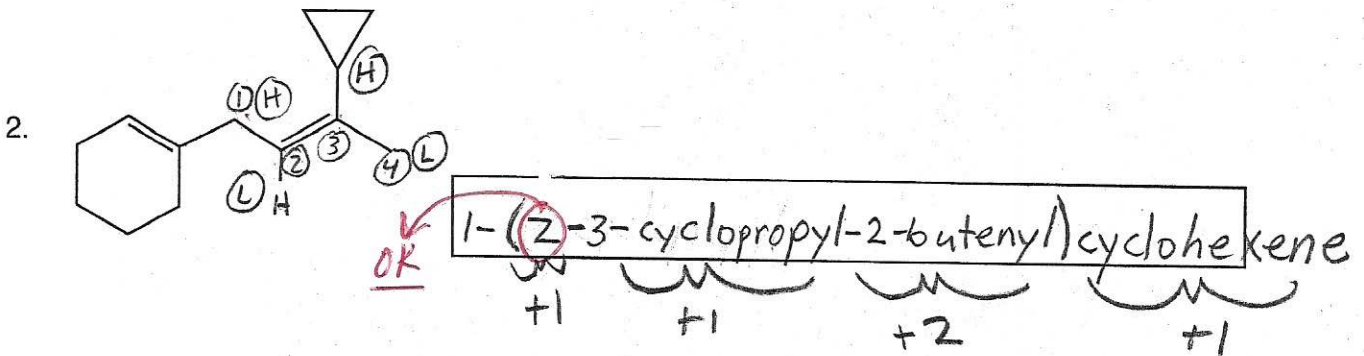
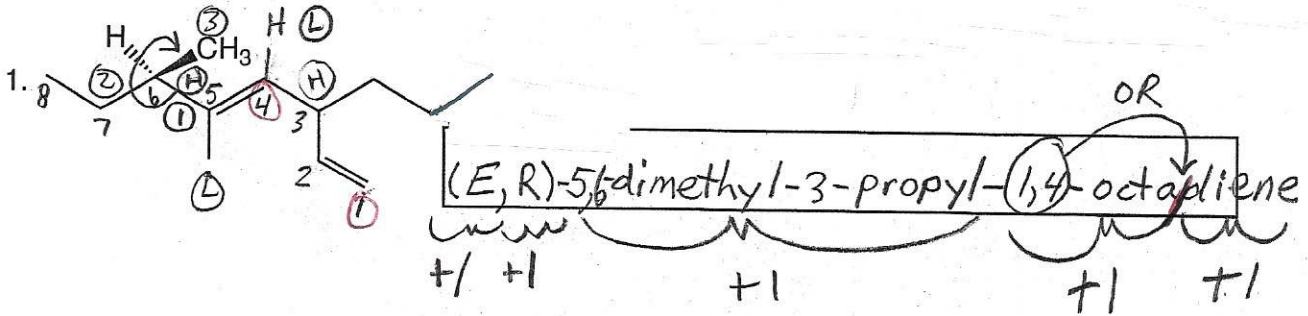


# Exam 2A Fall

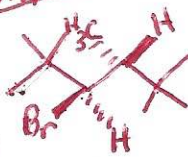
⊖ for chain numbering

## A. Nomenclature: (15 points)

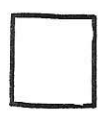
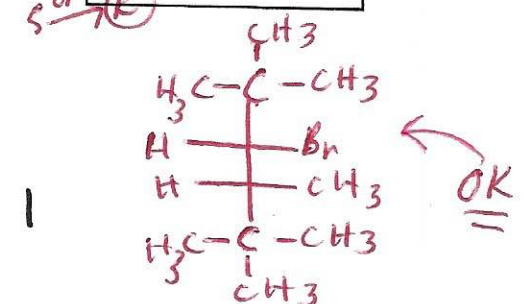
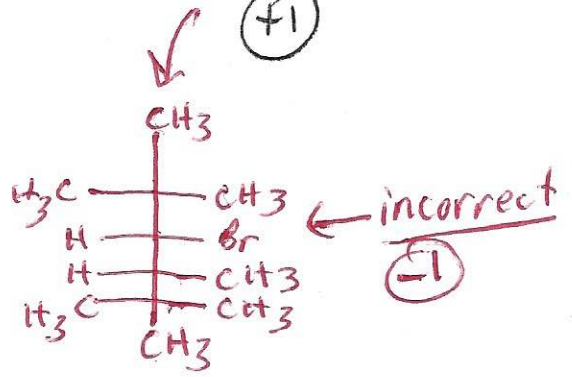
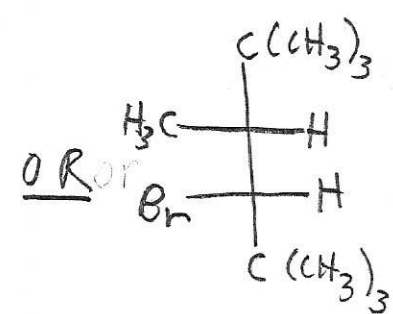
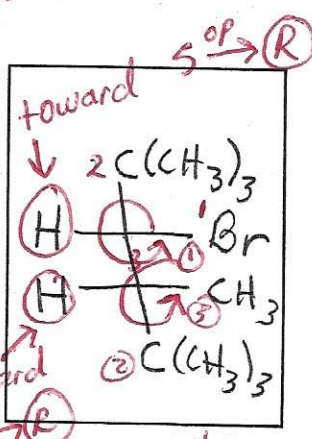
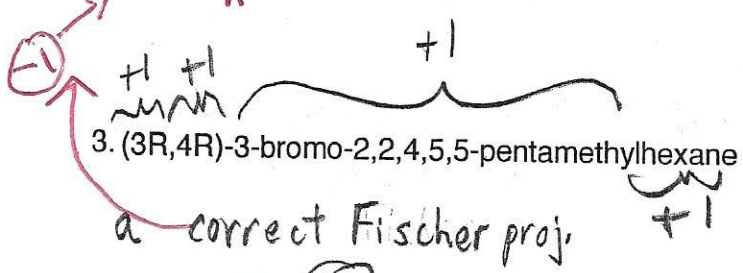
Give an acceptable IUPAC name for each of the compounds in 1 and 2. Be sure to indicate the stereochemistry where appropriate. Following the required conventions, draw a proper Fischer projection for the compound in 3.



examples:

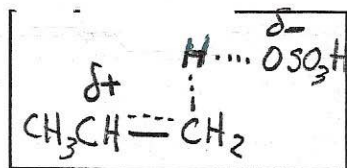
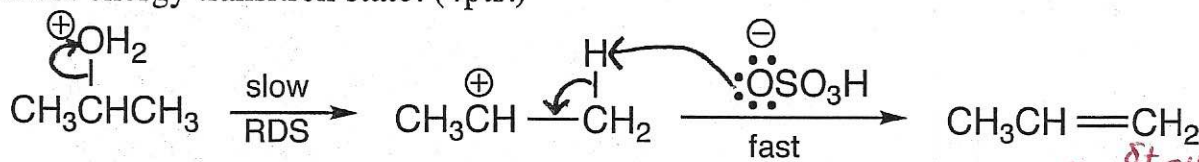


← everything correct but Fischer



Facts: Total points = 29

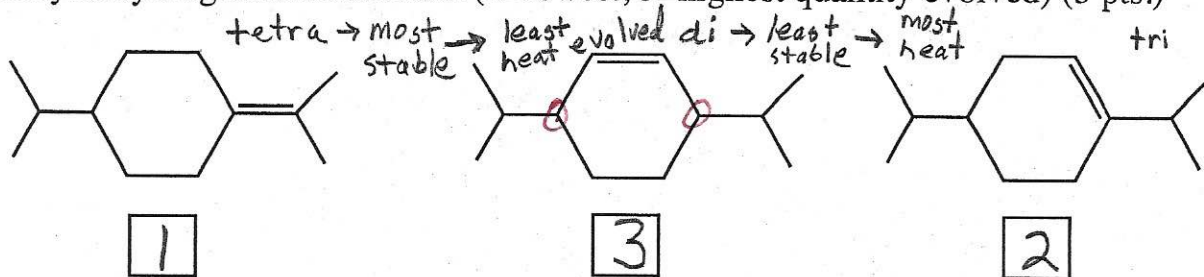
1. The last steps in the process of alcohol dehydration are shown below. Draw the structure of the lower energy transition state. (4pts.)



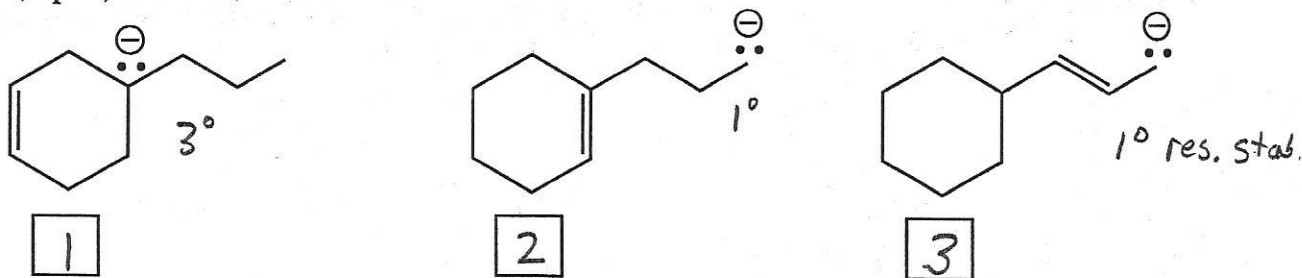
-1 if no partial charges

+2 only if TS of wrong step but must be perfect!

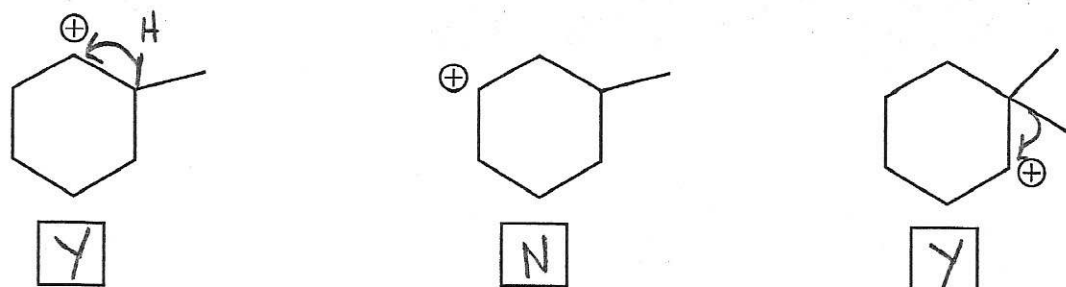
2. Place the following alkenes in order of increasing quantity of heat evolved per mole in a catalytic hydrogenation reaction. (1=lowest, 3=highest quantity evolved) (3 pts.)



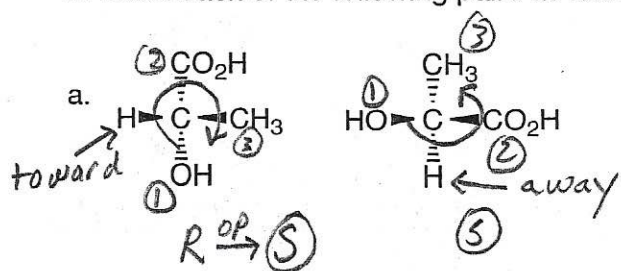
3. Place the following carbanions in order of increasing stability. (1=least stable, 3=most stable) (3 pts.)



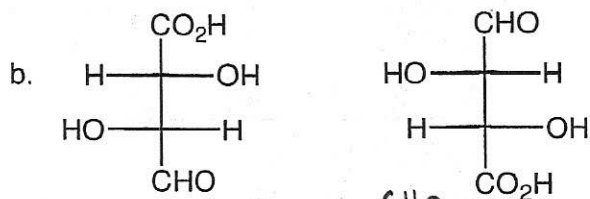
4. Consider the following carbocations. If the carbocation will rearrange, place a Y in the box. If the carbocation will not rearrange, place an N in the box. (3 pts.)



5. Label each of the following pairs as identical, structural isomers, enantiomers or diastereomers. (9 pts.)

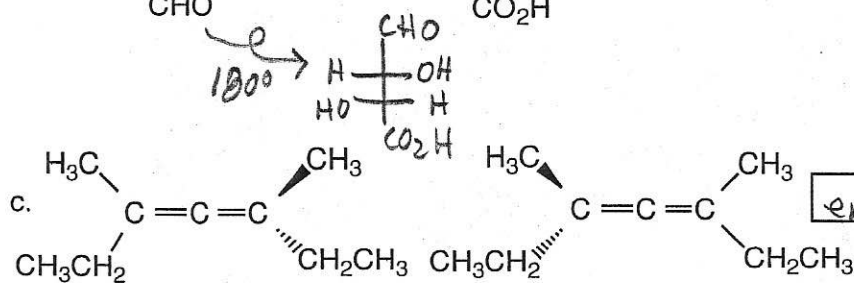


identical



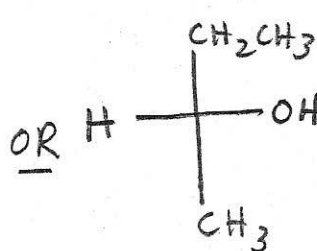
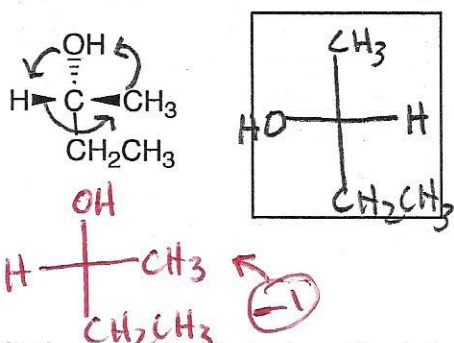
enantiomers

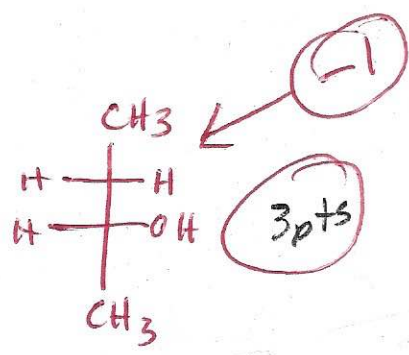
3pts each



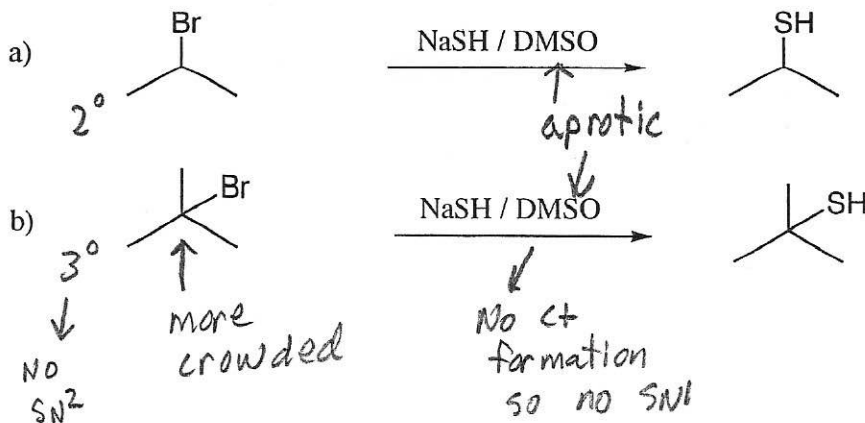
enantiomers

6. Convert the 3D structure to a proper Fischer projection. (3 points)



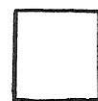


7. In the box provided, place the letter of the reaction with the faster rate. If the rate is the same, write "same" in the box. (4 pts.)



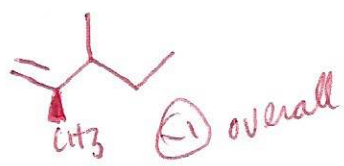
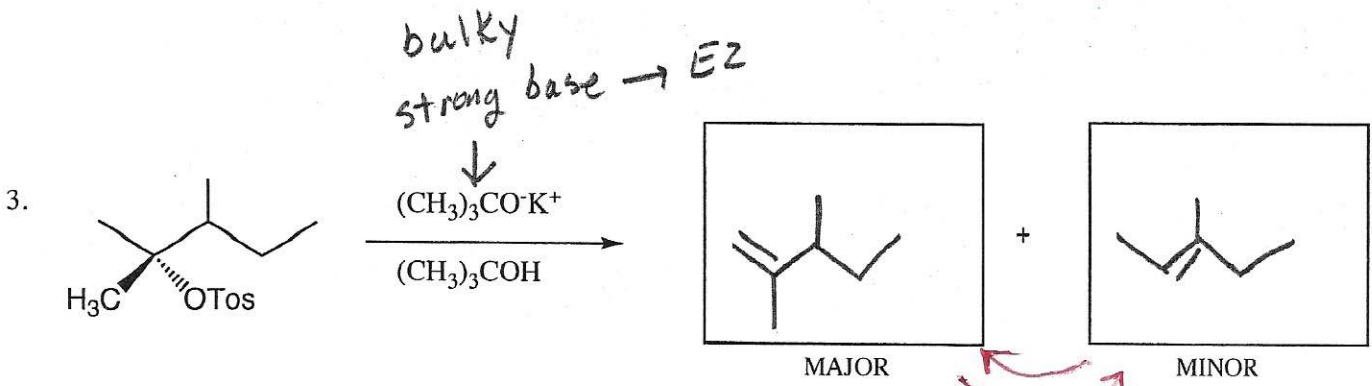
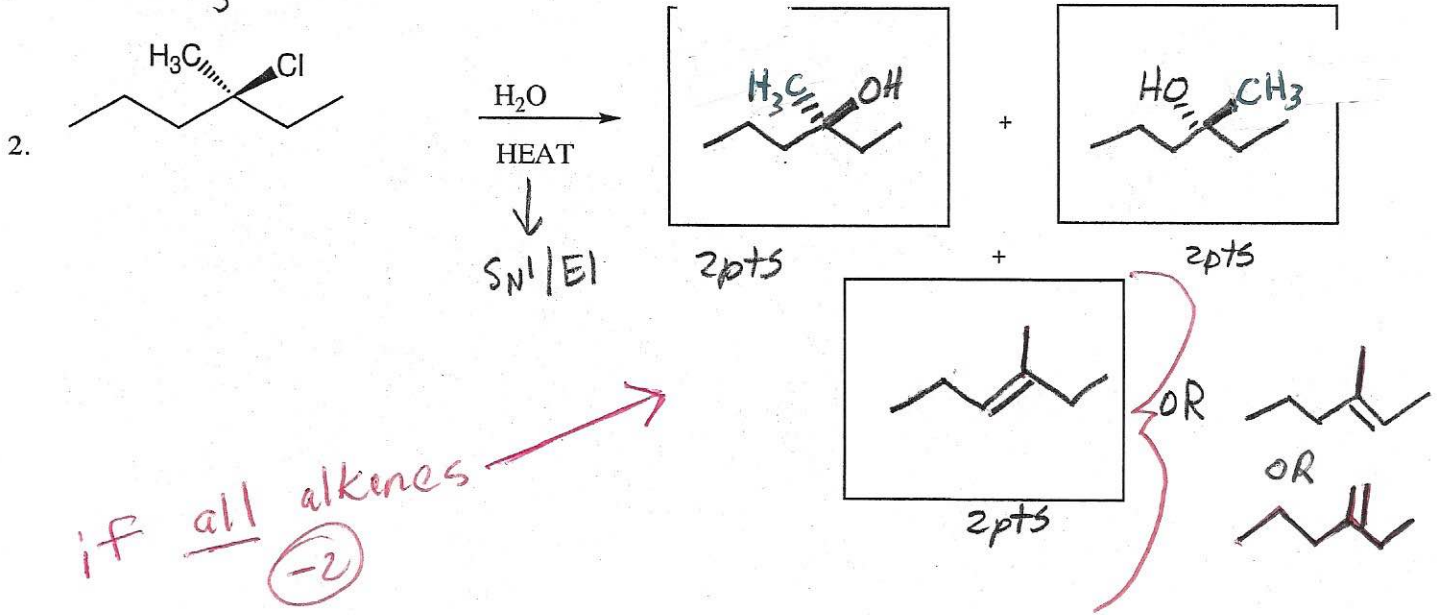
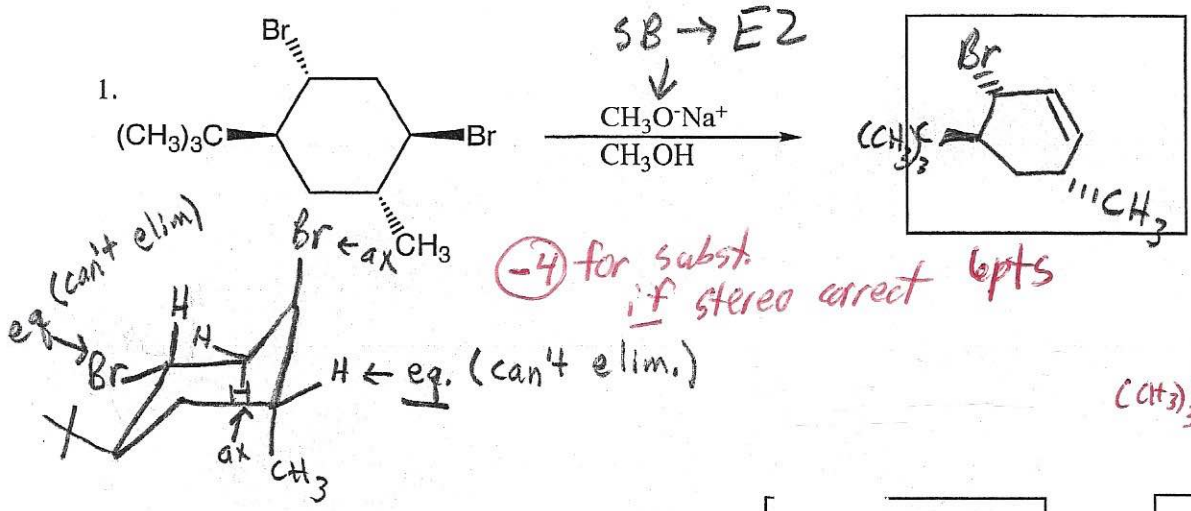
Answer: a

4pts

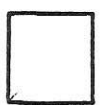


C. Reactions: Total = 36 points → 6pts each

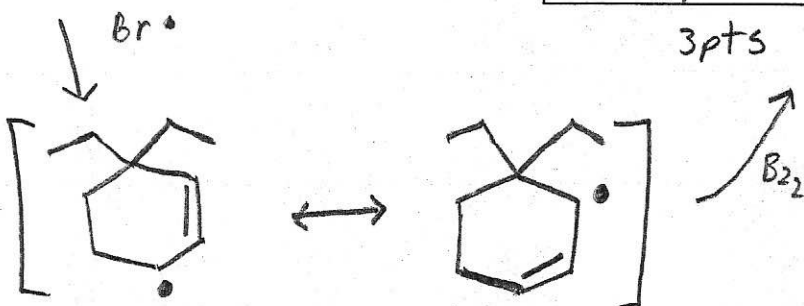
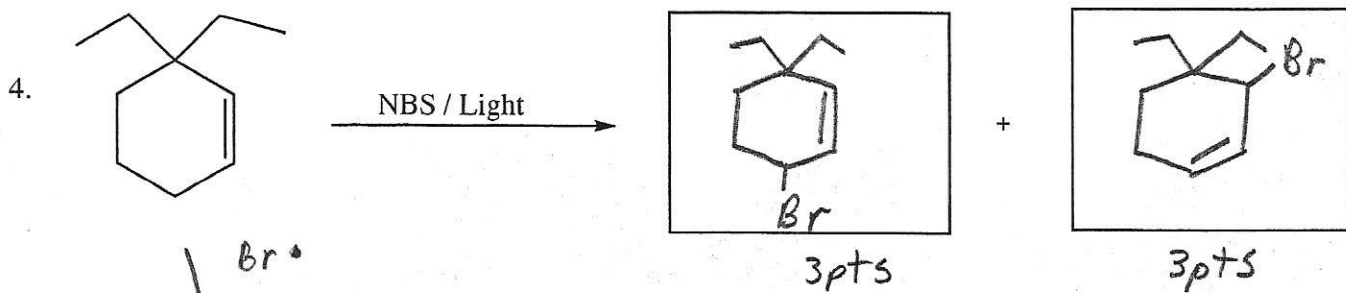
Please provide an organic product in each answer box. If only one box is provided, give the major product. Be sure your drawing indicates stereochemistry if applicable.



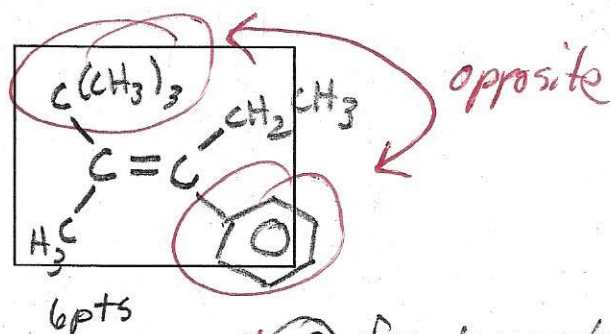
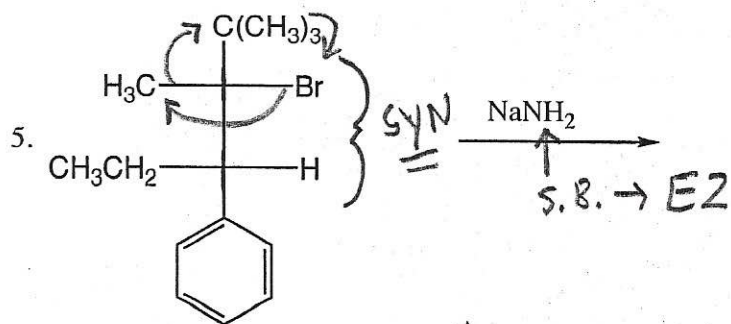
-2 if reversed  
 zero for substitution



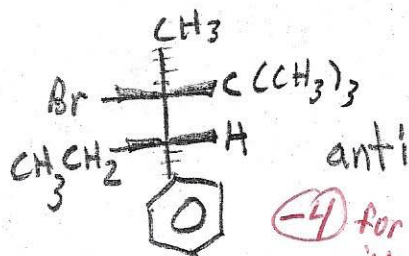
6 pts each



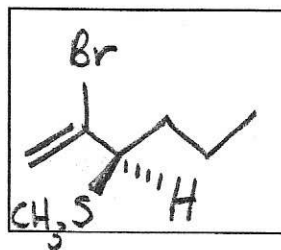
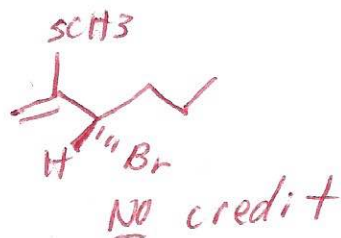
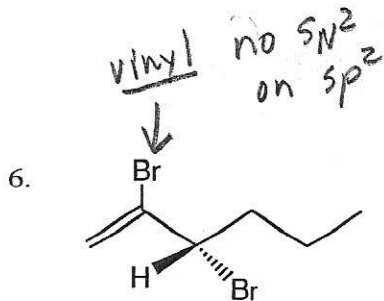
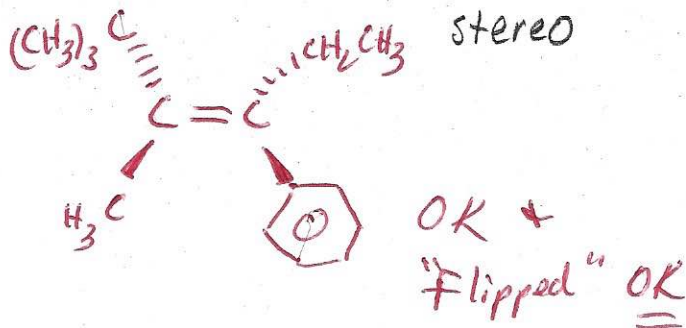
either product in either box is OK



\*(-2) for incorrect stereo



(-4) for subst. with inv.   
 (-5) for subst. with ret.



6pts (-2) if wrong stereo

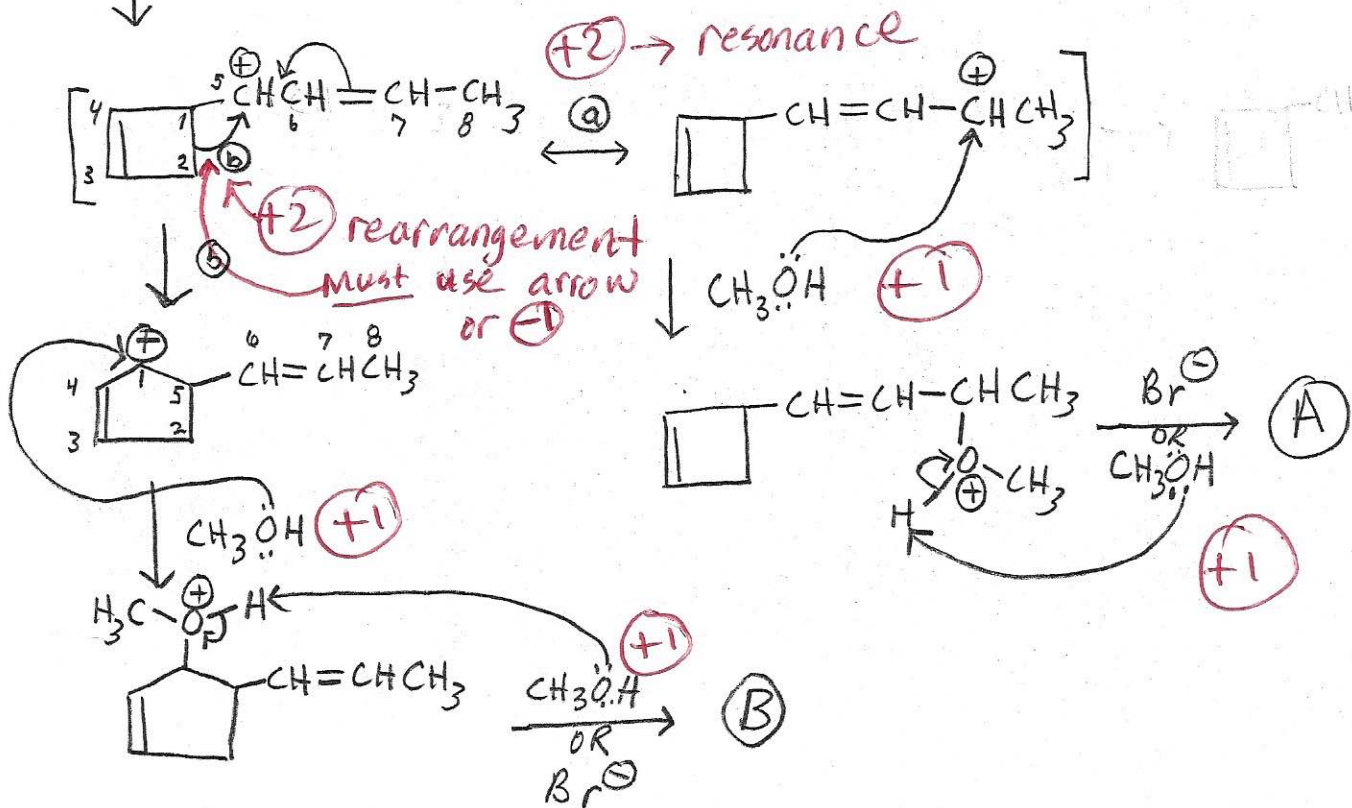
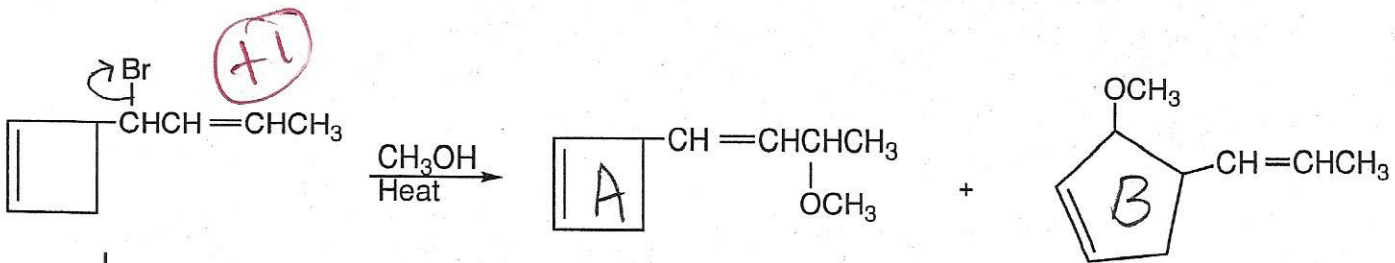
(-2) if vinyl Br is also substituted

(-4) if vinyl Br is only subst.

**D. Mechanism: (11 points)**

1. The reaction presented below produces several products. Provide clear mechanisms to explain the formation of the two products shown. Use curved arrows to indicate "electron flow". Remember to show only one step at a time. Show all intermediates and all formal charges. Please do not show transition states.

2. In the box, draw the structure of another possible product that is a result of rearrangement followed by substitution.



Answer for 2.:

