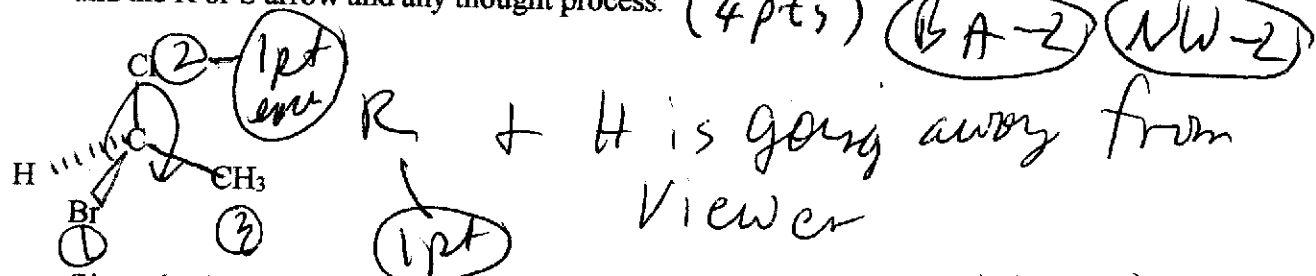


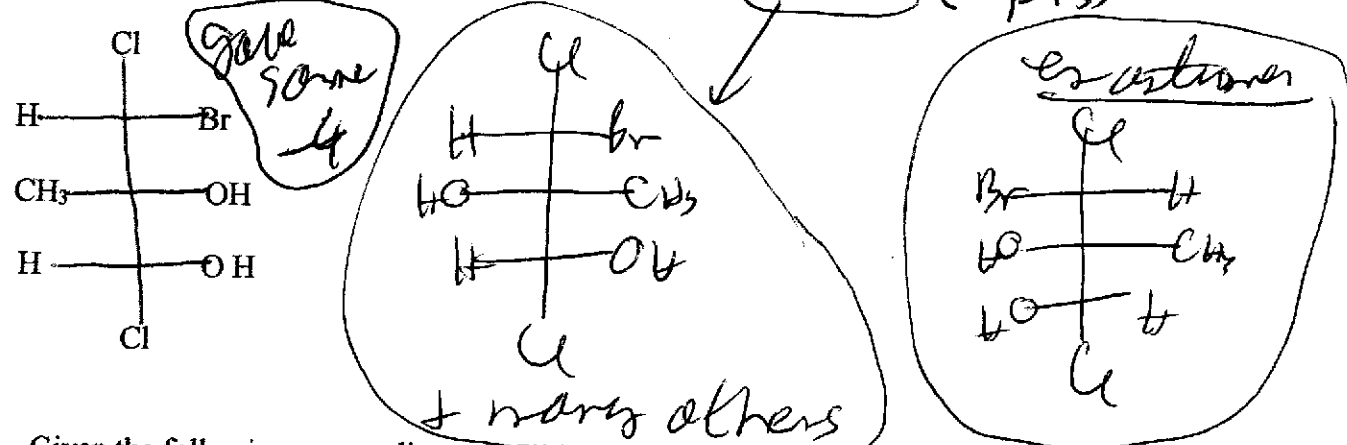
Sign Name Key Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (25 total pts)

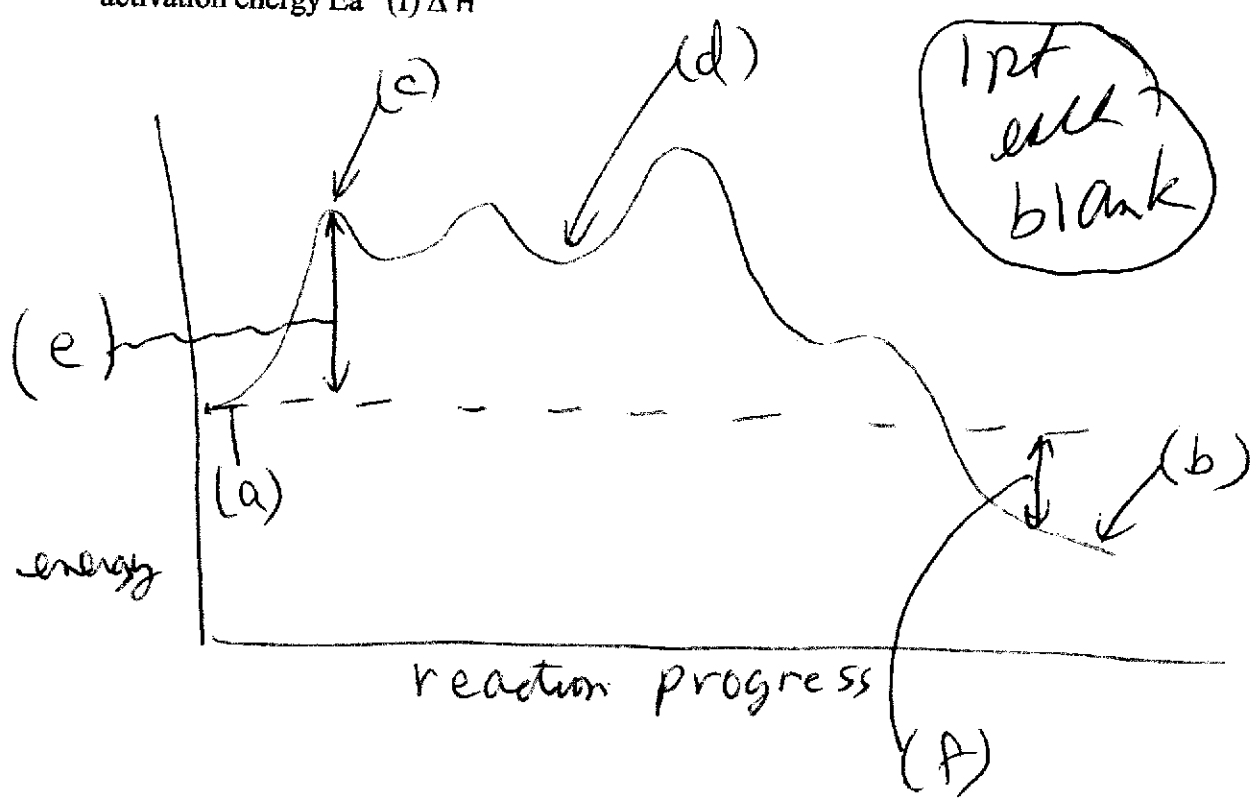
1. a. Given the following 3D structure, assign R,S: Show work by showing your assignment of priority and the R or S arrow and any thought process. (4 pts)



- b. Given the following Fisher Projection formula, Draw a diastereomer. (4 pts)

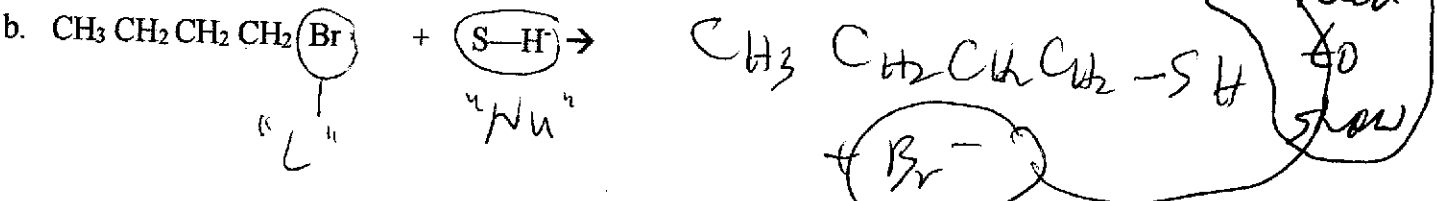
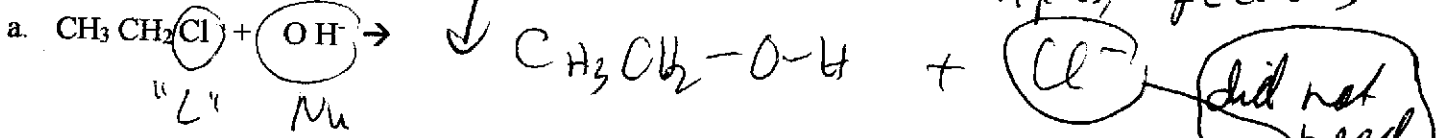


2. Given the following energy diagram, fill in the blank with the letters. Each letter may be used once, many times or not at all. (a) reactant (b) product (c) transition state (d) intermediate (e) activation energy E_a (f) ΔH (6 pts)



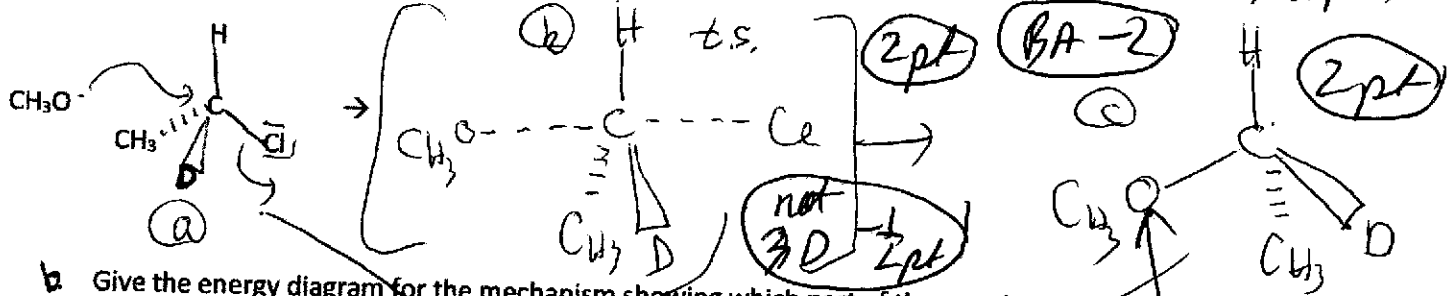
WATER
intermediate or isomer no partial credit equation

3. Complete the following organic reaction by giving the organic product. (4 pts, 2pt each)



did not need to show

4. a. Show the reaction mechanism for the following reactants. (including the transition state) (4 pts)



b. Give the energy diagram for the mechanism showing which part of the reaction mechanism goes with which part of the energy diagram. (1 pt)



did not label 1/2 w mech

wrong place 1/2pt

c. Give the rate law for the above reaction mechanism with specific molecules in the rate law. (1 pt)

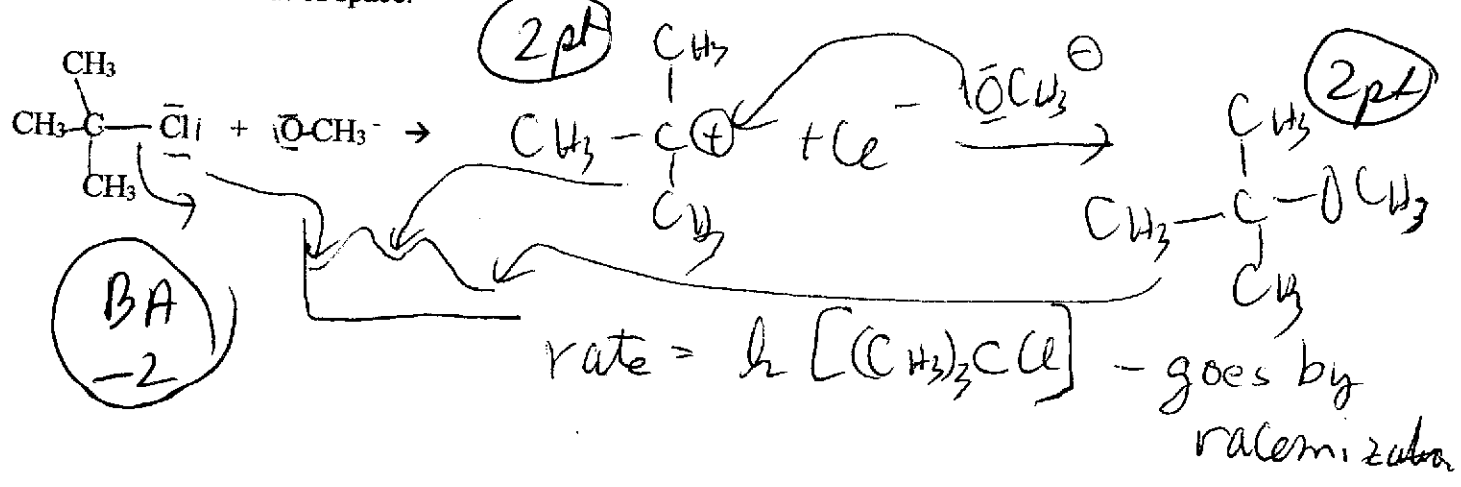
$$\text{rate} = k [\text{CH}_3\text{CH}_2\text{Cl}] [\text{CH}_3\text{O}^-]$$

d. If you started the reaction with R reactant (as shown above), the product would be [(R) or (S)] (circle one) (1 pt)

inversion

no partial credit

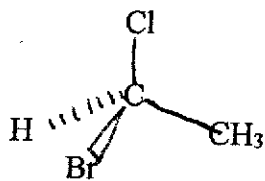
5. Extra Credit: (4 pts) Give the reaction mechanism for the following reactant. (by $\text{S}_{\text{N}}1$) (continue on back if run out of space.)



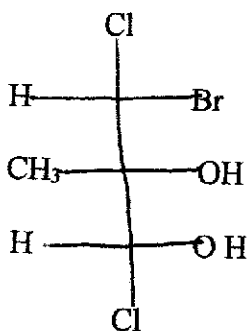
Sign Name _____ Print Name _____

Please show work on all questions for partial credit even on questions which do not specify. (25 total pts)

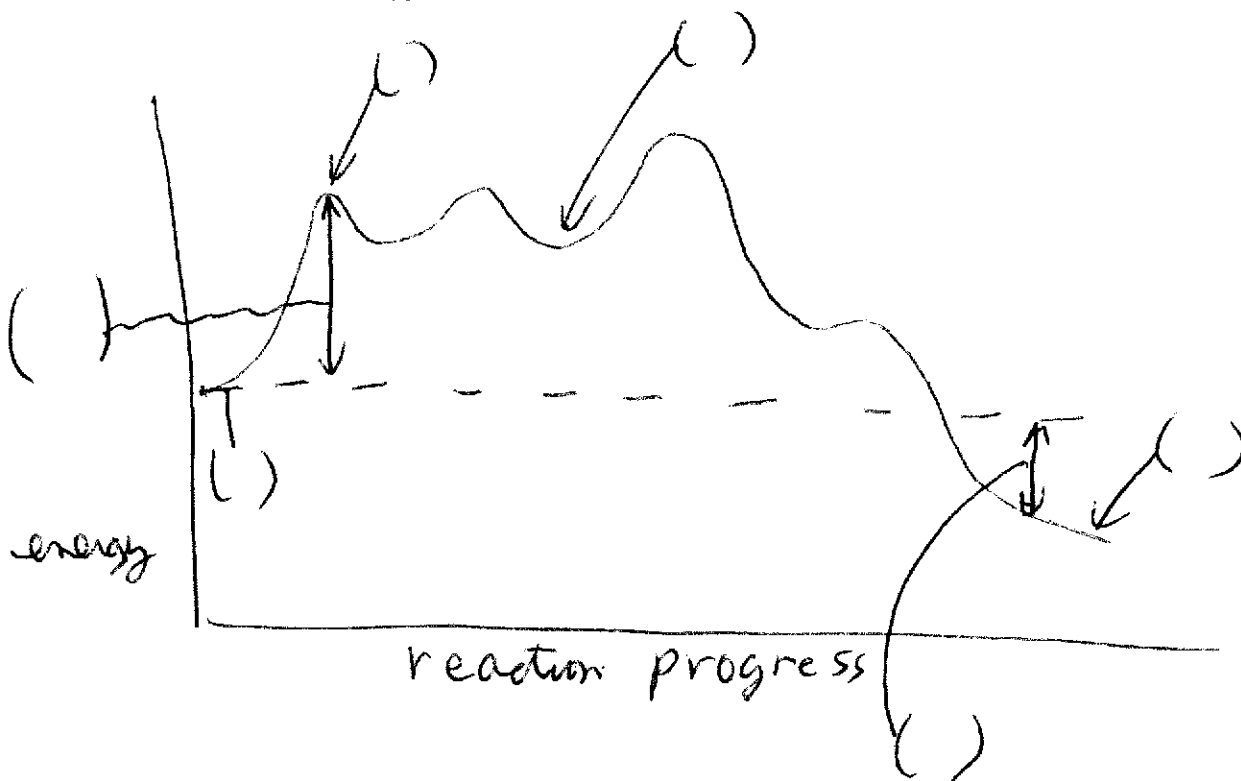
1. a. Given the following 3D structure, assign R,S: Show work by showing your assignment of priority and the R or S arrow and any thought process. (4 pts)



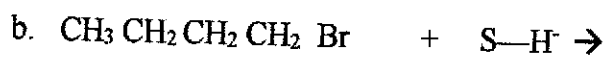
- b. Given the following Fisher Projection formula, Draw a diastereomer. (4 pts)



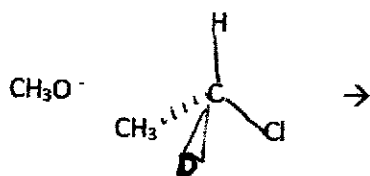
2. Given the following energy diagram, fill in the blank with the letters. Each letter may be used once, many times or not at all. (a) reactant (b) product (c) transition state (d) intermediate (e) activation energy E_a (f) ΔH (6 pts)



3. Complete the following organic reaction by giving the organic product. (4 pts, 2 pt each)



4. a. Show the reaction mechanism for the following reactants. (including the transition state) (4 pts)



b. Give the energy diagram for the mechanism showing which part of the reaction mechanism goes with which part of the energy diagram. (1 pt)

c. Give the rate law for the above reaction mechanism with specific molecules in the rate law. (1 pt)

d. If you started the reaction with R reactant (as shown above), the product would be [(R) or (S)] (circle one) (1 pt)

5. Extra Credit: (4 pts) Give the reaction mechanism for the following reactant. (by $\text{S}_{\text{N}}1$) (continue on back if run out of space.)

