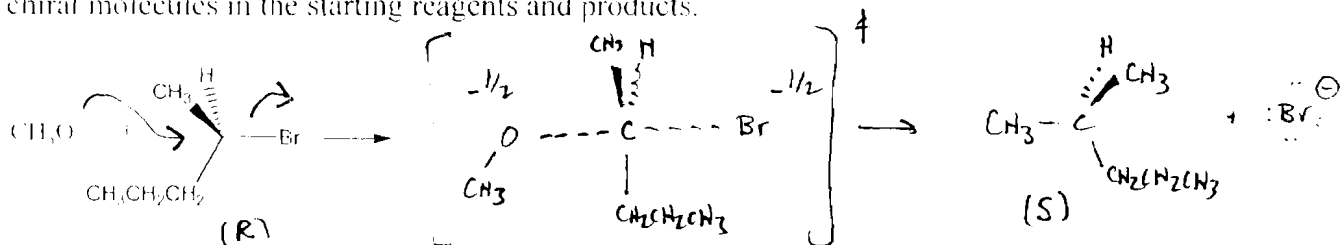
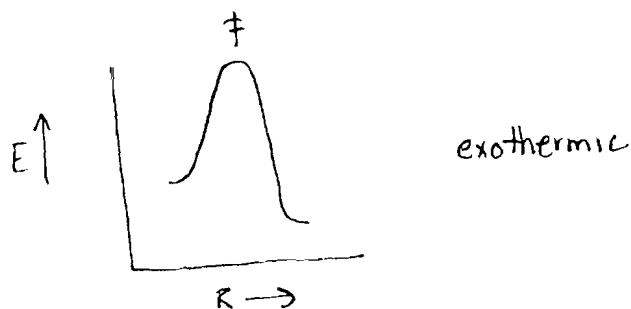


CHEM 242 IN-CLASS Assignment #3 (25 pts) NAMES John Locke

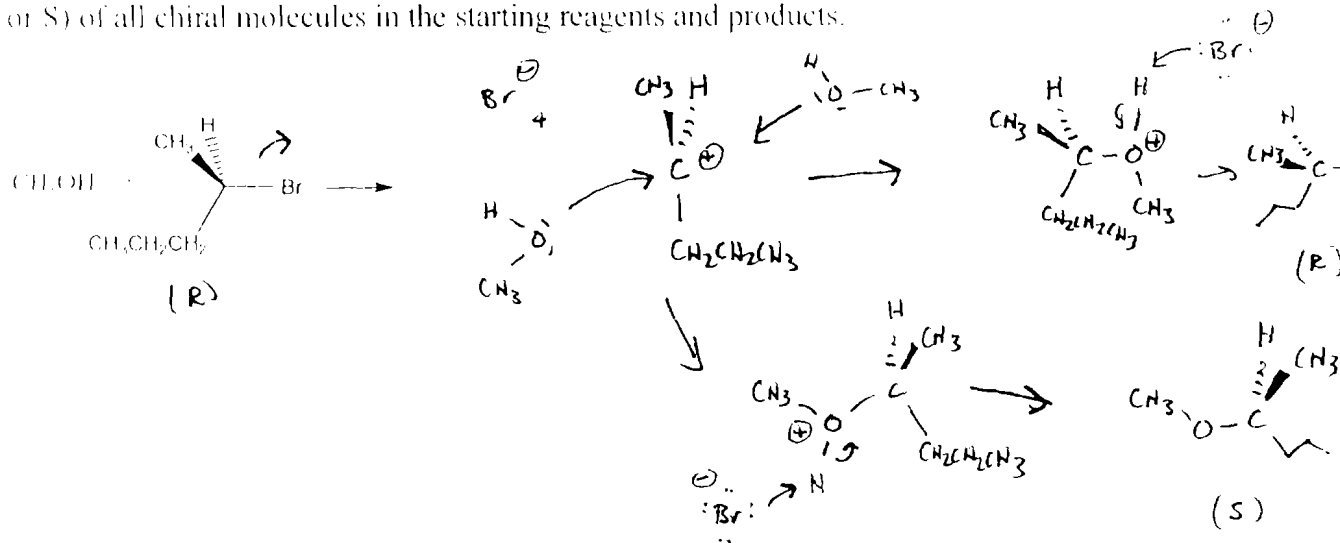
1 a. Draw the reaction mechanism for the following  $S_N2$  reaction. Be sure to show the transition state and pertinent stereochemistry. Also note the configuration (R or S) of all chiral molecules in the starting reagents and products.



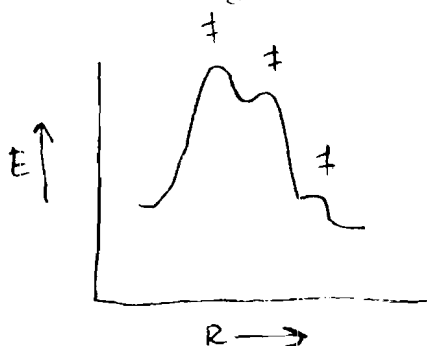
B. Draw the reaction coordinate diagram for the reaction above.



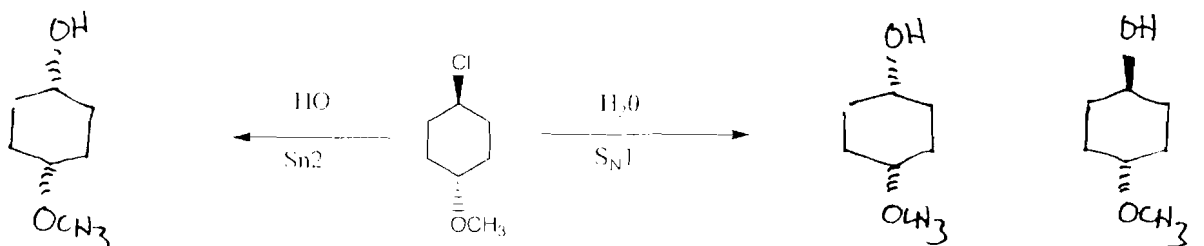
2 a. Draw the reaction mechanism for the following  $S_N1$  reaction. Be sure to show the carbocation intermediate and pertinent stereochemistry. Also note the configuration (R or S) of all chiral molecules in the starting reagents and products.



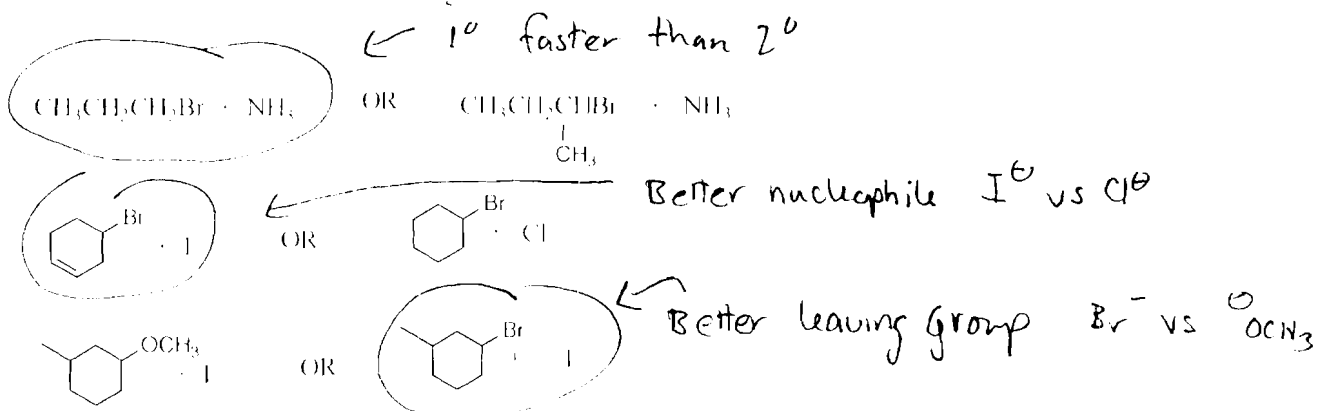
B. Draw the reaction coordinate diagram for the reaction above.



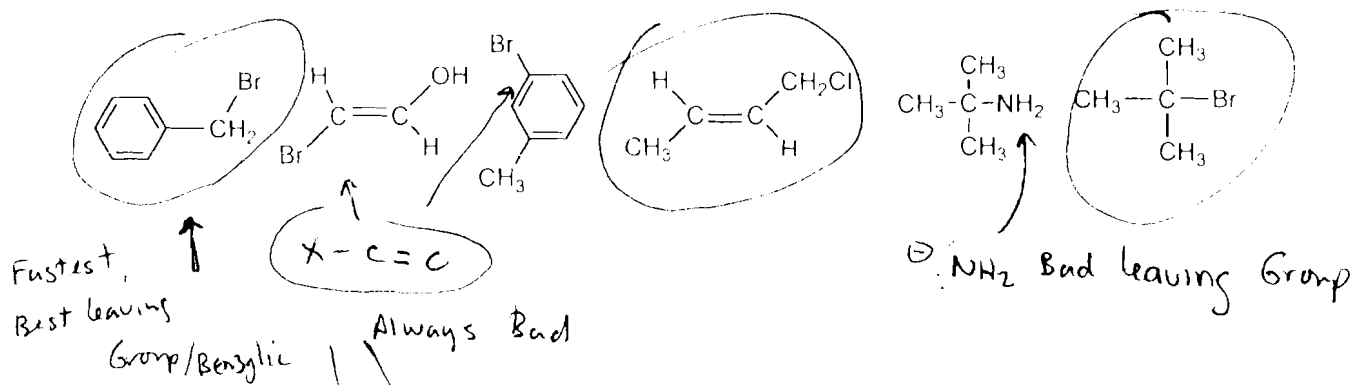
3. Draw the products for the following reactions (the mechanism is given for each reaction). Be sure to show the stereochemistry of the products.



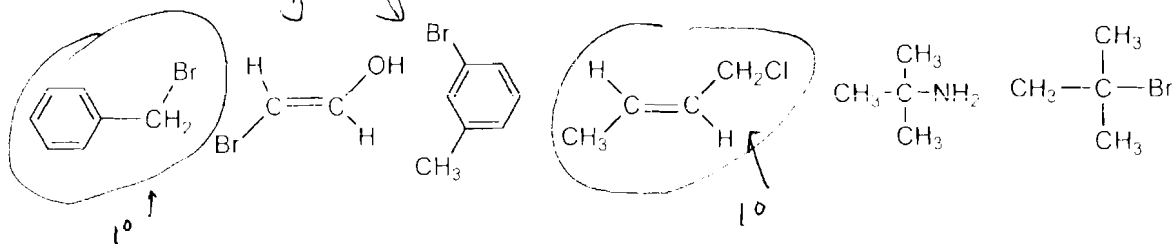
4. In each of the following pairs of **Sn2** reactions circle the reaction that would be faster. Assume all reaction are run using ethanol as the solvent.



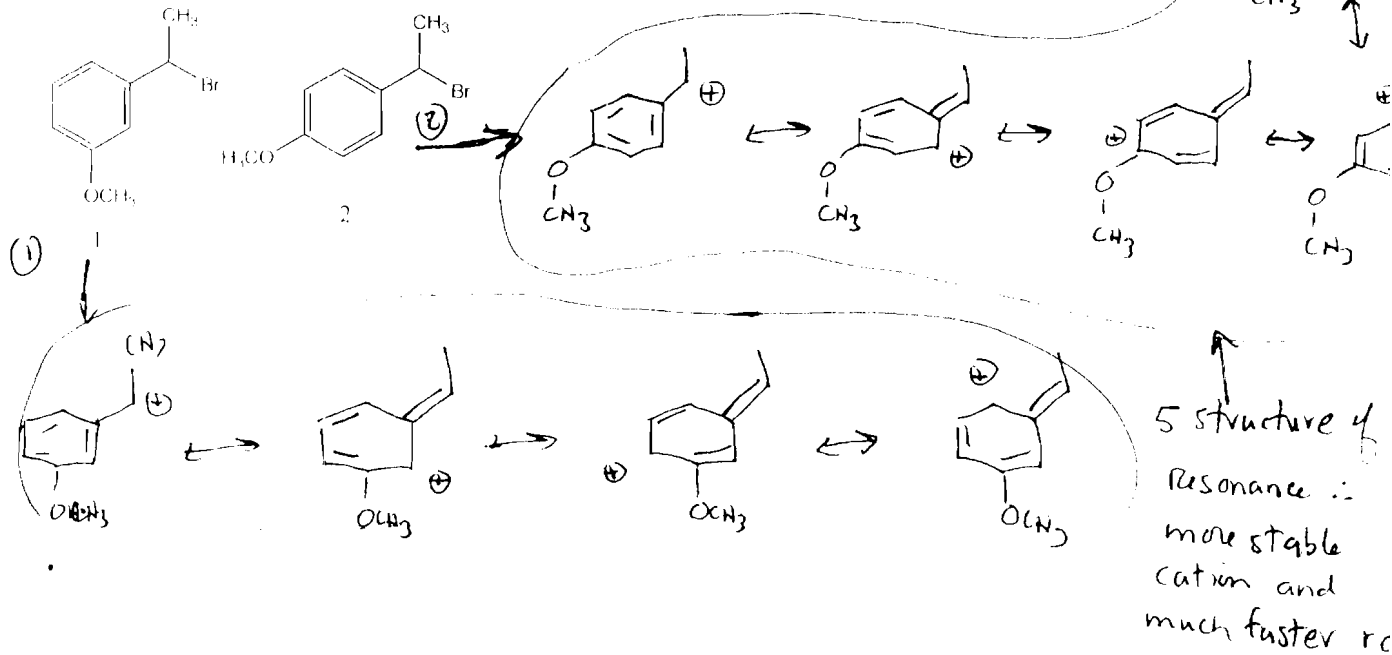
5. For the substrates below, circle which that could undergo an **Sn1** substitution reaction. Also, note which of the circled compounds would be the fastest Sn1 reaction.



6. For the substrates below, circle which that could undergo an **Sn2** substitution reaction



7. In  $S_N1$  reactions compound 2 has a reaction rate 100 times faster than compound 1. Explain (Hint—draw structures of the intermediates).



8. The reaction below proceeds by the  $S_N2$  mechanism. Draw the arrow pushing mechanism for this reaction. (You do not have to show the transition state). For the reaction state why the leaving group is stable.

