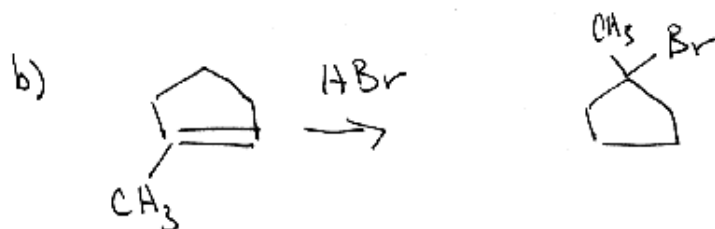
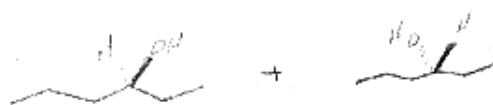
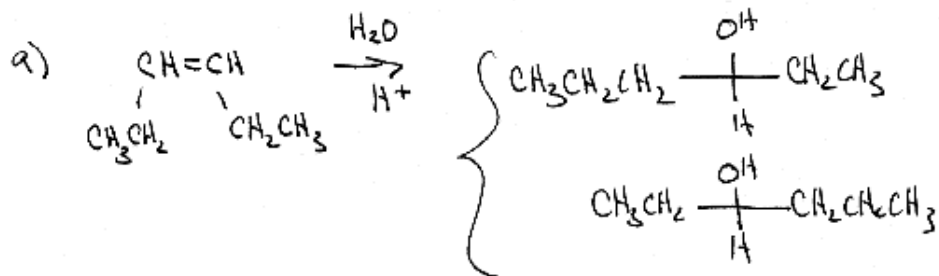
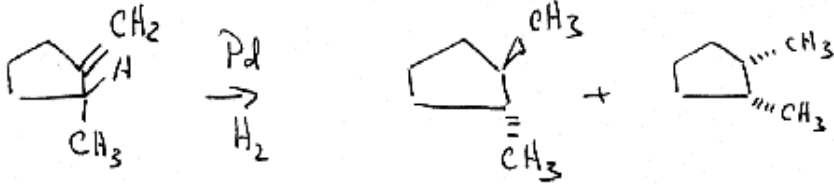


Name: Key (please print)

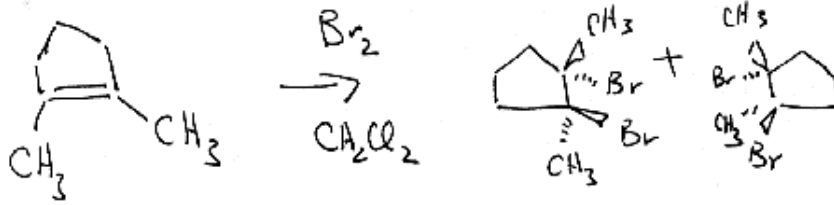
1. (15 pts) What stereoisomers are formed in the following reactions?



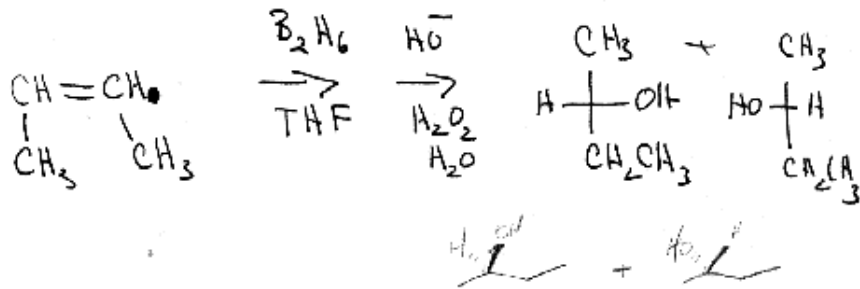
c)



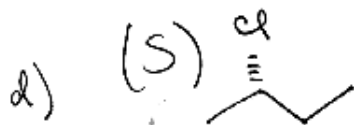
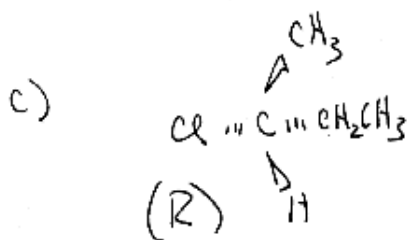
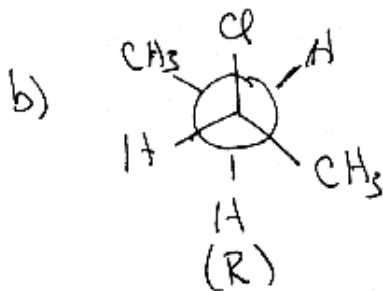
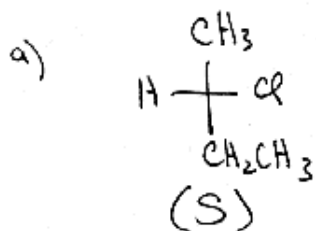
d)



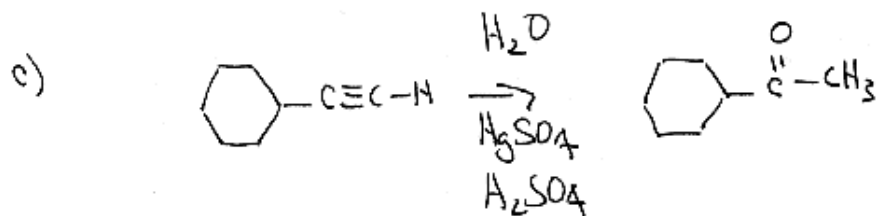
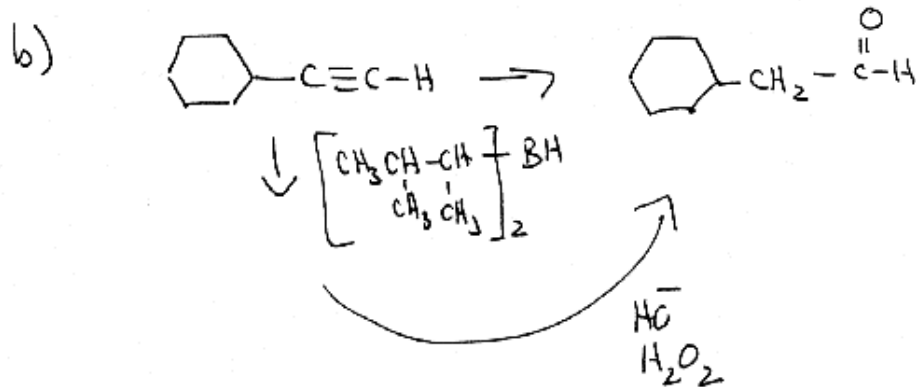
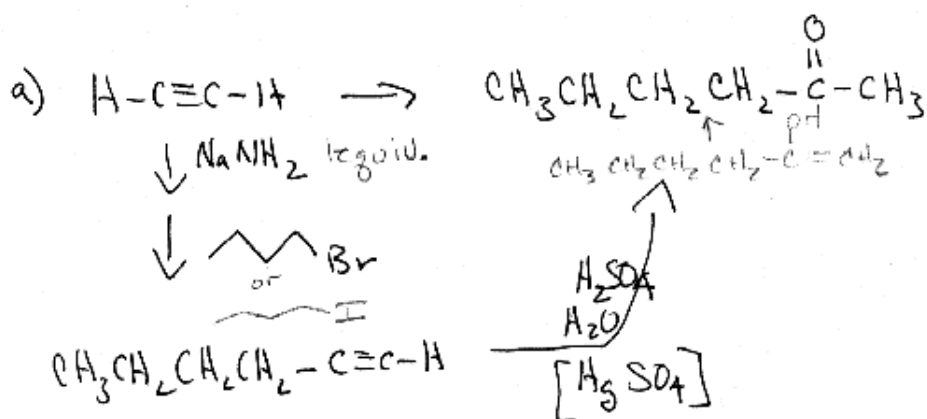
e)



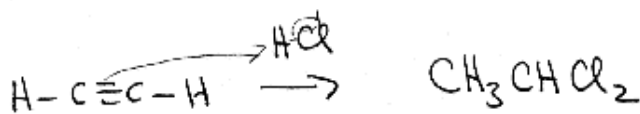
2. (10 pts) Assign the following structures as (R)-2-chlorobutane or (S)-2-chlorobutane.



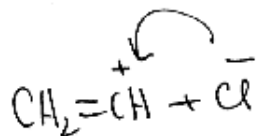
3. (15 pts) Show how the following compounds could be synthesized using the given starting material and any necessary inorganic or organic reagents (4 carbons or less).



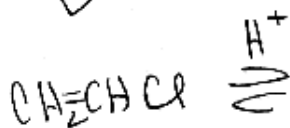
4. (10 pts) Why is 1,1-dichloroethane formed in this reaction? What is the mechanism of this transformation?



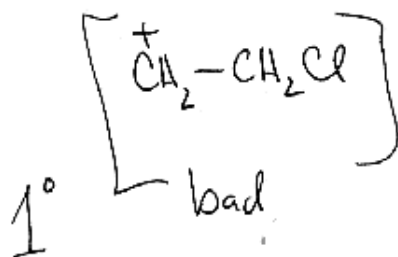
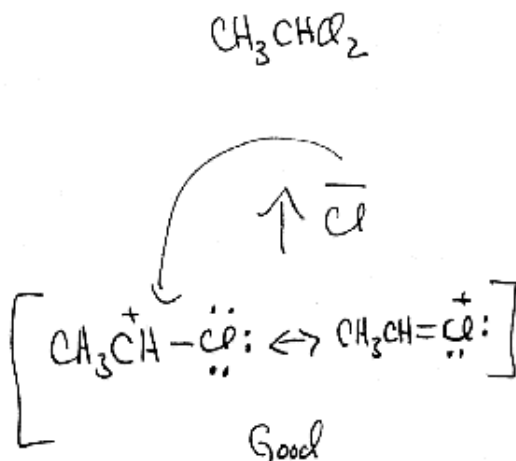
✓✓

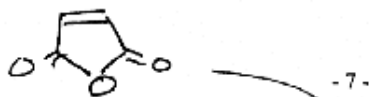


↓



A<sup>+</sup> ✓✓



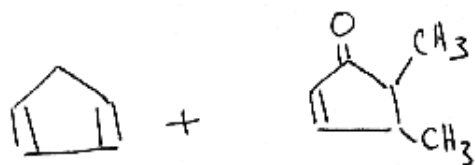


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5. (10 pts) The following equilibrium is driven to the right if the reaction is carried out in the presence of maleic anhydride. What is the function of maleic anhydride?



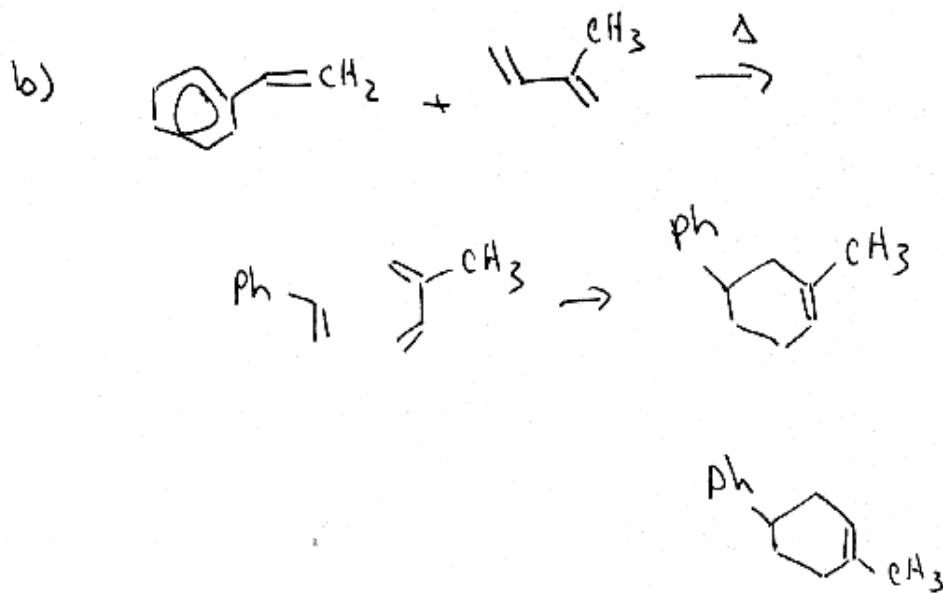
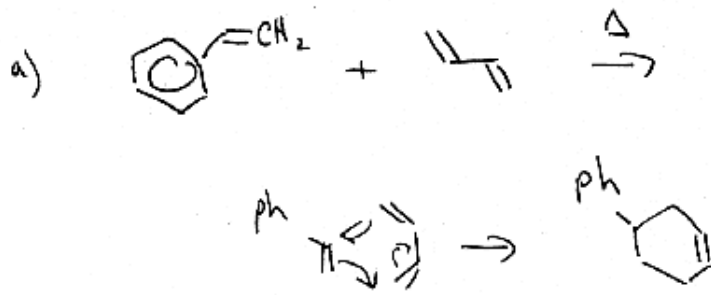
✓ retro Diels Alder

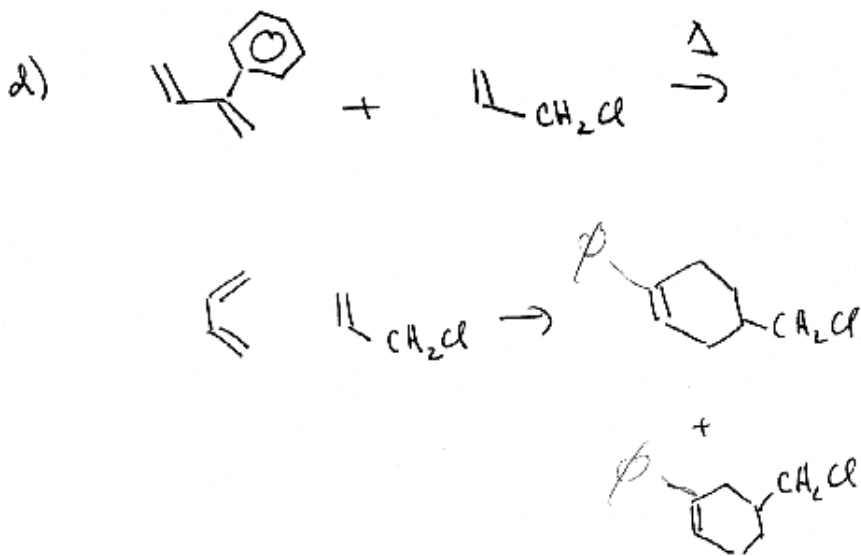
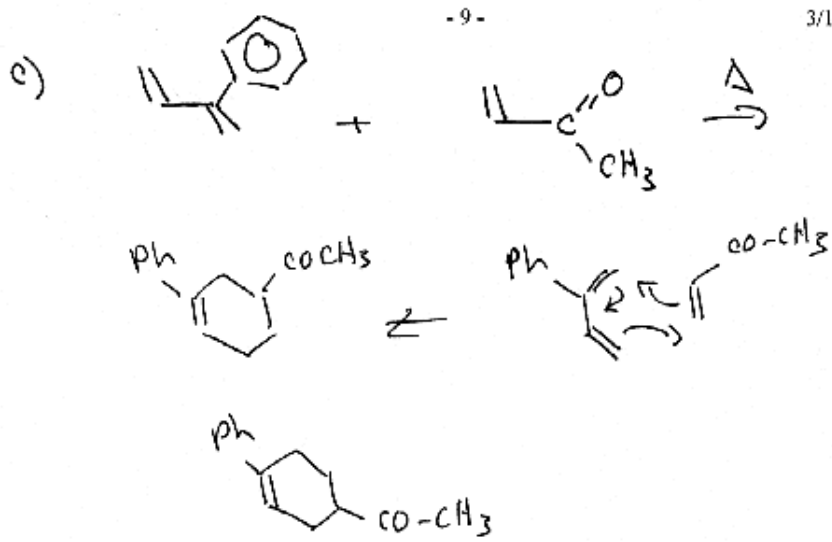


↓ Trap with maleic anhydride



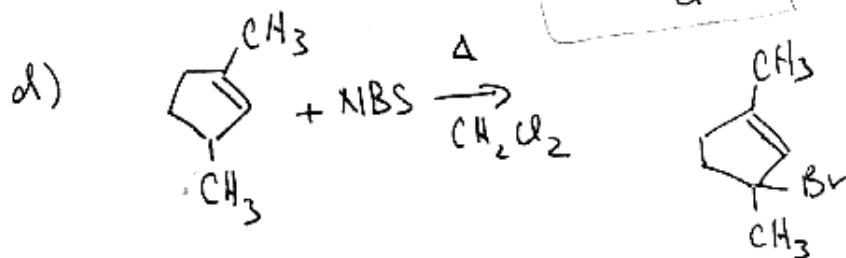
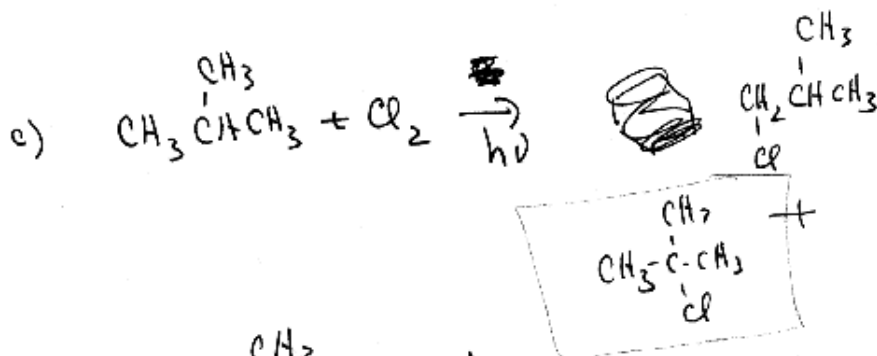
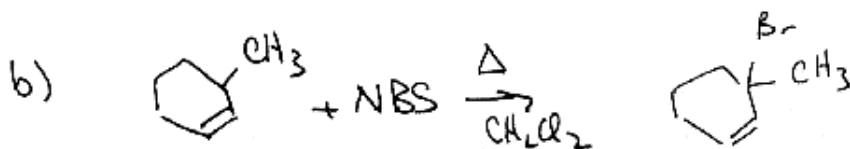
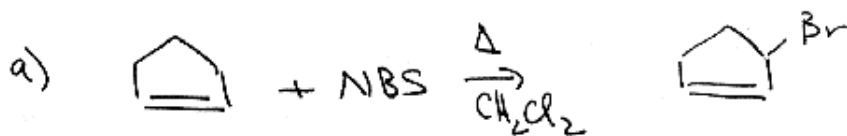
6. (20 pts) Give the products that would be obtained from each of the following reactions.







7. (10 pts) Give the major product of the following reactions.



8. (10 pts) Propose a mechanism for the following reaction.

