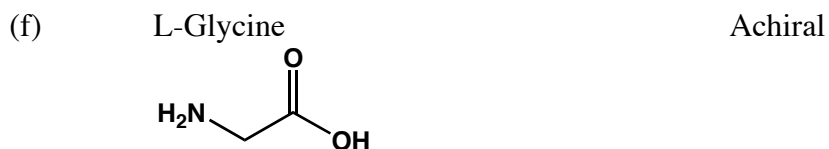
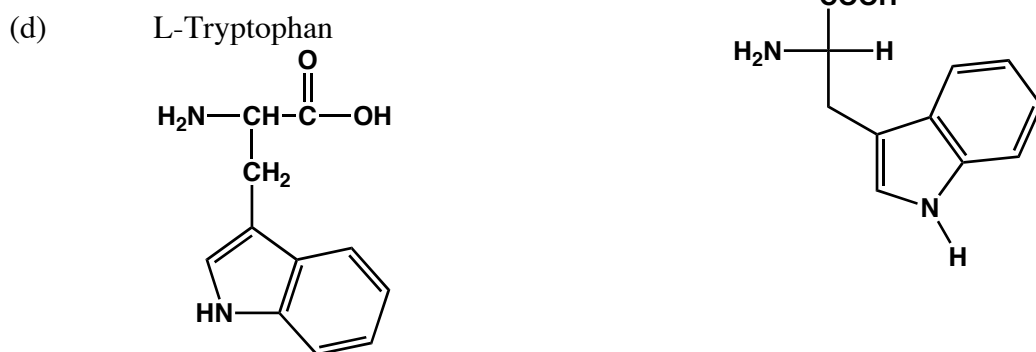
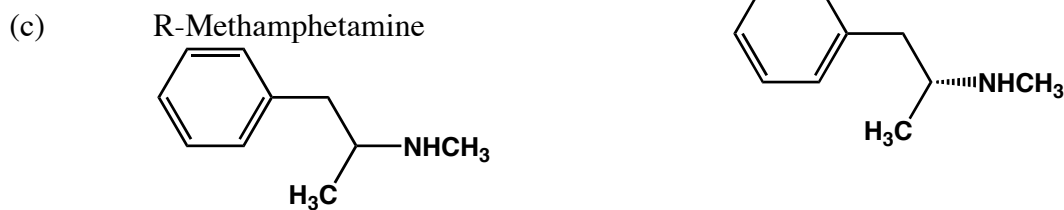
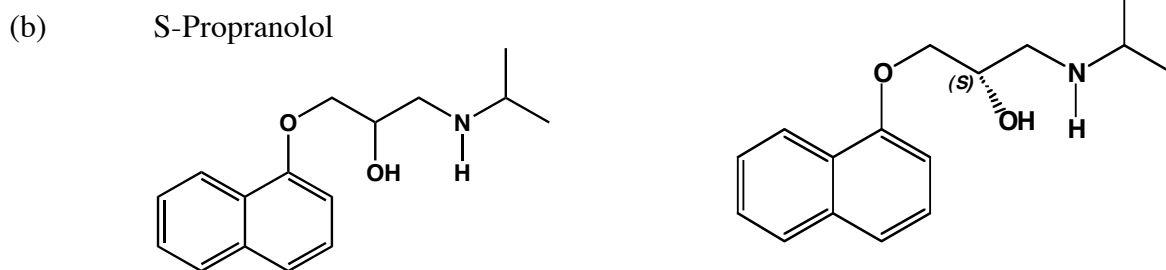
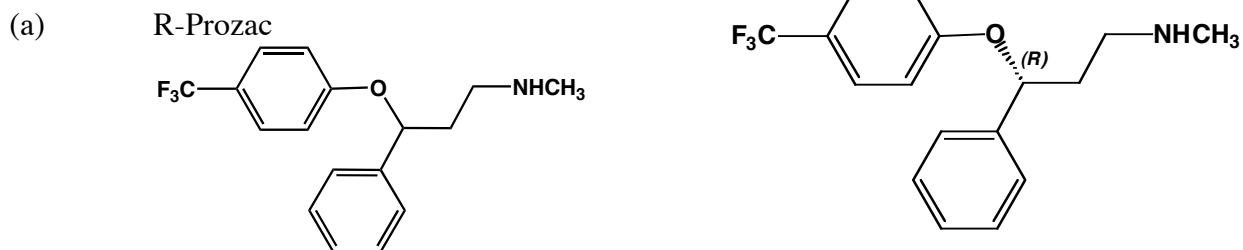
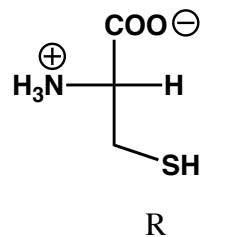
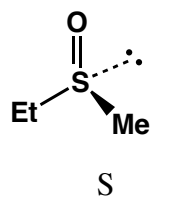
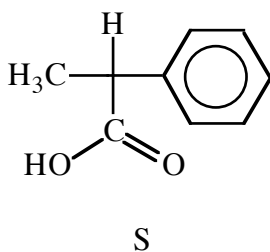
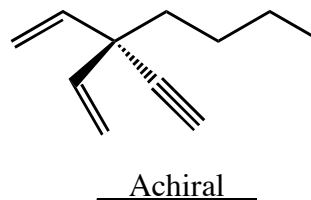
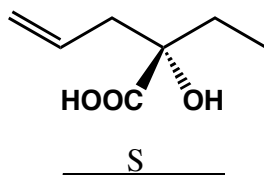
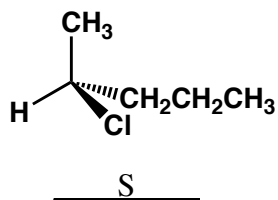


Key to Problem Set #2
CHM 333
October 13, 2006

1. Draw a *3-dimensional* representation of the chiral center of each of the following compounds. If the compound happens to be achiral, write "achiral" as your answer.



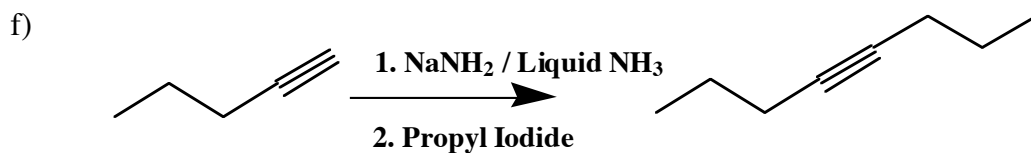
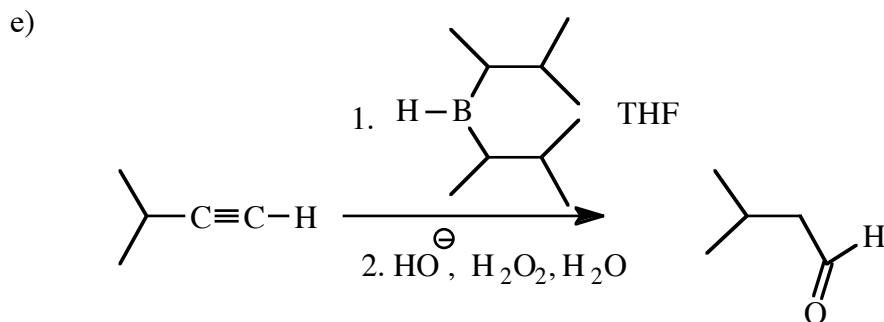
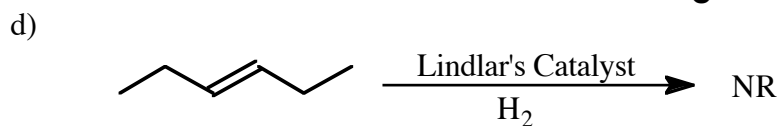
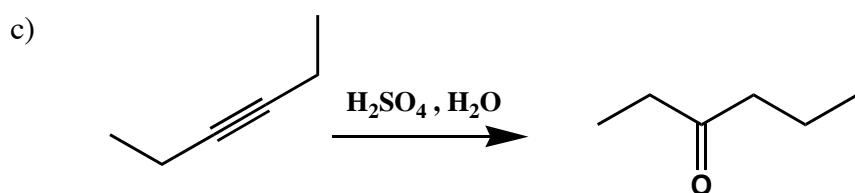
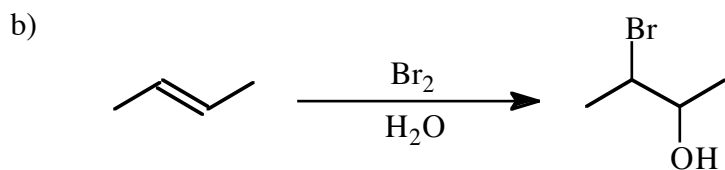
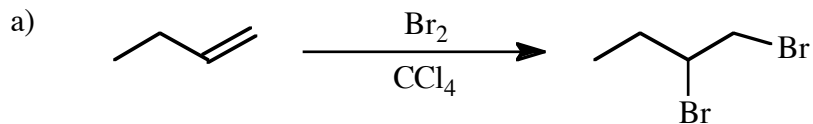
2. Classify each of the following carbon centers as either R, S, or achiral.



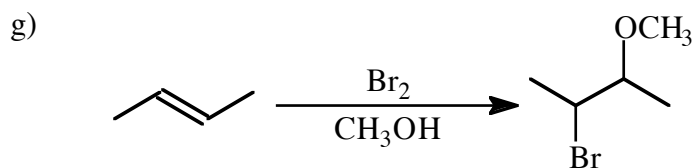
3. Indicate whether each of the following compounds are achiral (not meso), meso, or chiral.

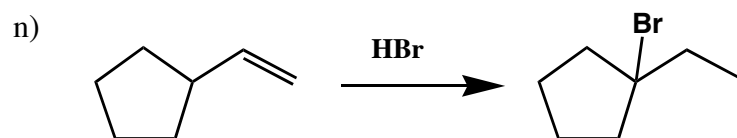
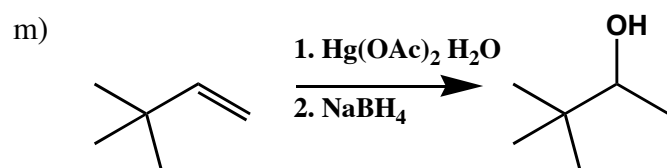
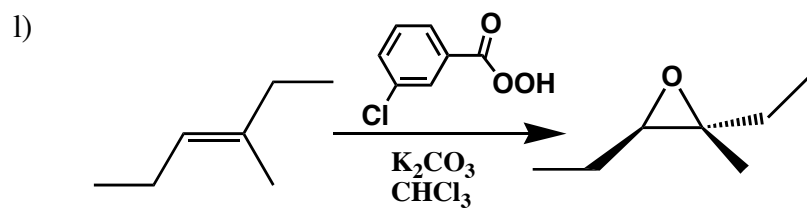
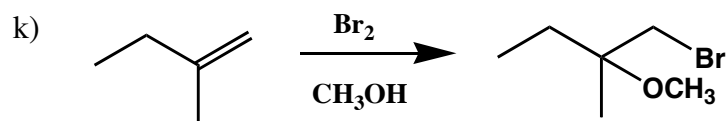
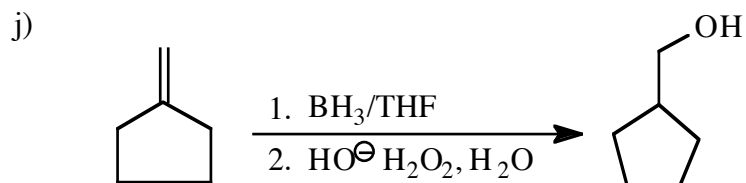
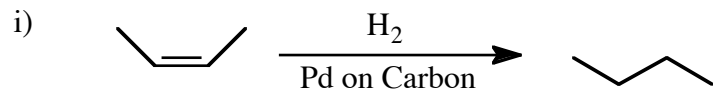
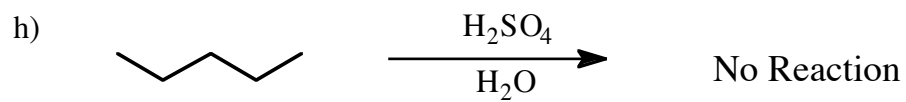
a. <u>Chiral</u>	b. <u>Chiral</u>	c. <u>Achiral</u>	d. <u>Meso</u>

4. Predict the major product of the following reactions. Do not address the stereochemical consequences of these reactions. If there is no reaction, write NR.



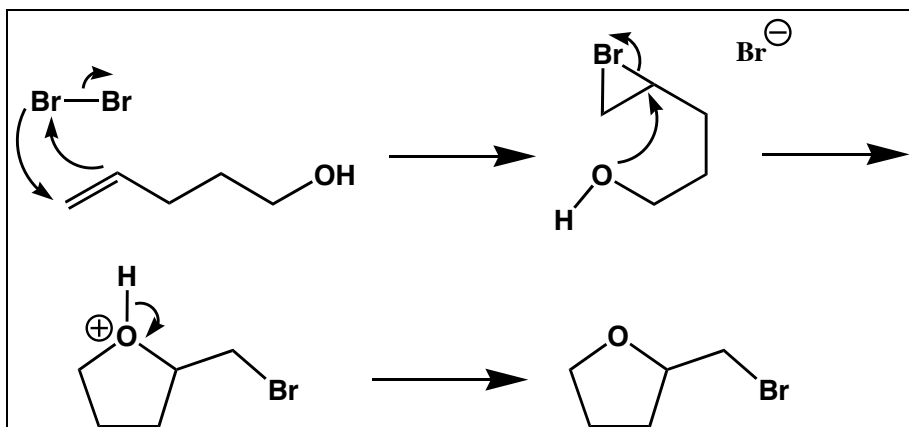
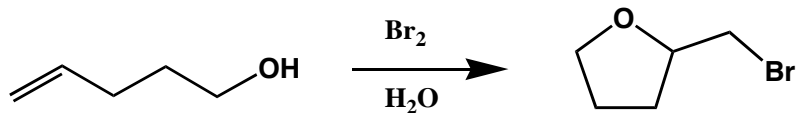
Liquid NH₃ is the solvent.



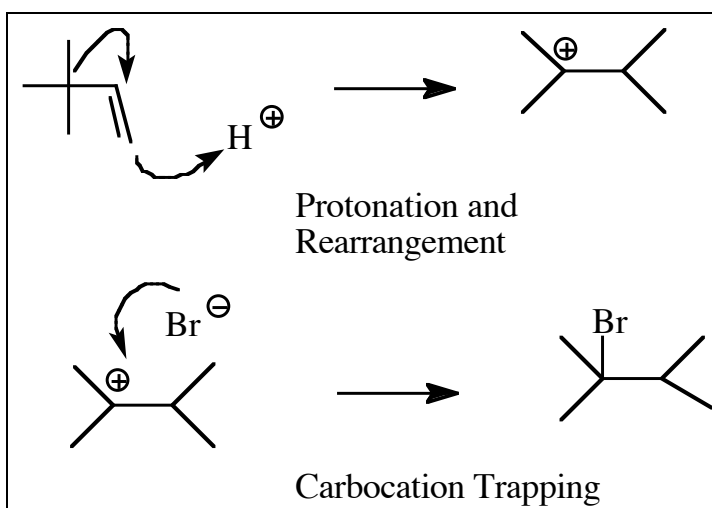
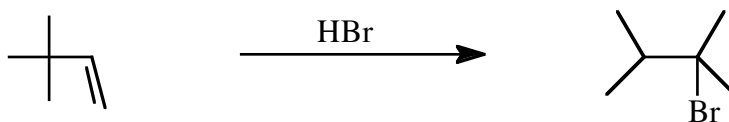


5. Provide a mechanism for each of the following reactions. Be sure to use curved arrows.

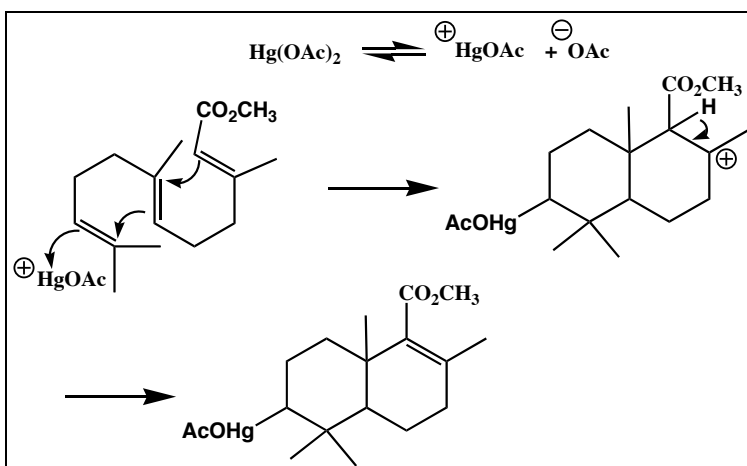
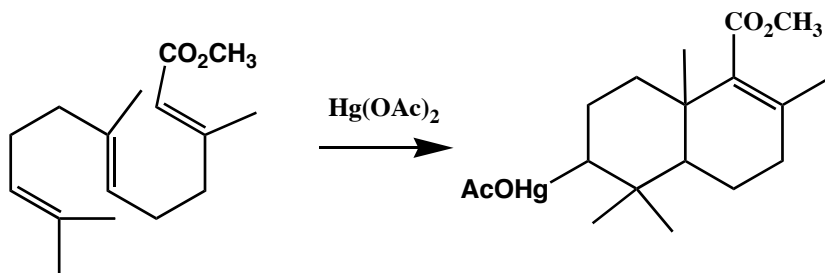
a)



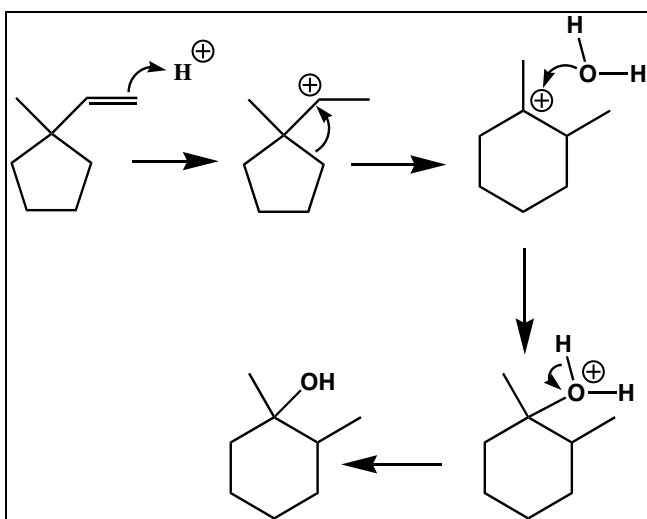
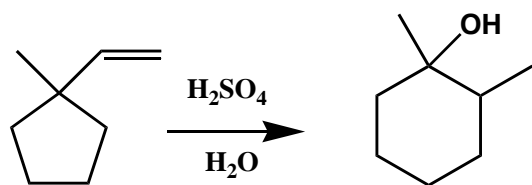
b)



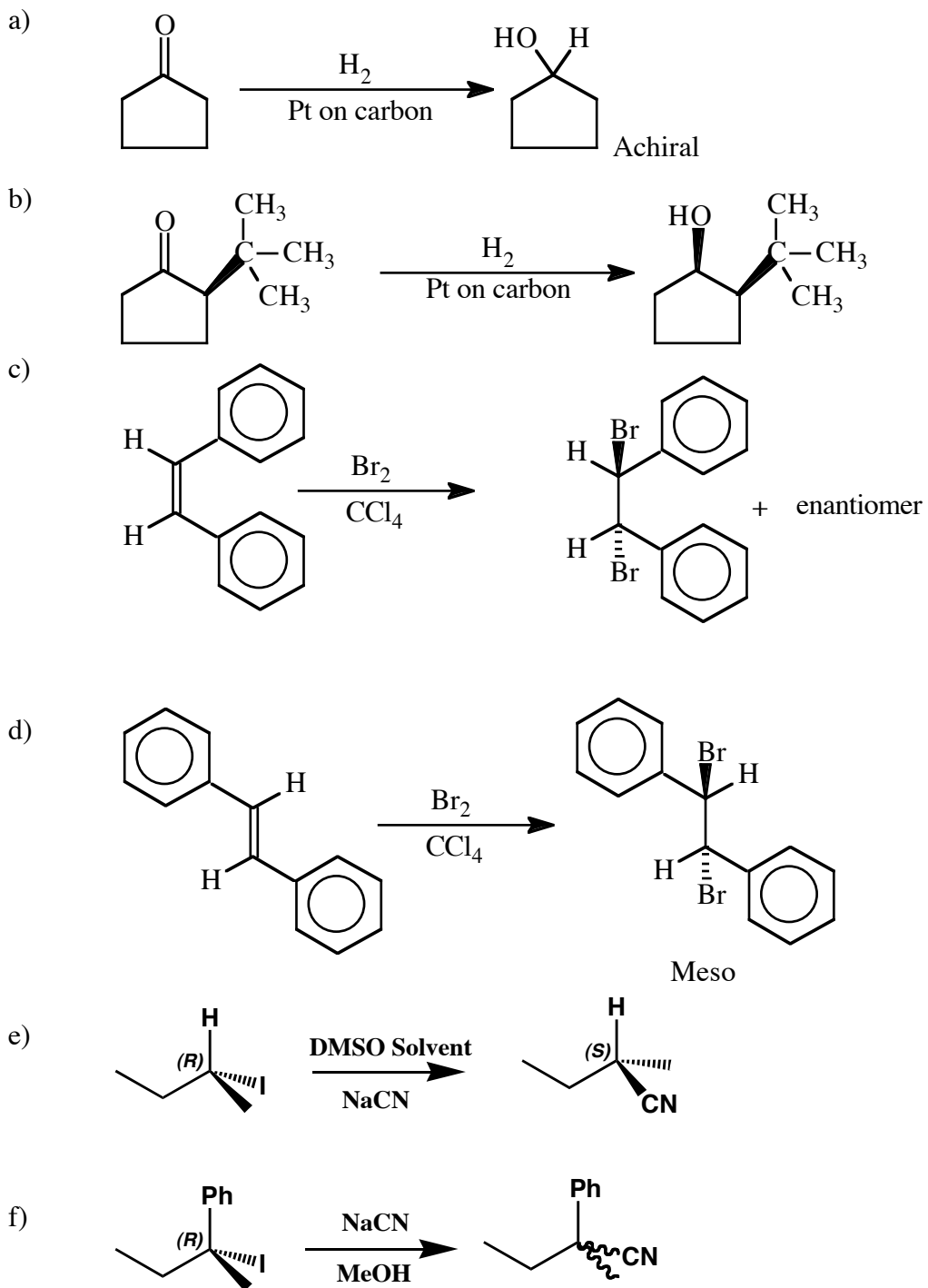
c)

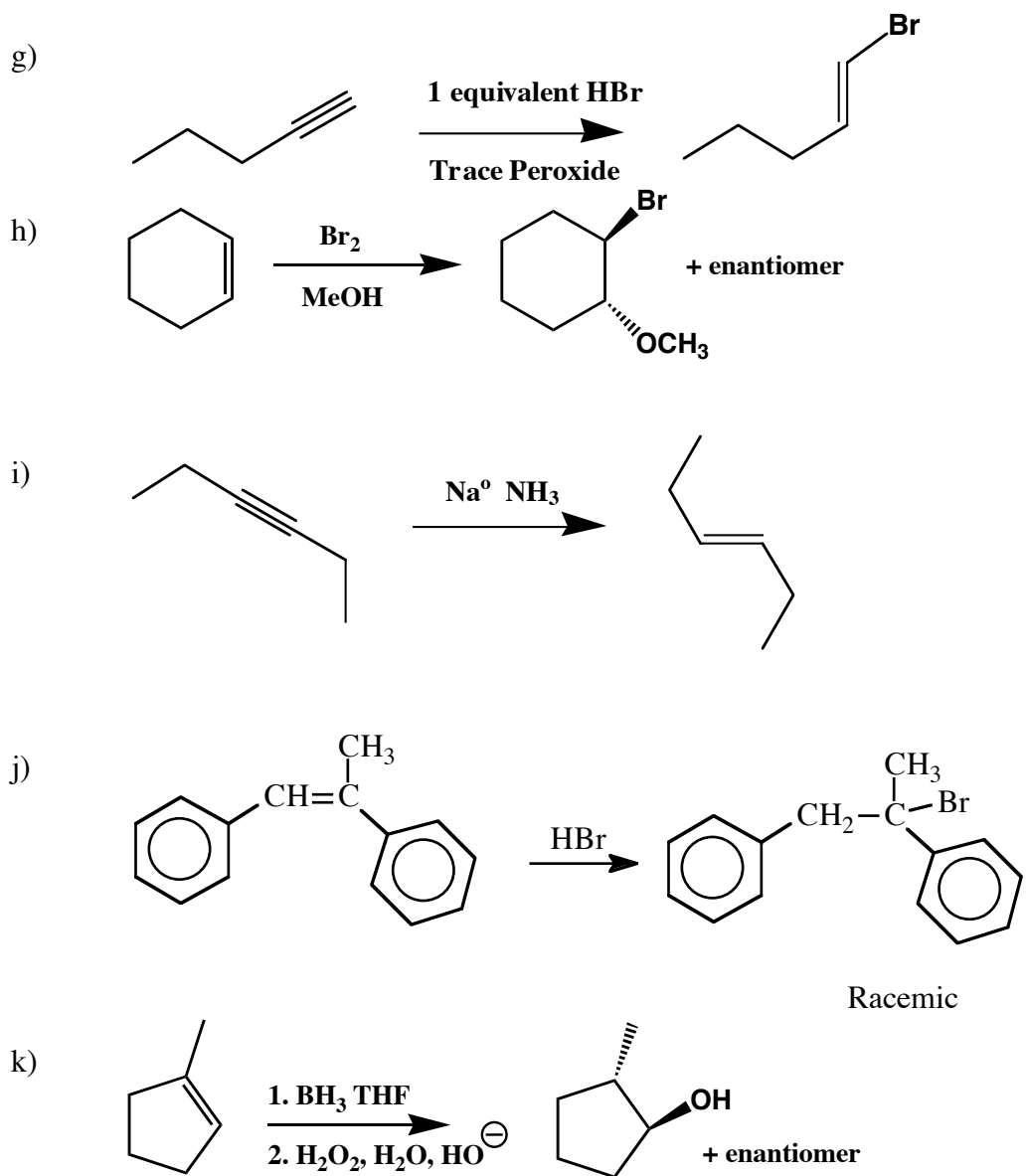


d)

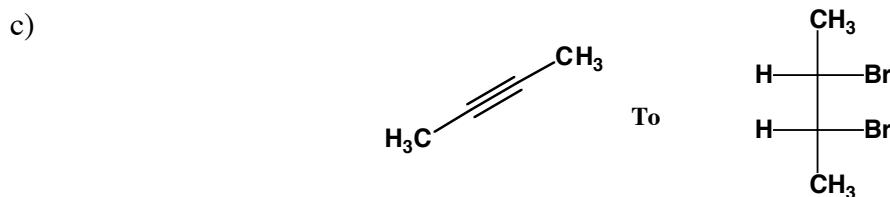
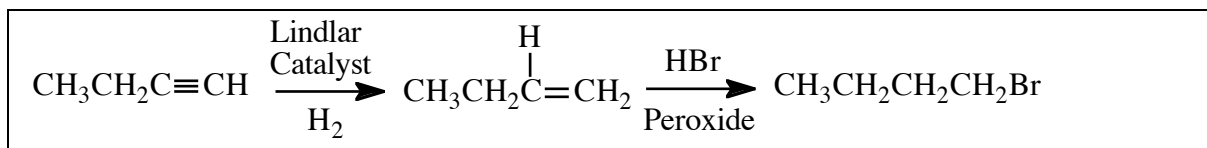
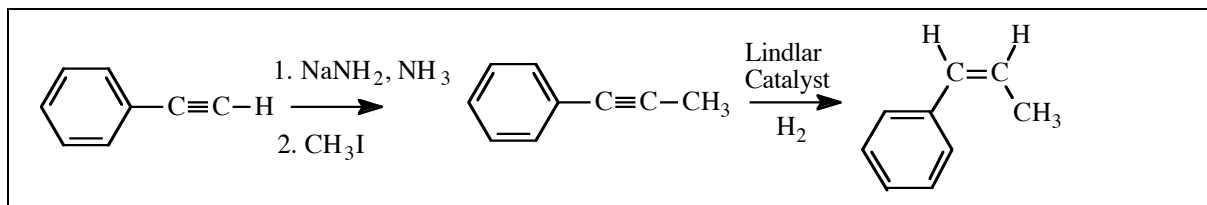
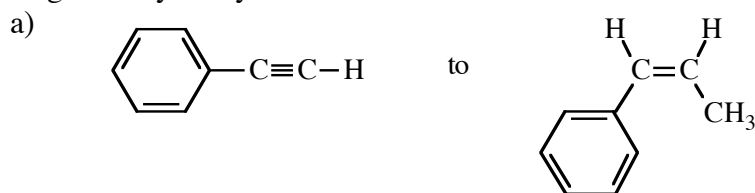


6. Predict the product of the following reactions along with the stereochemical result. Write racemic or show the structure of the enantiomer that results.



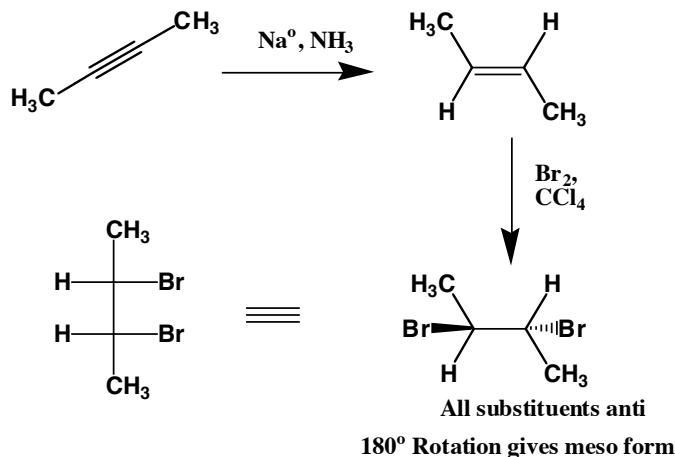


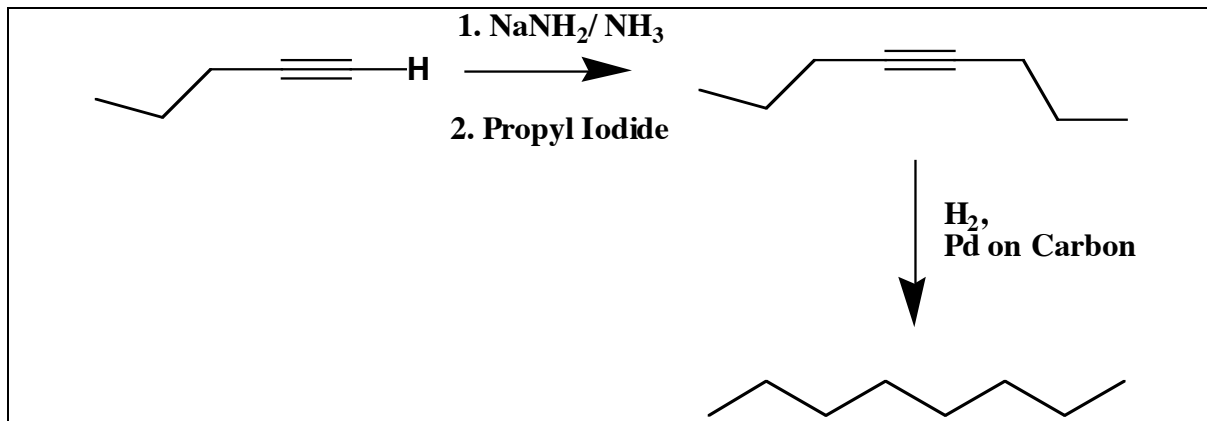
7. Multistep Synthesis. Starting with the starting material shown below show how the synthesis of the product can be carried out. Use any necessary carbon sources and reagents in your synthesis.



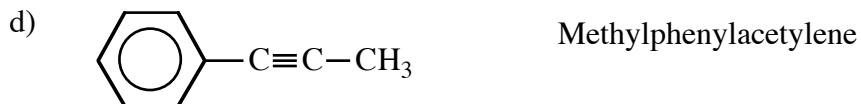
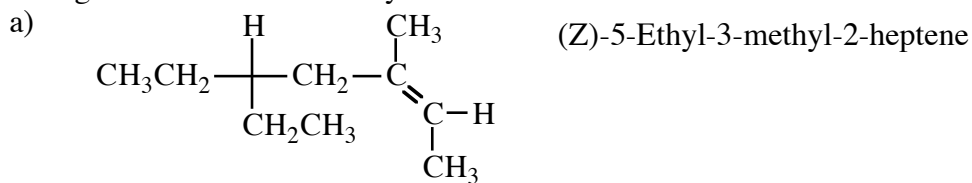
MESO ONLY

Either add H_2 and Br_2 in a syn or in an anti fashion. Since syn addition of Br_2 is not known, anti addition will be used.

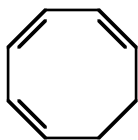




8. Provide the IUPAC name corresponding to the structures provided below using R and S and E and Z designations where necessary.

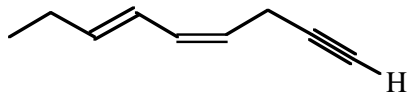


f)



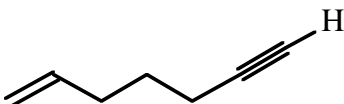
1, 3, 5-Cyclooctatriene

g)



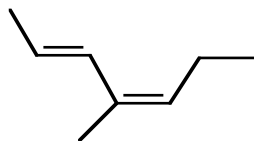
(4Z,6E)-4,6-Nonadiene-1-yne

h)



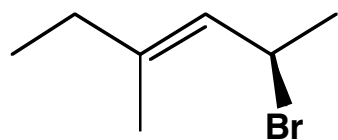
1-Heptene-6-yne

i)



(2E,4Z)-4-Methyl-2,4-heptadiene

j)



(2R, 3E)-2-Bromo-4-methylhex-3-ene

b) The biosynthesis of limonene a fragrant hydrocarbon found in citrus.

