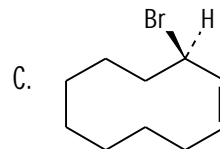
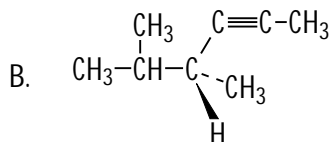
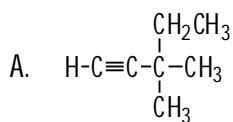


Exam # 4 – November 22, 2000
Chemistry 2401

(4) I. There are four stereoisomers of the compound 4-methyl-2-hexene. What are their stereochemical designations? That is, what is each called?

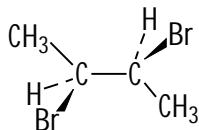
(9) II. Name each of the following compounds including designations of stereochemistry where that is appropriate. Show assignments of priorities.



(12) III. Draw structural formulas for each of the following:

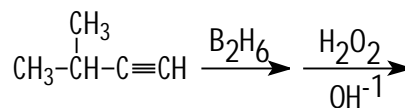
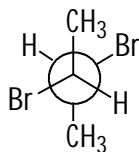
A. An enantiomer of the compound shown below.

B. A diastereomer of the compound shown in III A.

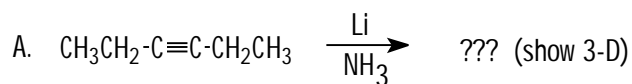


C. Is the compound shown below the original, the enantiomer, or the diastereomer?

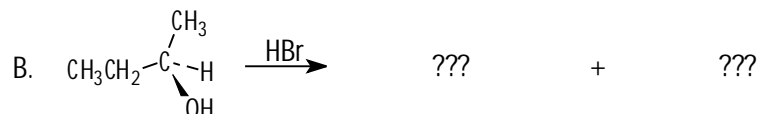
D. Draw the enol intermediate for the reaction shown below.



(36) IV. Complete each of the following reactions and answer any additional questions. Use 3-D representations of specific stereoisomers where that is appropriate. I've included selected comments to assist or confuse you.



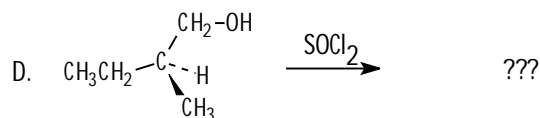
Now draw the structural formula for any of the reactive intermediates for this reaction. (there are three) ???



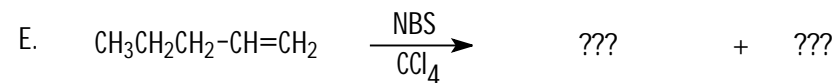
The product consists of two different substances, but only one peak is observed in the gas chromatogram. Does the product mixture rotate the plane of polarized light? Explain.



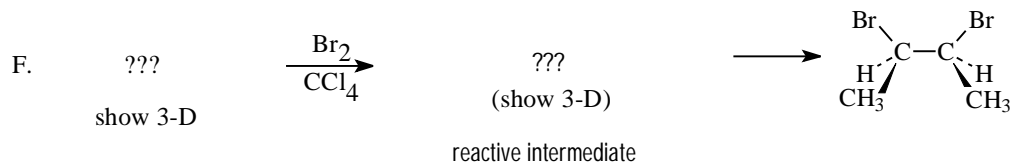
The IR spectrum of the product contains a strong band at 1715 cm^{-1} , but no absorption at 2750 cm^{-1} . What does this IR evidence indicate?



Will this product rotate the plane of polarized light? Explain.

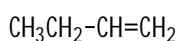


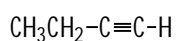
The gas chromatogram of the product contains two significant peaks.

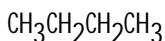


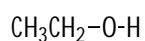
Does the product rotate the plane of polarized light? Explain.

(6) V. Match each of the following with their approximate pK_a values from the list:
-2, 15, 25, 35, 45, 60









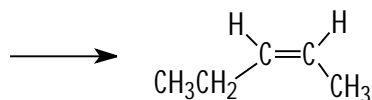




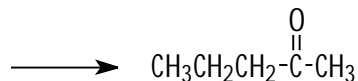
(8) VI. Outline a sequence of reactions that you could use to synthesize each of the following in good yield starting with acetylene and using any additional reagents or reactants needed.

acetylene is $\text{H-C}\equiv\text{C-H}$

A.

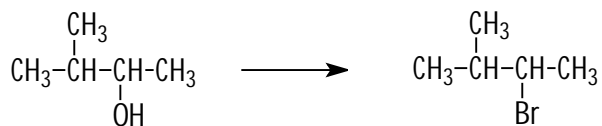


B.

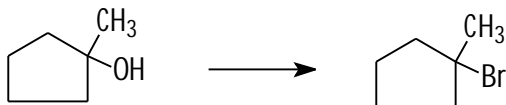


(9) VII. Explain briefly each of the following:

A. HBr is not an appropriate reagent for the conversion shown below.



B. But it does work for the conversion shown below.



C. And also works for the one shown below.

