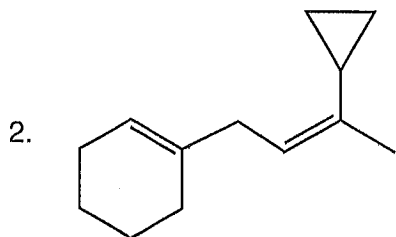
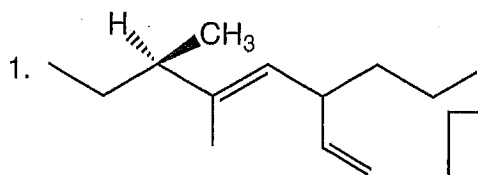


EXAM 2A, Fall

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.

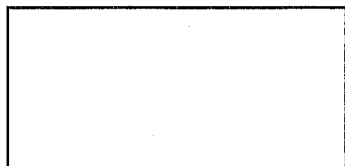
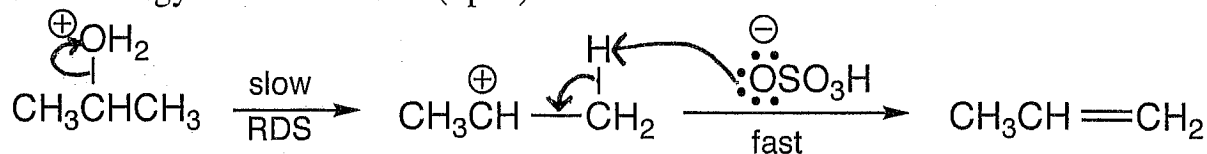


3. (3R,4R)-3-bromo-2,2,4,5,5-pentamethylhexane

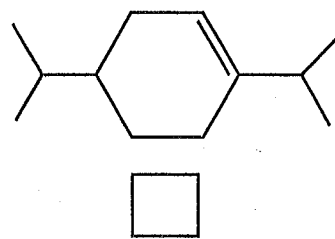
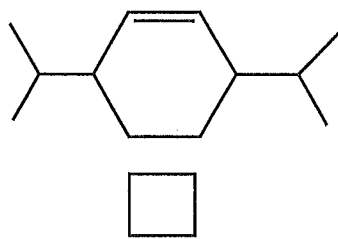
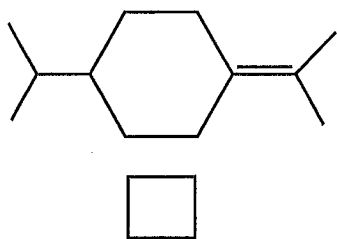


Facts: Total points = 29

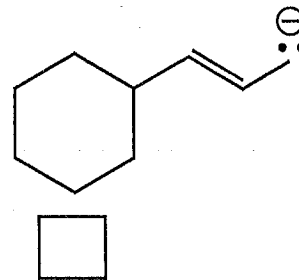
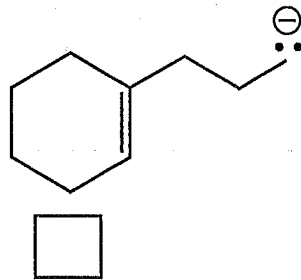
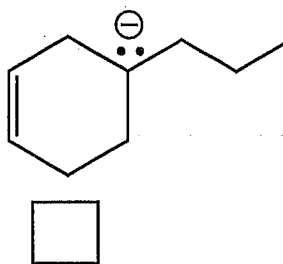
1. The last steps in the process of alcohol dehydration are shown below. Draw the structure of the lower energy transition state. (4pts.)



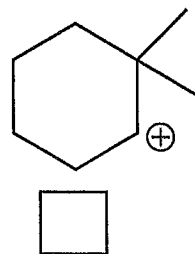
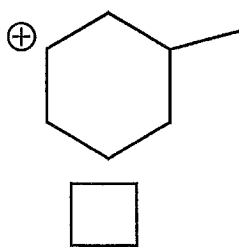
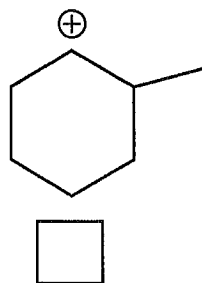
2. Place the following alkenes in order of increasing quantity of heat evolved per mole in a catalytic hydrogenation reaction. (1=lowest, 3=highest quantity evolved) (3 pts.)



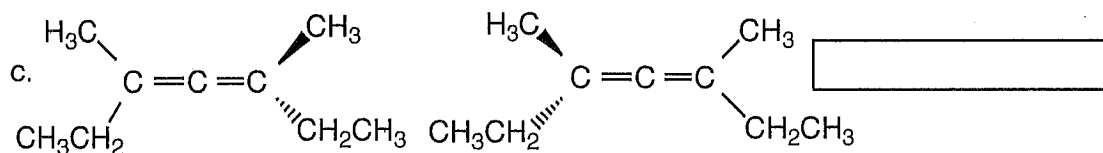
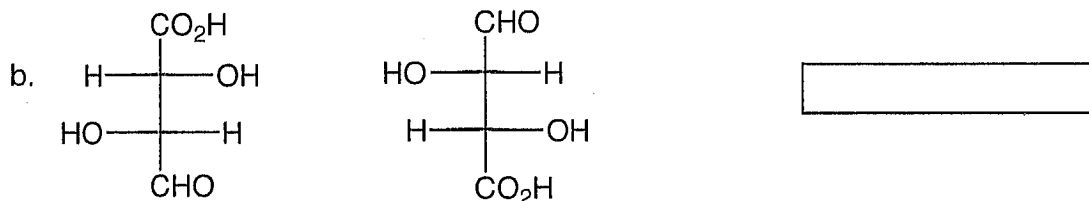
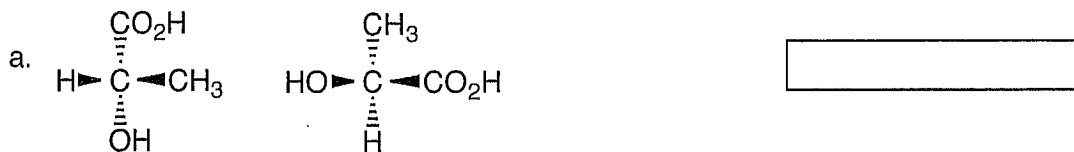
3. Place the following carbanions in order of increasing stability. (1=least stable, 3=most stable) (3 pts.)



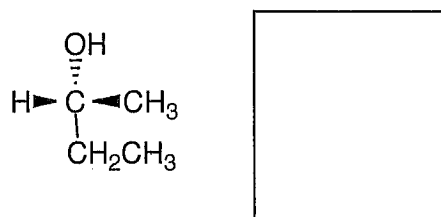
4. Consider the following carbocations. If the carbocation will rearrange, place a Y in the box. If the carbocation will not rearrange, place an N in the box. (3 pts.)



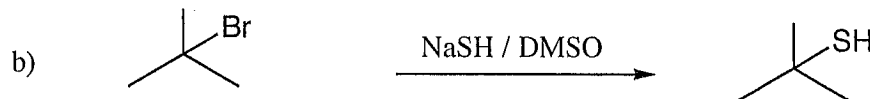
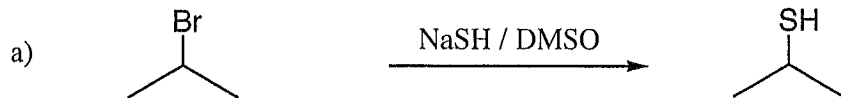
5. Label each of the following pairs as identical, structural isomers, enantiomers or diastereomers. (9 pts.)



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

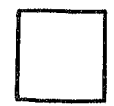
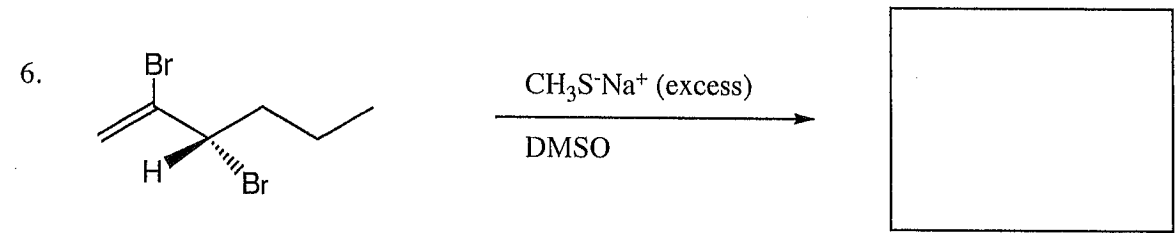
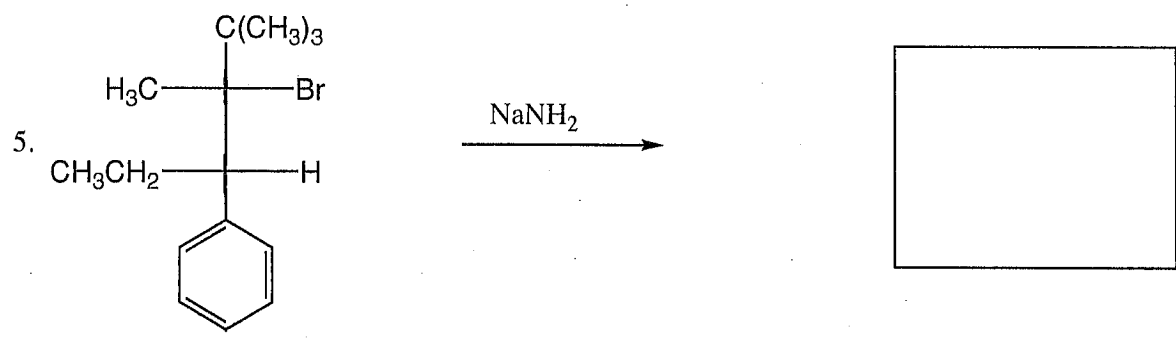
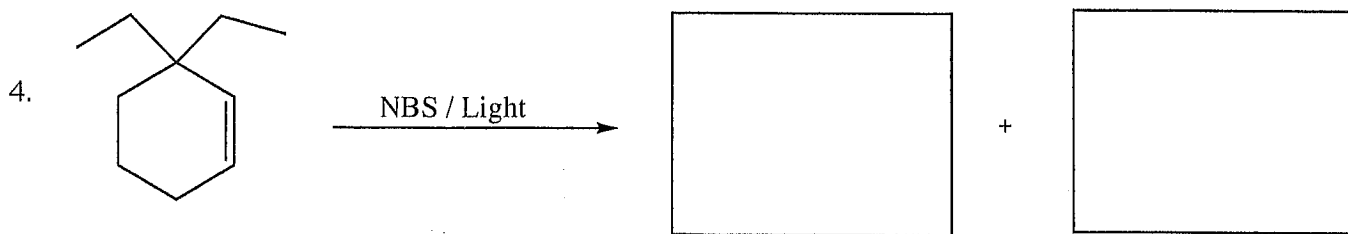


7. In the box provided, place the letter of the reaction with the faster rate. If the rate is the same, write "same" in the box. (4 pts.)



Answer:

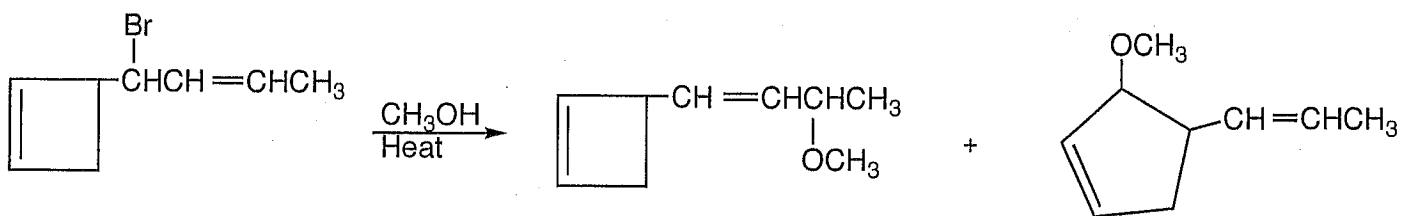




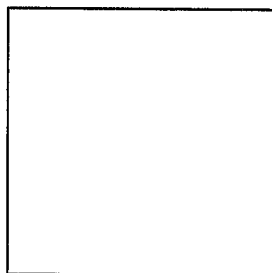
D. Mechanism: (11 points)

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.:



E. Synthesis: (9 points)

Synthesize the molecule below from alkanes of **four carbons or less** and any inorganic reagents. (Please do not include mechanisms!)

