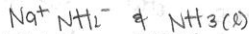


Alkynes

1. What reagents should be used to make an acetylide ion?



2. Why are acetylide ions useful? What are the reagents used for this reaction?

↳ elongate the carbon chain ↳ alkyl halide 1° or 2° can't do 3°

3. Draw keto-enol tautomerization.

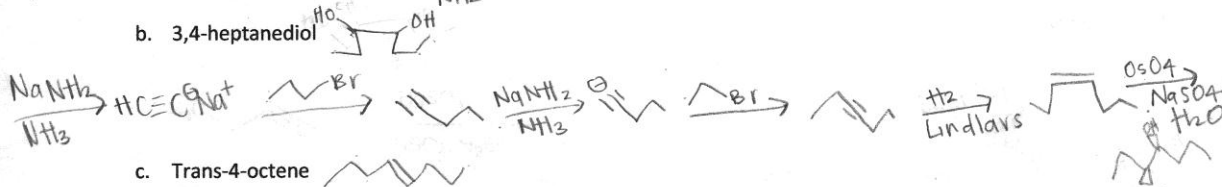


4. Synthesize the following molecules starting with acetylene.

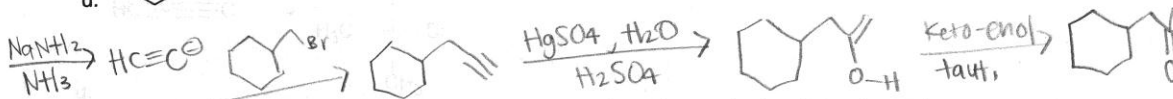
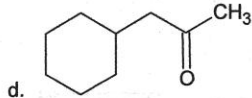
a. 2,3-dibromohexane



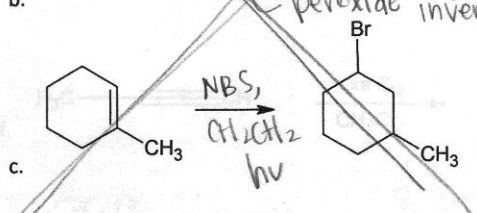
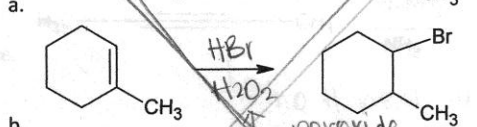
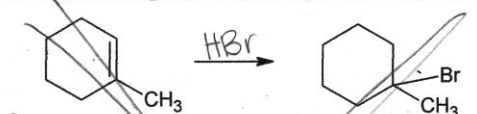
b. 3,4-heptanediol



c. Trans-4-octene

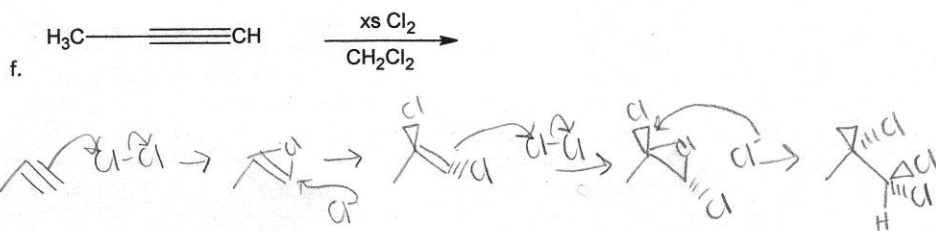
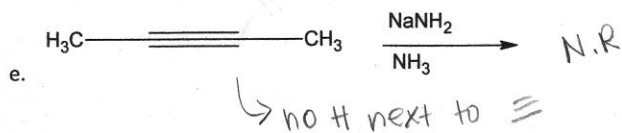
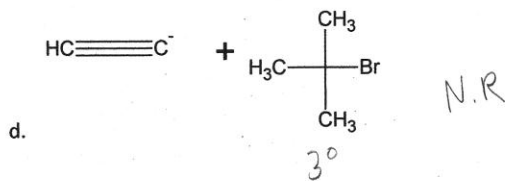
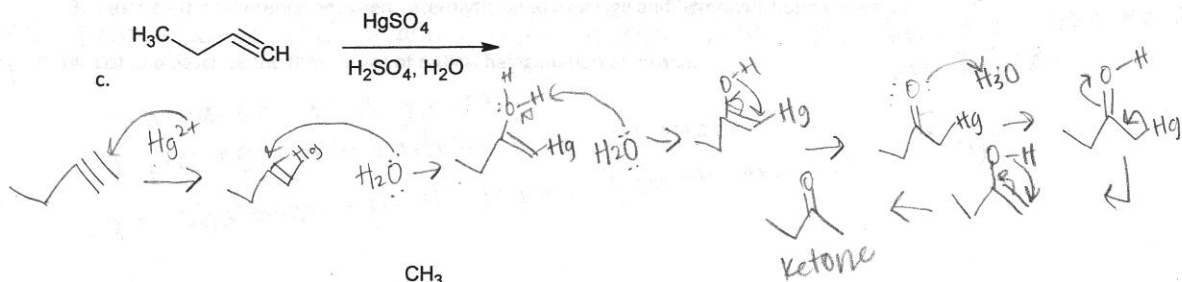
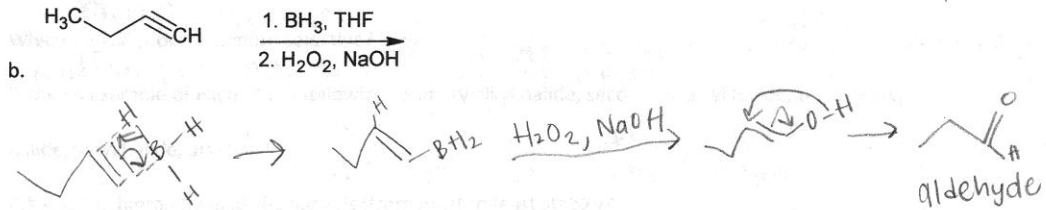
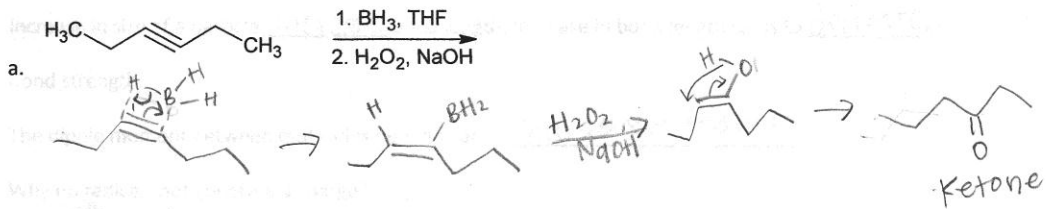


5. Provide the reagents for each of the following reactions. Show the mechanism for each reaction.



peroxide inverses & puts on less substituted C

6. Complete the following reactions of alkynes.



**Alkyl Halides**

7. Increase in size of a particle increase bond length. Increase in bond length leads to decrease in bond strength.

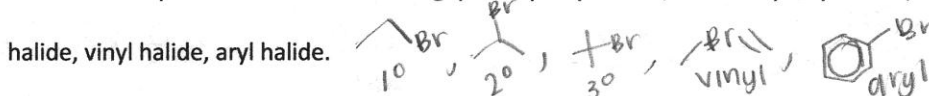
8. The dipole moment between molecules depends on charge & distance.

9. Why do radicals not generate a charge?

homolytic cleavage  
10. Which radical process is more selective? Why?

Radical Bromination → Hammond's Postulate - late intermediate state  
end: product depend on.

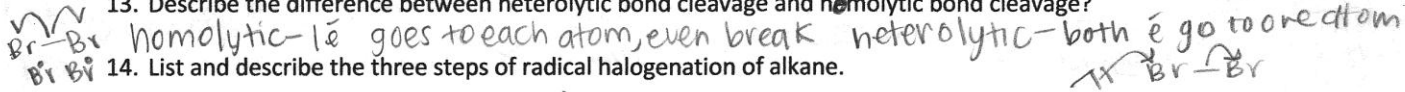
11. Draw an example of each of the following: primary alkyl halide, secondary alkyl halide, tertiary alkyl



12. What is the hierarchy of allylic radicals (from most to least stable)?



13. Describe the difference between heterolytic bond cleavage and homolytic bond cleavage?



14. List and describe the three steps of radical halogenation of alkane.

1. initiation - create radical
2. propagation - radical forming more
3. termination - radical depleted, bonds formed