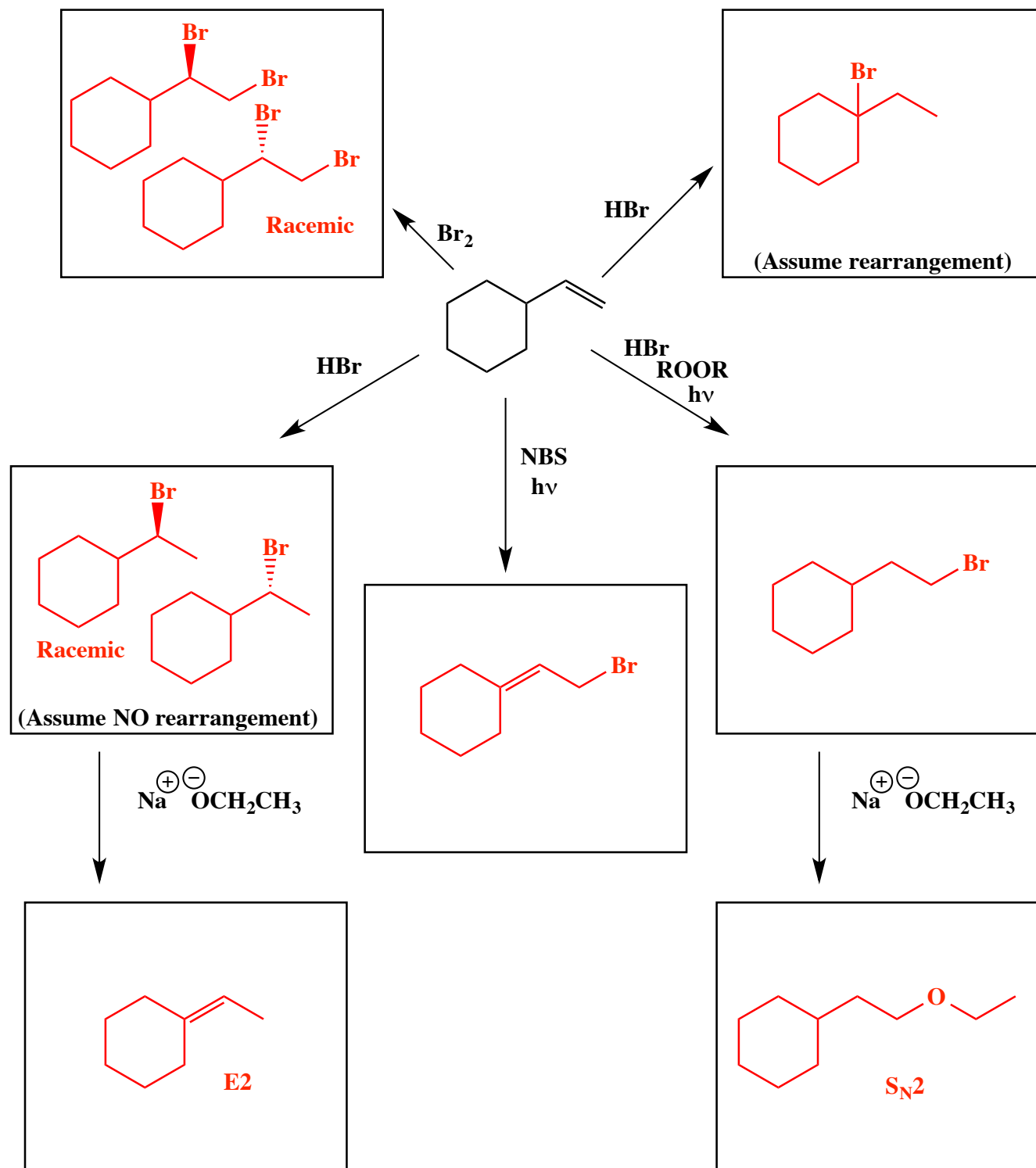
**Please print the  
first three letters  
of your last name  
in the three boxes**

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(3 or 5 pts each) Fill in the boxes with the structures that complete the reactions. Use wedges and dashes to indicate stereochemistry when appropriate. If a racemic mixture is produced, you must draw both enantiomers and write the word "racemic". If more than one carbon containing product is produced, you must draw all of them.

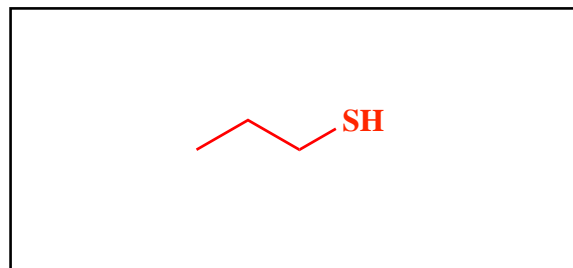
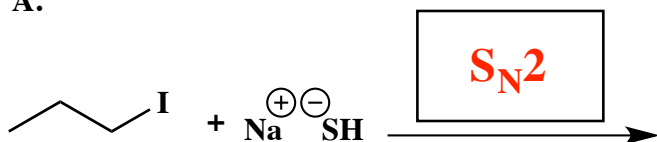


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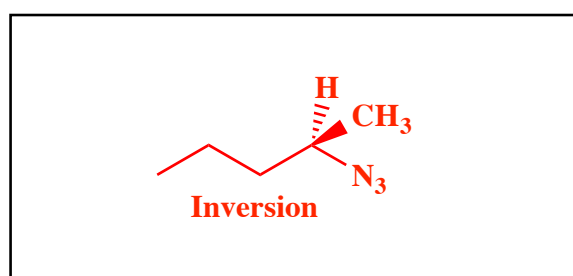
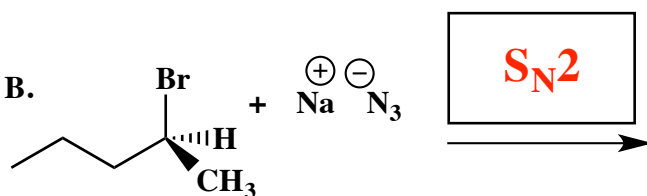


(5 or 7 pts each) The following reactions all involve substitution and/or elimination. **Fill in the box above the arrow with the mechanism that will be followed ( $S_N2$ , E2, etc.). Then draw only the predominant product or products** and please remember that **you must draw the correct stereoisomers**. For  $S_N1$ /E1 reactions you must draw both types of products.

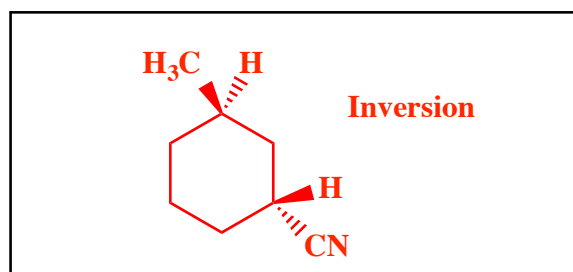
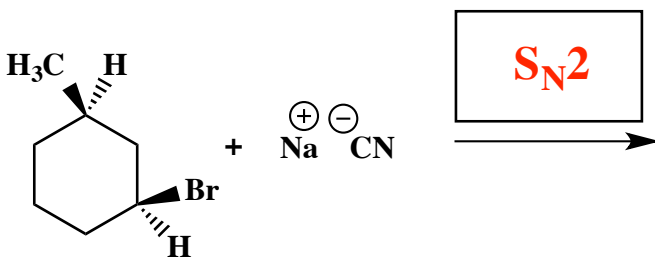
A.



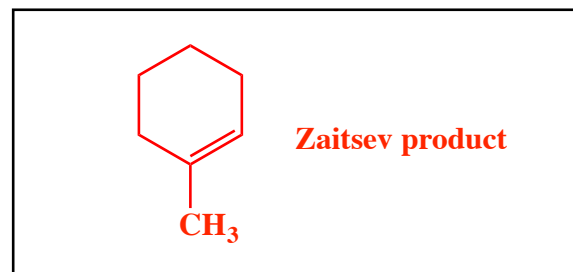
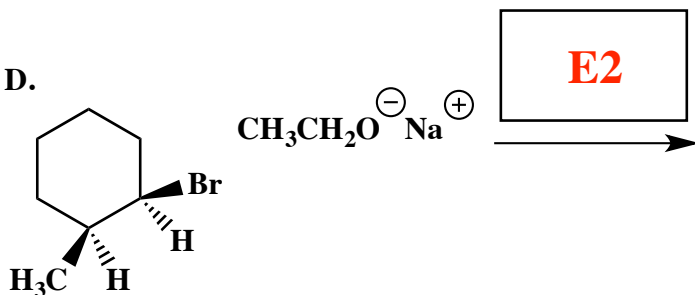
B.



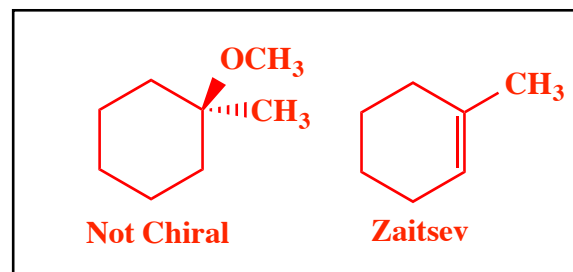
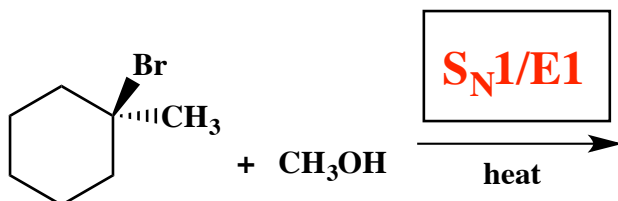
C.



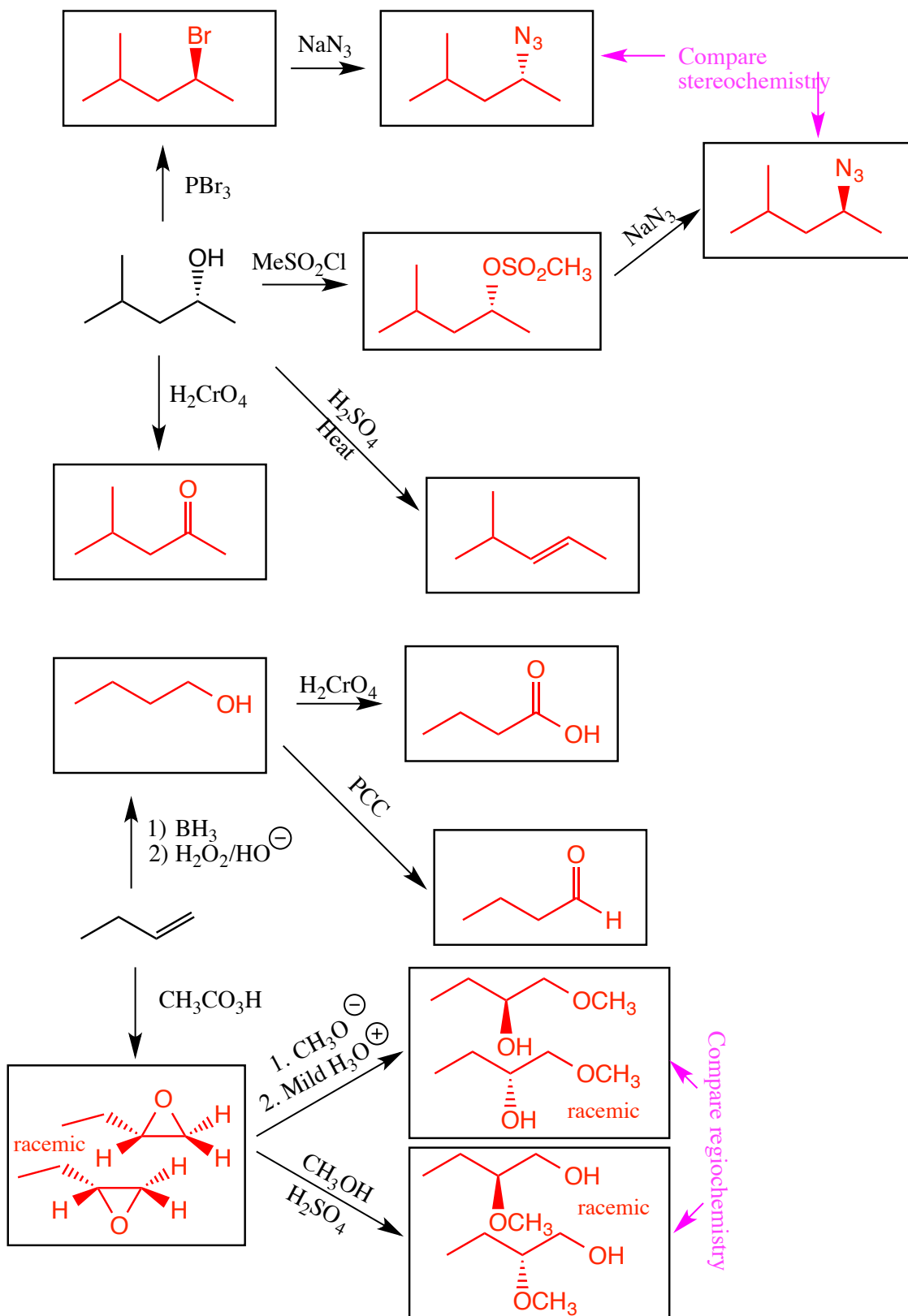
D.



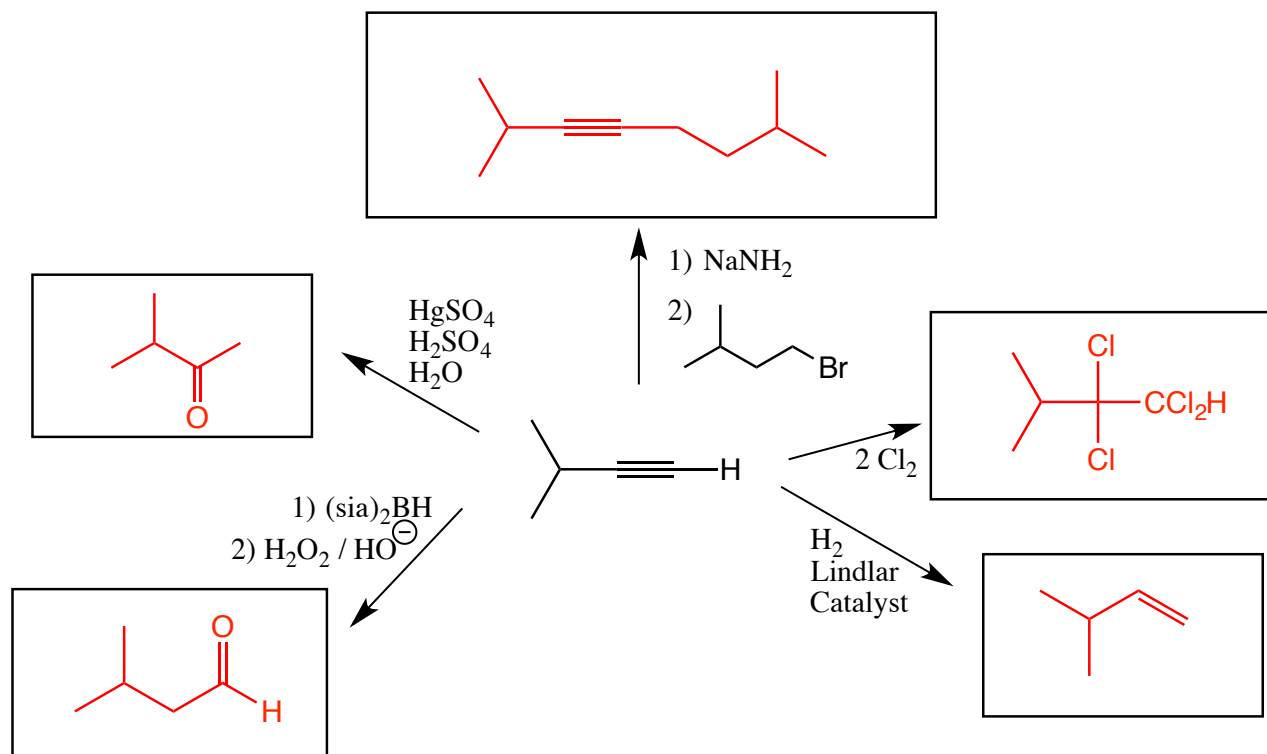
E.



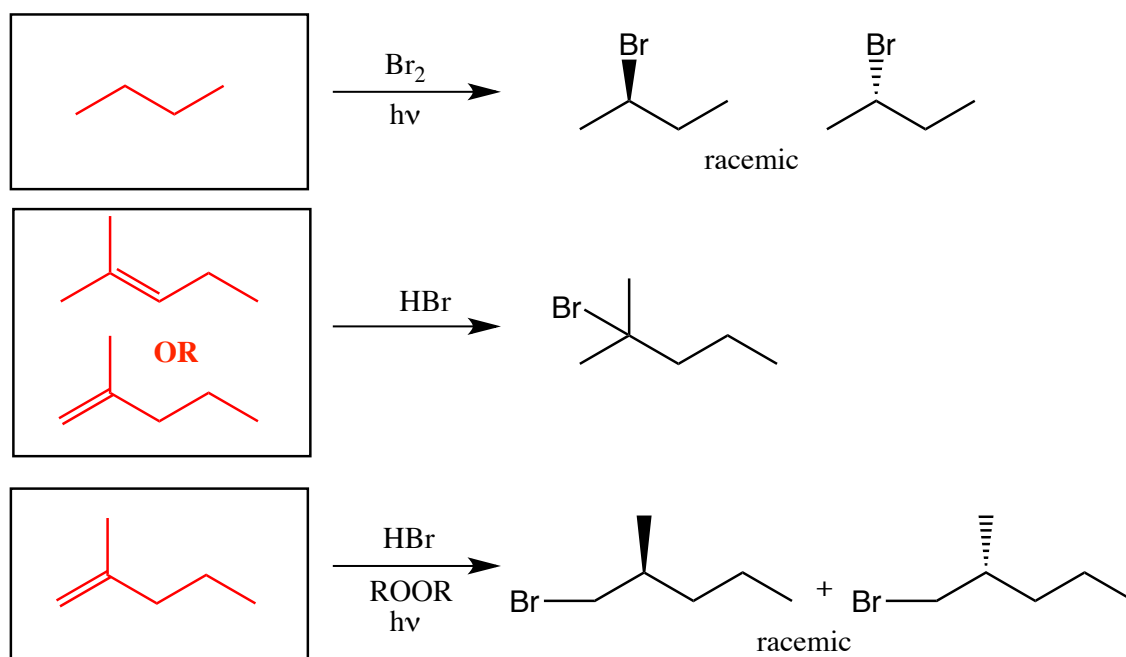
(3 or 5 pts each) Fill in the boxes with the structures that complete the reactions. Use wedges and dashes to indicate stereochemistry when appropriate. If a racemic mixture is produced, you must draw both enantiomers and write the word "racemic". If more than one carbon containing product is produced, you must draw all of them.



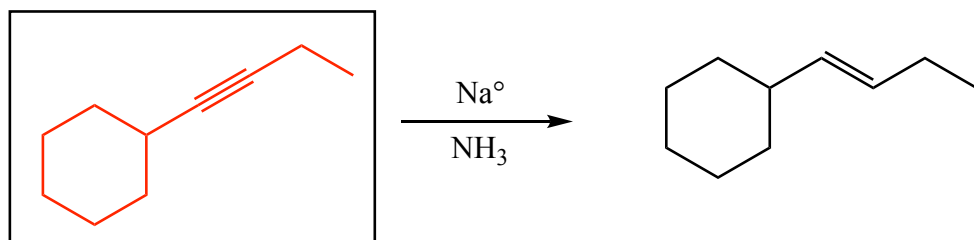
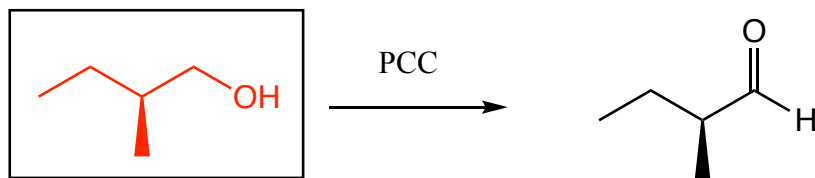
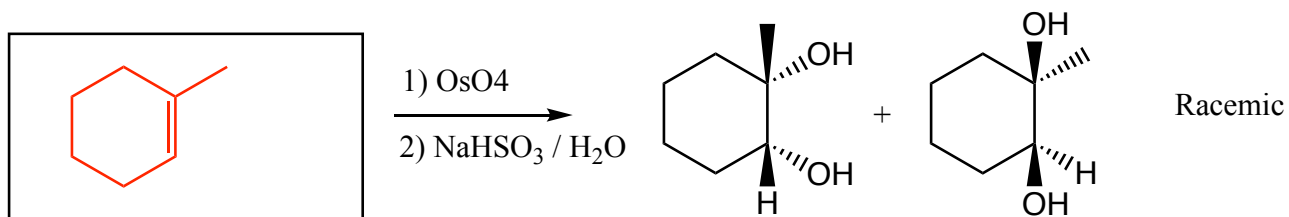
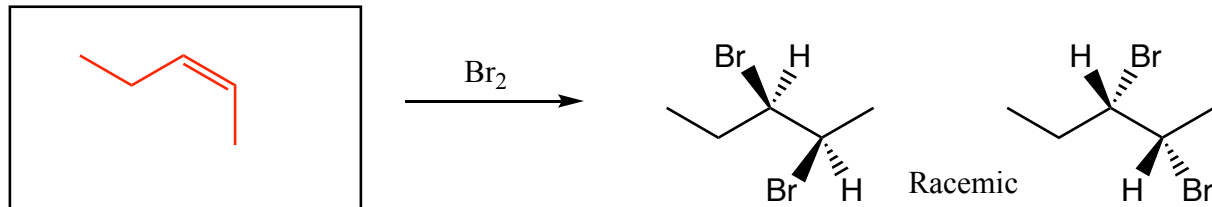
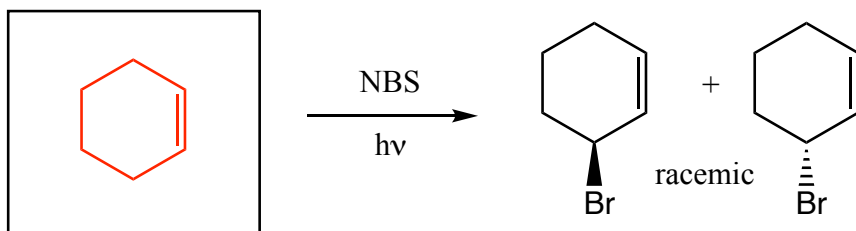
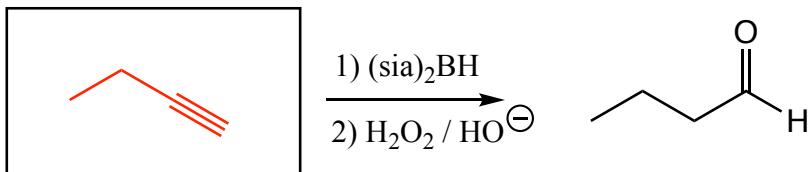
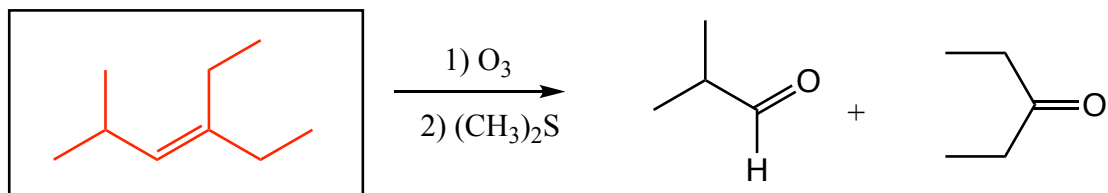
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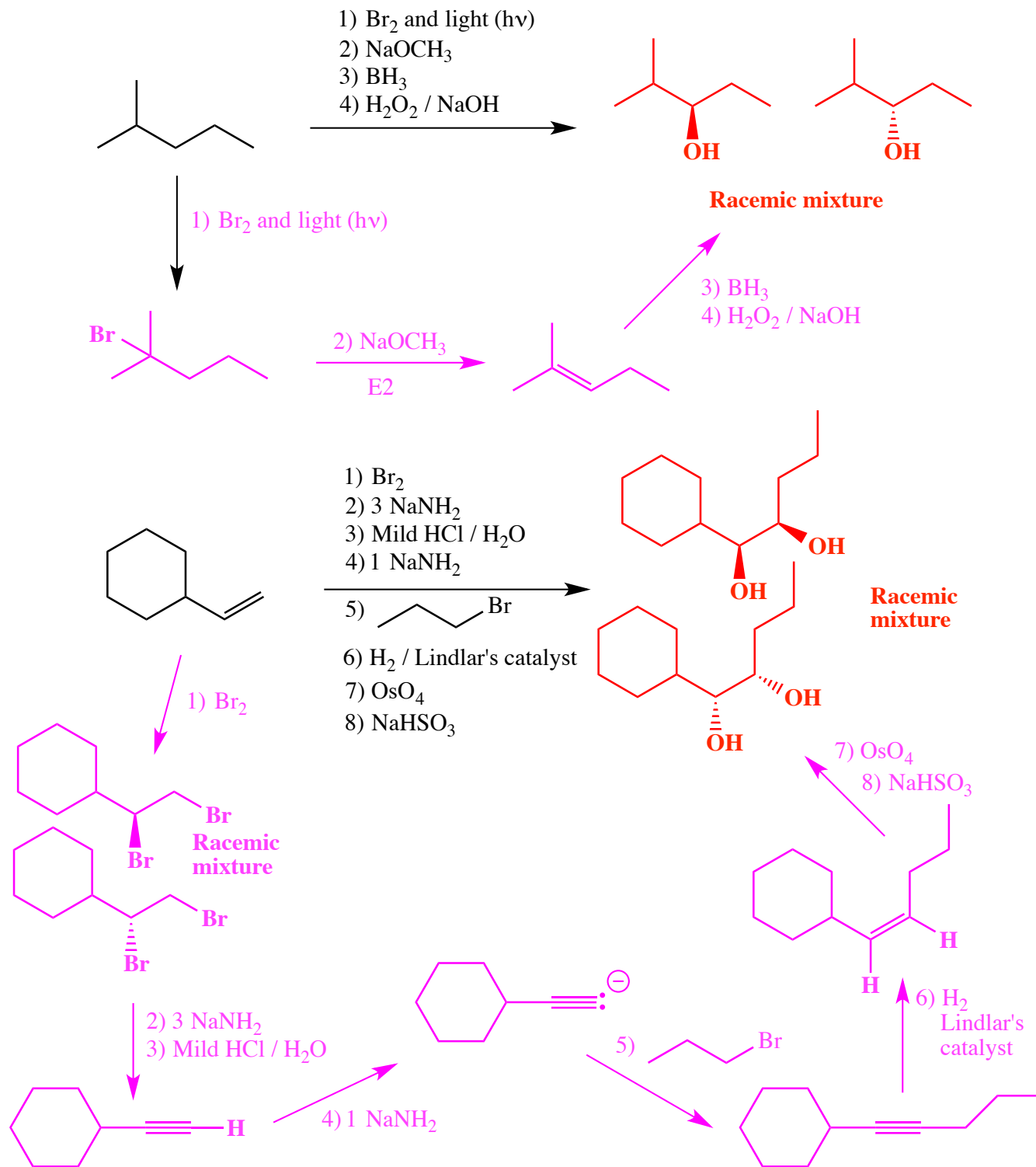
(3 pts each) Fill in the boxes with the structures that complete the reactions. Use wedges and dashes to indicate stereochemistry when appropriate. This format is intended to get you more comfortable with working backwards in synthesis problems.



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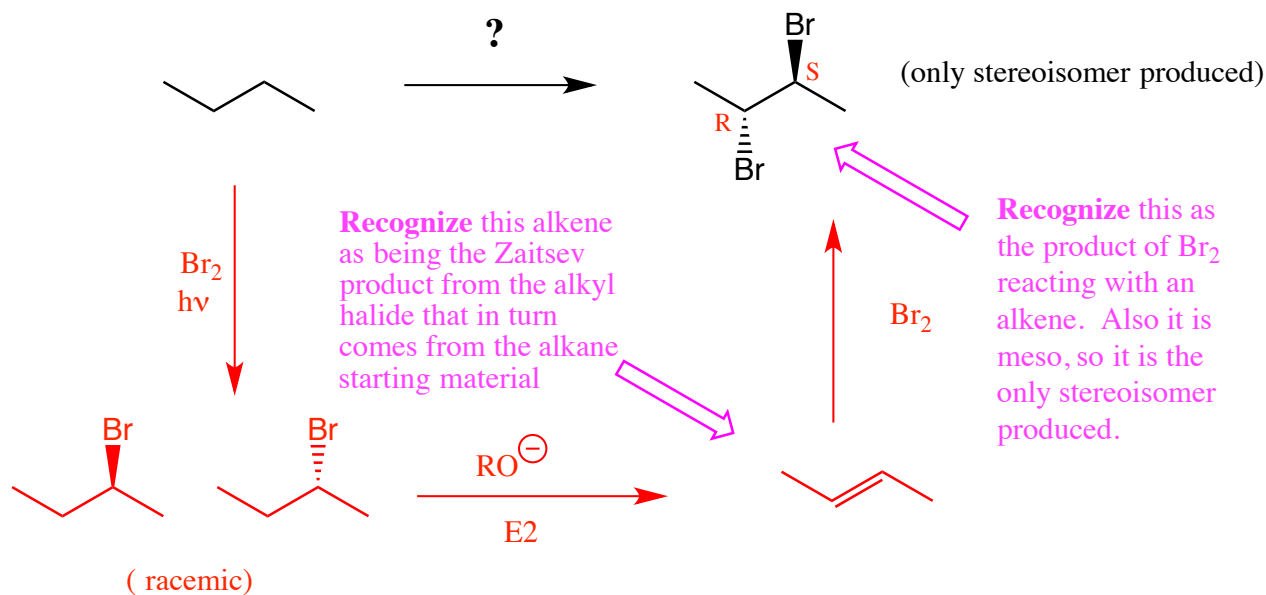
(7 and 9 pts) For the following sequences of reactions, work through all the different steps and then write the final product(s). Assume only the predominant product is formed at each step. You must indicate stereochemistry with wedges and dashes. You must draw all stereoisomers produced as predominant products and write "racemic" under the structures when appropriate. Assume no rearrangements take place.



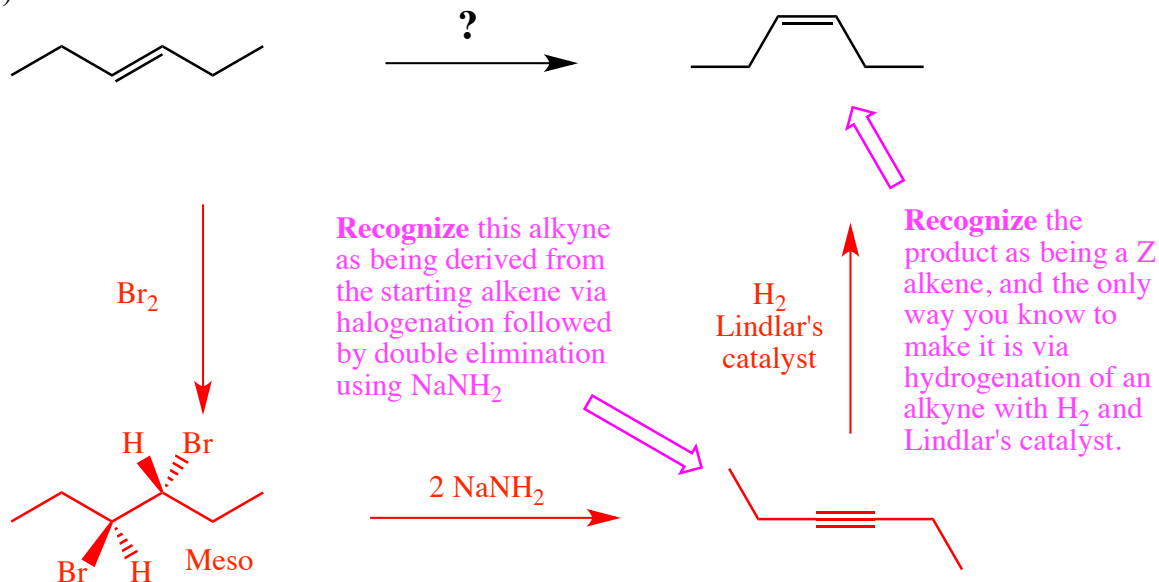


These are synthesis questions. You need to show how the starting material can be converted into the product(s) shown. You may use any reactions we have learned provided that the product(s) you draw for each step is/are the predominant one(s). Show all the reagents you need. Show each molecule synthesized 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.

A) (8 pts)

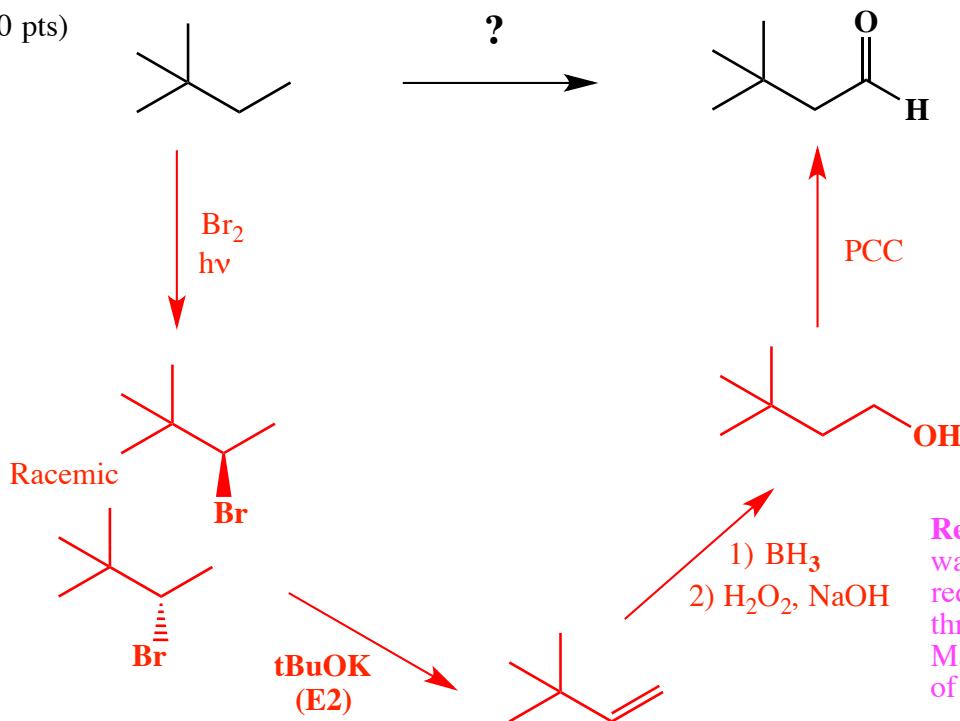


B) (8 pts)



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C) (10 pts)

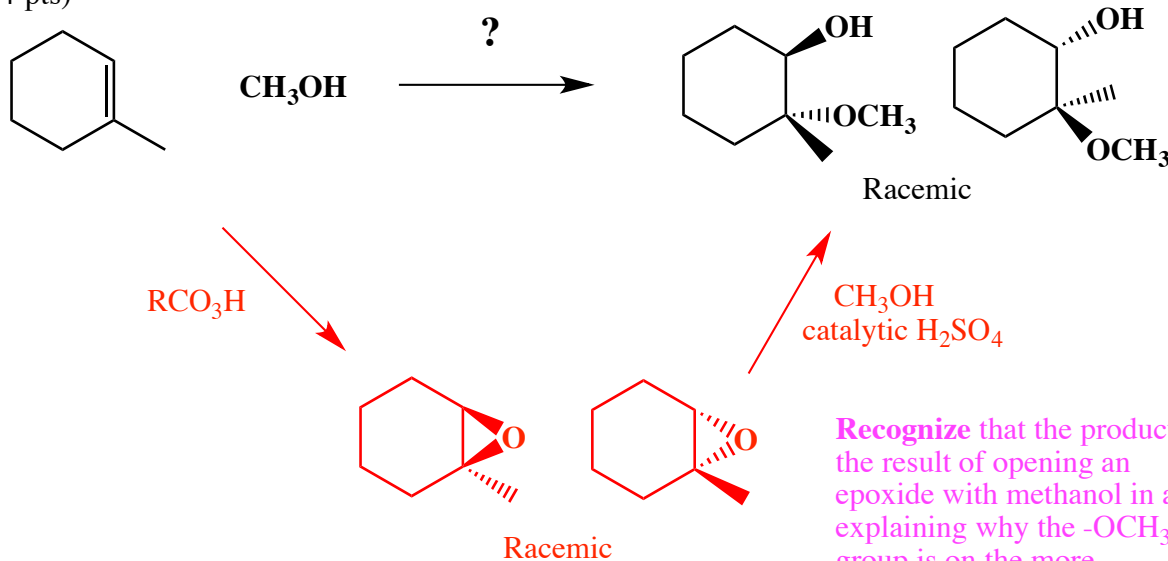


Recognize that the product has the same number of carbon atoms as the starting material, but there is an aldehyde.

Recognize PCC as the only reagent you know that can create an aldehyde without cleaving any C=C bonds.

Recognize that the only way to make the required 1° alcohol is through the non-Markovnikov addition of OH to an alkene.

D) (4 pts)



Recognize that the product is the result of opening an epoxide with methanol in acid, explaining why the  $-\text{OCH}_3$  group is on the more substituted C atom.