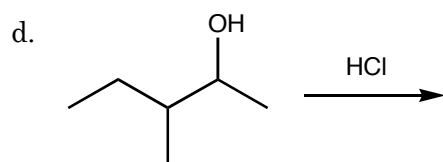
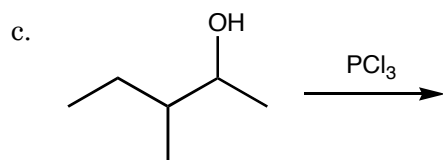
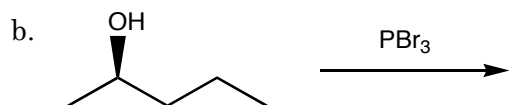
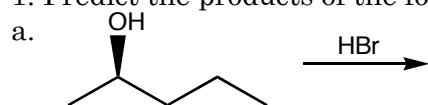
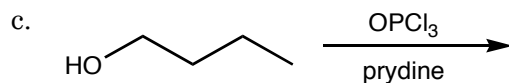
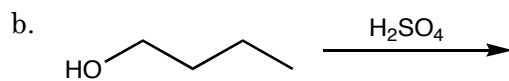
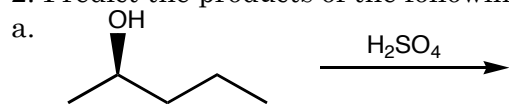


1. Predict the products of the following reactions (indicate the stereochemistry of the product).

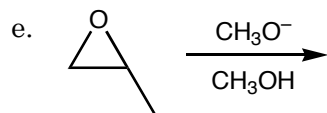
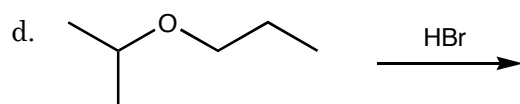
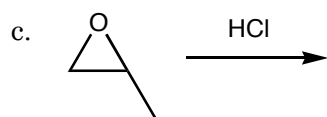
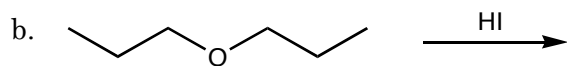
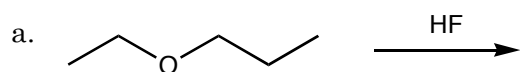


2. Predict the products of the following reactions.

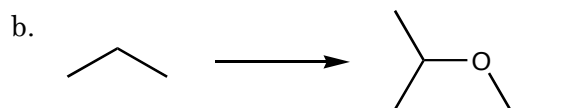
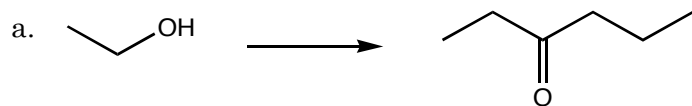


3. By what mechanism does the dehydration of a 2° or 3° alcohol occur? Draw and label the mechanism for the dehydration of a 2° alcohol.

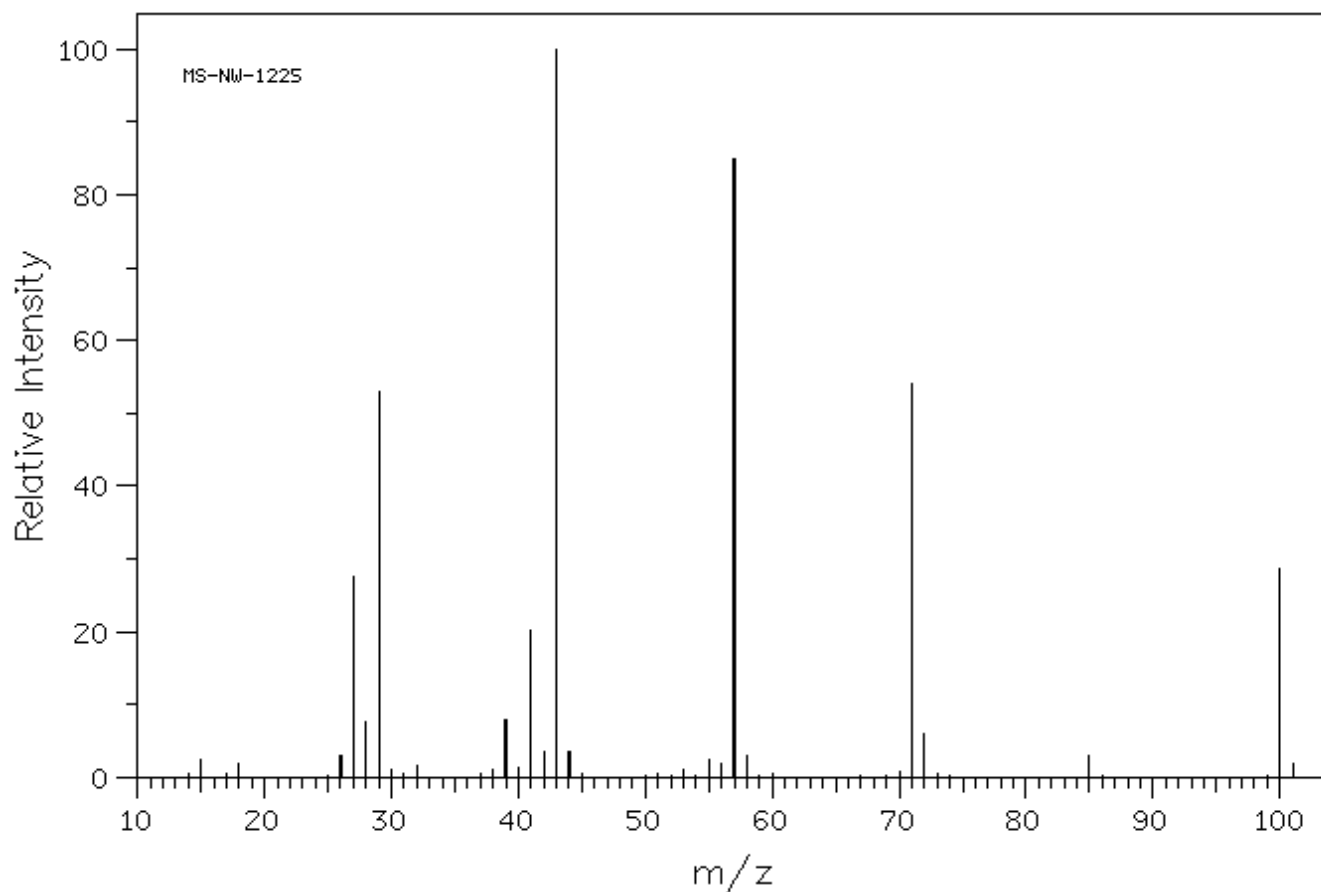
4. Predict the products of the following reactions. If no reaction occurs, indicate this fact by writing NR after the reaction arrow.



5. Using the following starting material and any organic or inorganic reagents make the following products.

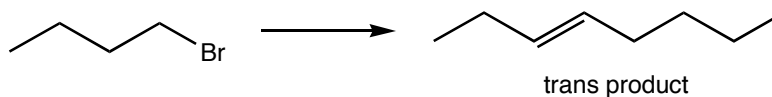


6. A mass spectrum from SDBS Web: <http://www.aist.go.jp/RIODB/SDBS/> (accessed 4/27/03) of  $\text{CH}_3\text{CH}_2\text{C}(\text{O})\text{CH}_2\text{CH}_2\text{CH}_3$  is reproduced below.

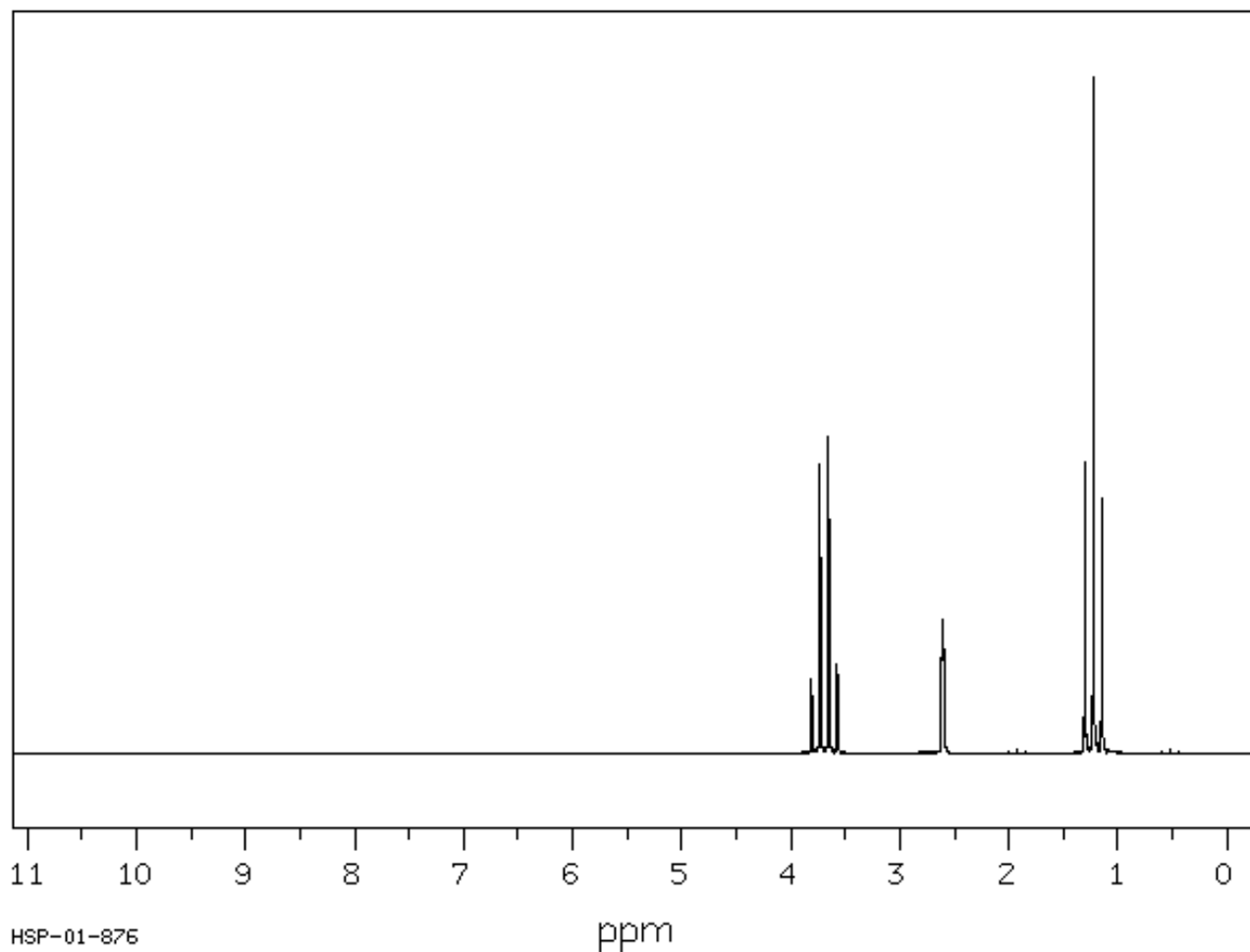


Identify the chemical formulas of the molecules responsible for the peaks at  $m/z = 100$ ,  $71$ ,  $57$ , and  $43$ .

5. From the given starting material and any organic or inorganic reagents make the following product.



8. The following  $^1\text{H}$  NMR spectrum is for a molecule with the formula  $\text{C}_2\text{H}_6\text{O}$ . Identify the molecule and label the NMR peaks. (obtained from SDBS Web: <http://www.aist.go.jp/RIODB/SDBS/> 4/28/03)



9. Sketch the expected  $^1\text{H}$  NMR Spectrum for the following molecule. A indicate the area (integral) of each peak, the multiplicity (the splitting), and the relative location (which peak(s) would be upfield/downfield of the other).

