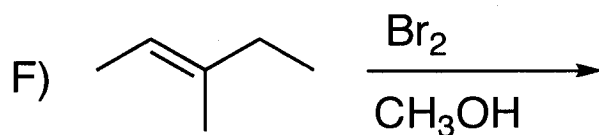
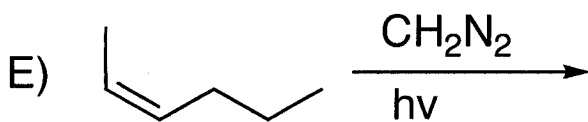
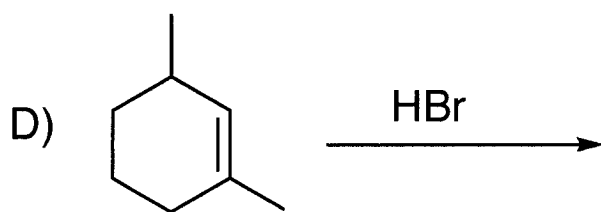
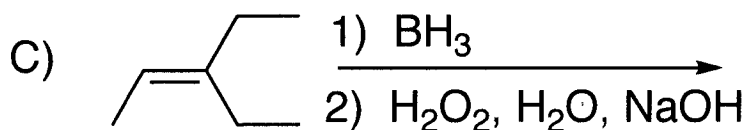
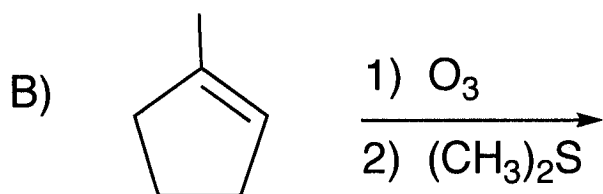
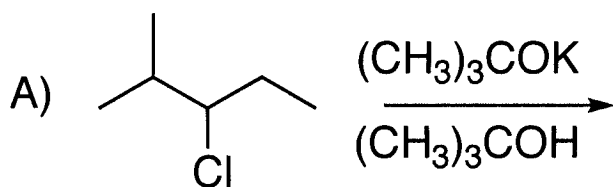
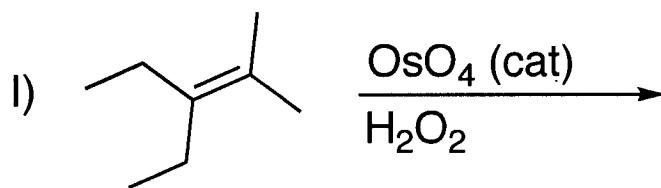
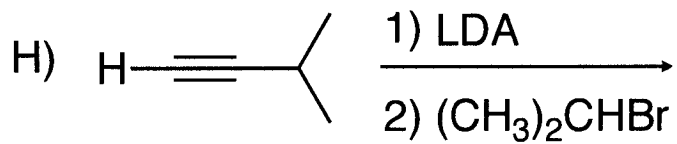
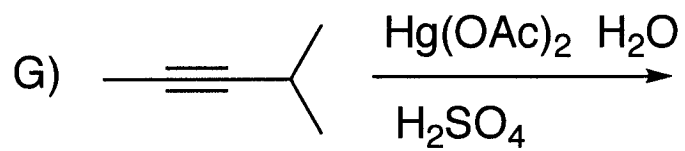


Jim Hollister  
Chem 118B Practice MT-1

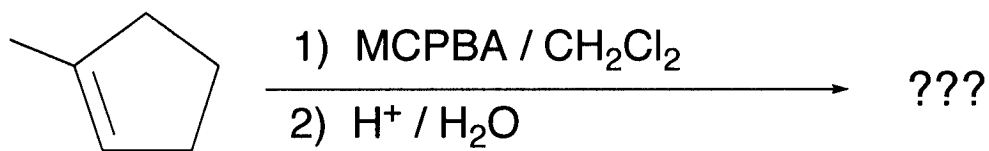
**1. Reactions:** Draw the structure of the expected organic product(s) formed in the following reactions *including correct relative stereochemistry*. If the reaction is racemic, indicate this by either drawing enantiomers or drawing one and writing *racemic*. Assume all reagents listed are present in excess unless otherwise noted. If no reaction occurs, write, No Reaction.



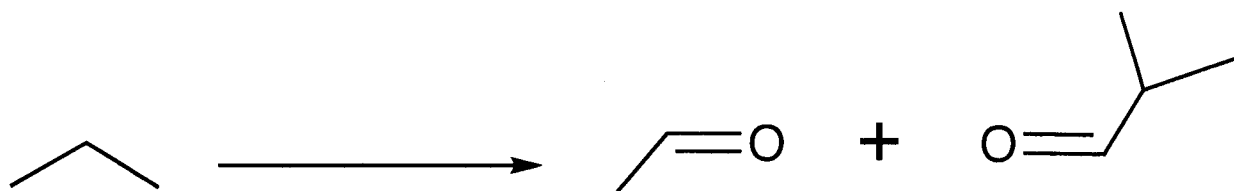


2. **Vocabulary:** Sorry-I didn't have time to do these.

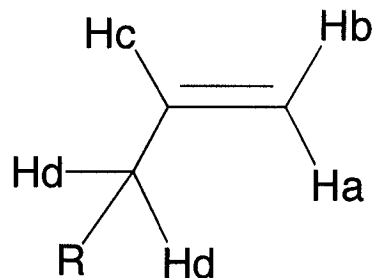
**3. Mechanism:** Show detailed reaction mechanisms for the following reaction. Include the structure of the expected products and appropriate stereochemistry for all steps. Assume all reagents are in excess.



**4. Synthesis:** Show the reaction steps you would use to carry out the following synthesis. Include the reagents you would need for each step and the structure of each intermediate product formed in each step. Use any inorganic reagents you need and any organic reagents of four carbons or less.



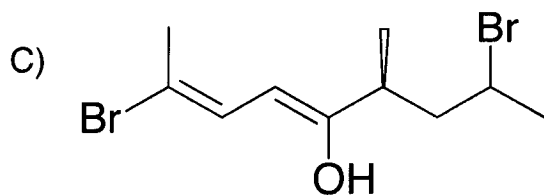
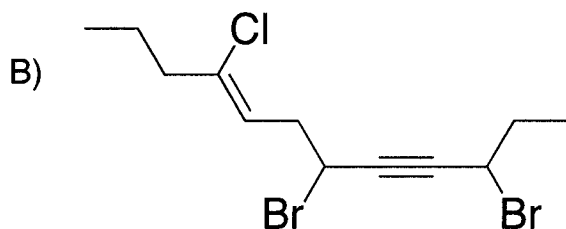
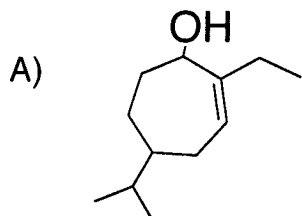
5. **Coupling:** In each case indicate which proton is described A, B, C, D or none of the above.



A) A proton has a chemical shift of  $\delta$  2.2 ppm with couplings  $J = 7$  Hz (d), 2 Hz (d), 1 Hz (D). Which proton is it? \_\_\_\_\_

B) A proton has a chemical shift of  $\delta$  1.2 ppm with couplings  $J = 10$  Hz (d), 8 Hz (d), 7 Hz (t). Which proton is it? \_\_\_\_\_

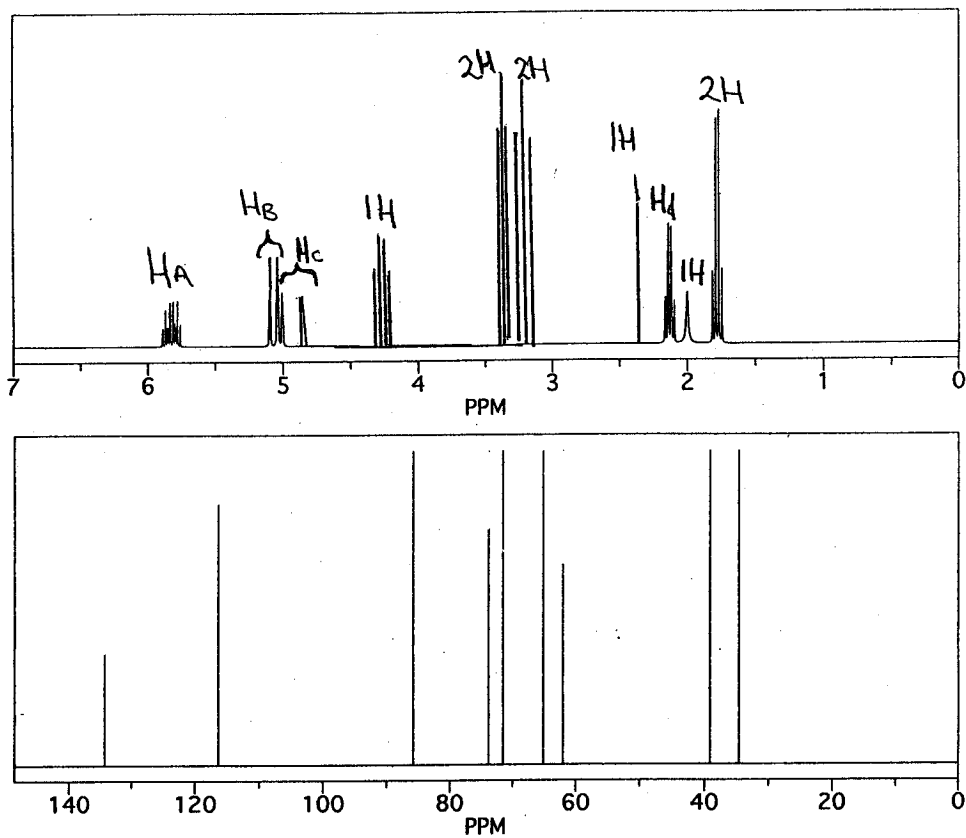
6. **Nomenclature:** Provide the systematic names or structure of each of the following compounds. Include E/Z or R/S where relevant.



D) (2E,5Z)-1,2-dichloro-6-ethynona-2,5-dien-8-yn-4-ol

7. **Spectroscopy:** The unknown **A** ( $C_9H_{14}O_2$ ) gives the following proton and carbon NMR spectra. Significant IR peaks are also listed.

What is compound **A**?



IR: 3100, 3950, 3150, 1650, 1200

Ha = 1H,  $J = 18$  Hz (d), 10 Hz (d), 7 Hz (t)

Hb = 1H,  $J = 10$  Hz (d), 3 Hz (d), 1 Hz (t)

Hc = 1H,  $J = 18$  Hz (d), 3 Hz (d), 2 Hz (t)

Hd = 2H,  $J = 7$  Hz (d), 6 Hz (t), 2 Hz (t), 1 Hz (d)