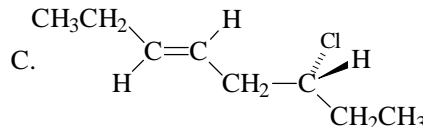
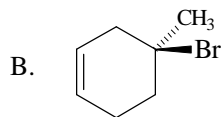
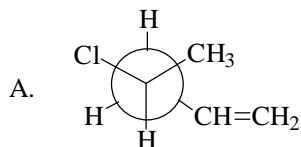


Exam # 4  
Chemistry 2401 – November 30, 2005

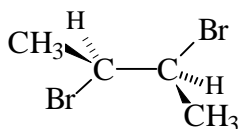
(12) I. Name each of the following including designations of stereochemistry.



(30) II. Draw structural formulas for each of the following.

A. The enantiomer of

B. A diastereomer of the same compound



enantiomer

diastereomer

C. Now designate the stereochemistry of each of the isomers shown above, both the one I drew and the ones you drew.

D. Draw resonance structures for the radical intermediate in the reaction shown below.



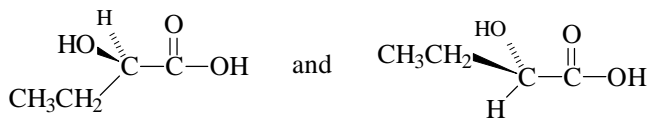
When the product mixture from the reaction above was injected into a gas chromatograph, three peaks were eluted. The first peak actually consisted of two stereoisomers while the next two peaks contained only one stereoisomer each. Draw structural formulas for these products.

Peak # 1

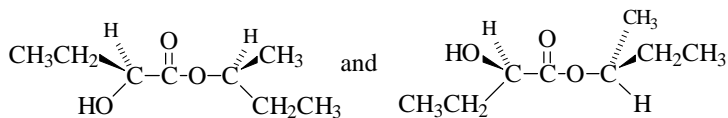
Peaks 2 and 3

If you isolated the substances present in each of these three peaks as they eluted from the gas chromatogram, how many of them would be optically active? \_\_\_\_\_

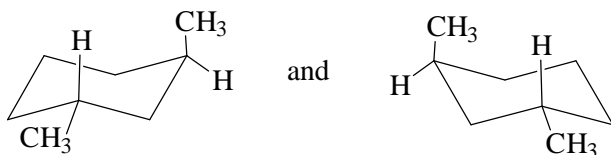
(9) III. Identify each of the pairs of compounds as being enantiomers, diastereomers, or the same compound.



\_\_\_\_\_

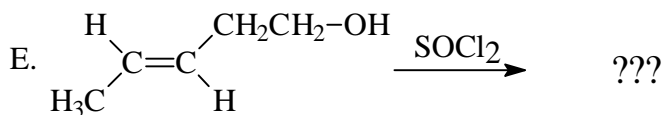
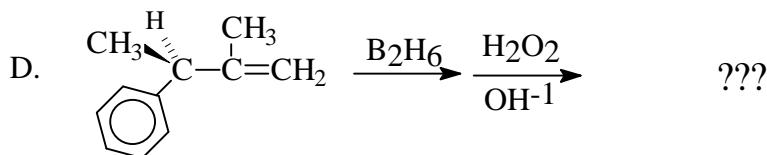
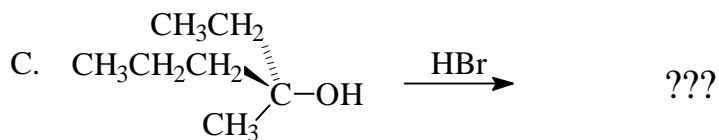
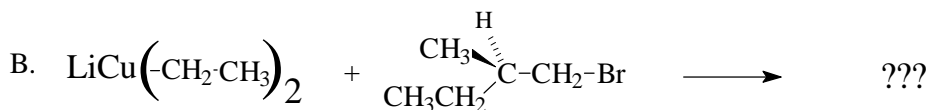
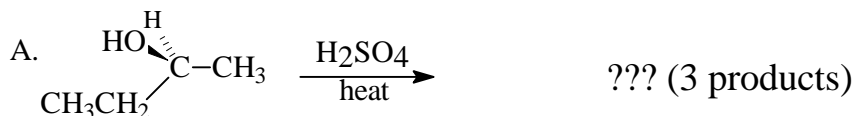


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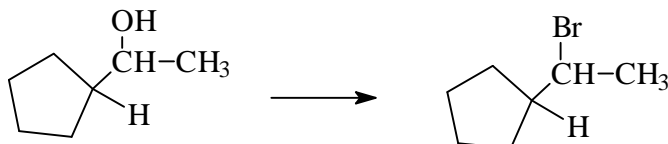
\_\_\_\_\_

(22) IV. Complete each of the following reactions by providing structural formulas for all stereoisomers produced.

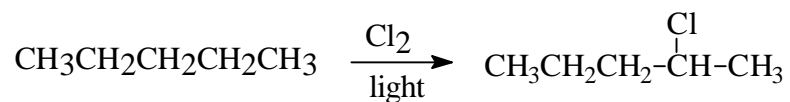


(9) V. Explain briefly each of the following.

A.  $\text{PBr}_3$  is the reagent preferred to accomplish the following transformation rather than using a concentrated solution of  $\text{HBr}$ .



B. The reaction shown below is a poor way to make 2-chloropentane.



C. *tert*-Butyl alcohol reacts completely with Lucas reagent in only seconds, but the reaction of *n*-butyl alcohol has hardly occurred at all even after an hour has elapsed.