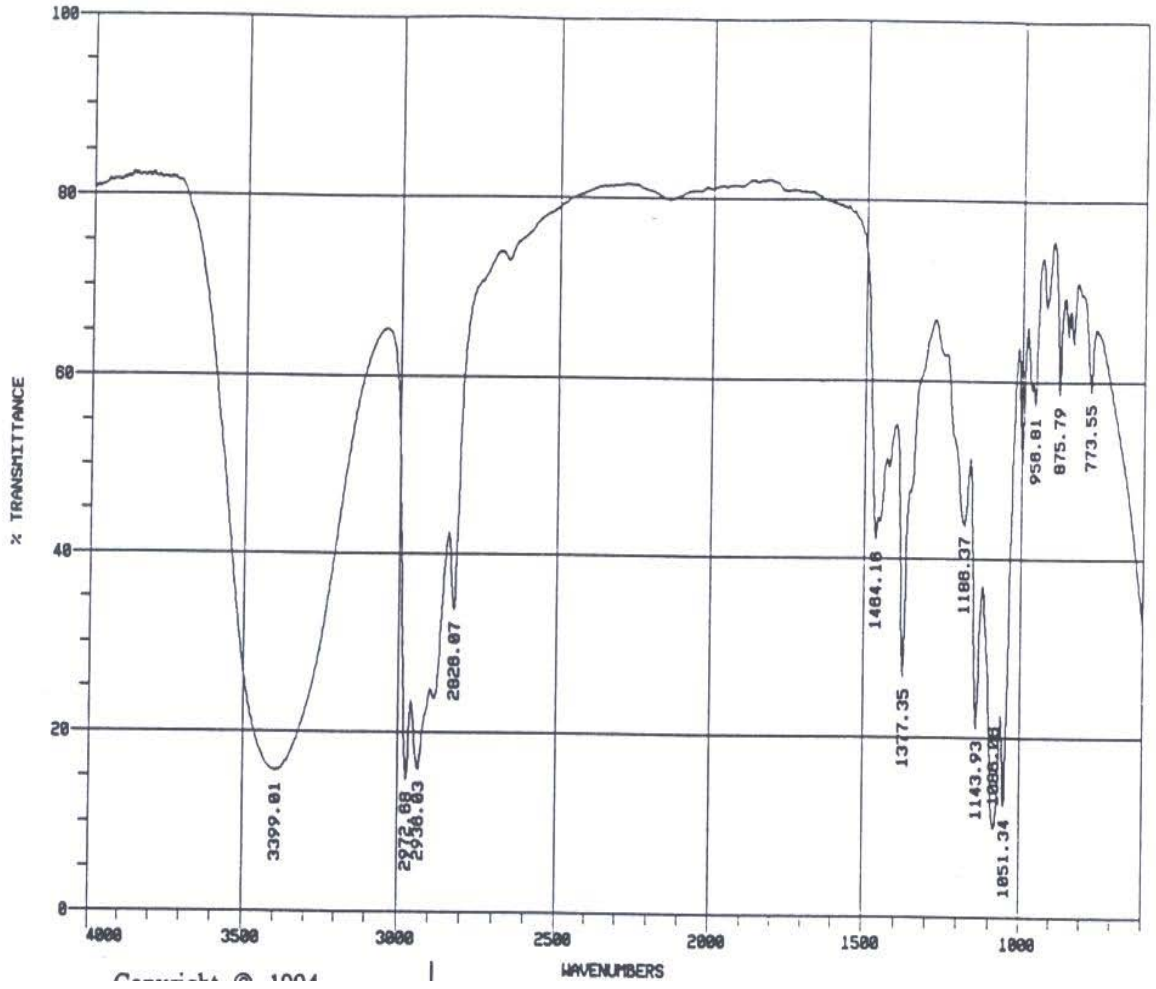
Citrus College

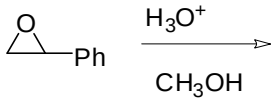
O. Chem. 210 **Name** _____
Final Exam (12/15) **Fall 2008**
Prof. Badieh Farahani

This is a closed books and notes exam. You must write the structure of all reactants and products, show stereochemistry where applied. In writing mechanism you must show the structure of all intermediates and resonance structures. In writing synthesis structure of all reagents must be given. Keep your eyes on your own exam. Cheating will get "F" for the grade!

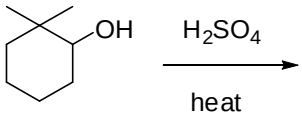
I. (10 pt) IR of $C_5H_{12}O_2$ is given below. Propose a reasonable structure. Explain!



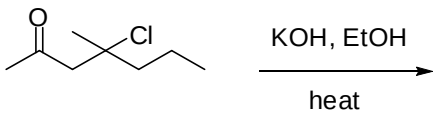
II. (7 pt) Give product of the following reaction. Write a detailed mechanism.



III. (7 pt) Show mechanism:



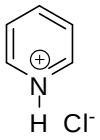
IV. (7 pt) This elimination reaction gives a single product. Show its structure and explain why it is the only product.



V. (17 pt) Show the equations for the reaction of 1-butanol and the following:

a. PBr_3 b. $SOCl_2$, pyridine c. $K_2Cr_2O_7$, H_2SO_4 d. Na

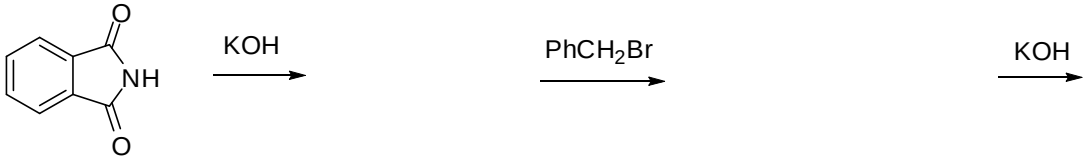
e.



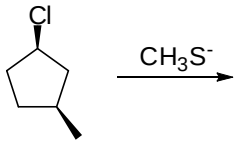
. CrO_3

VI. (15 pt) Show the products of the following reactions. When there is more than one indicate the major product.

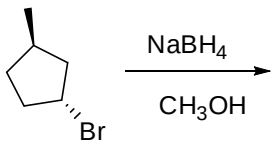
a.



b.

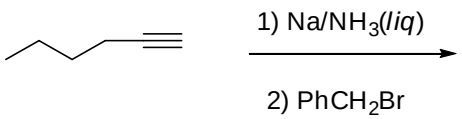


c.

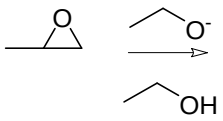


VII. (24 pt) Show the products of the following reactions. When there is more than one indicate the major product.

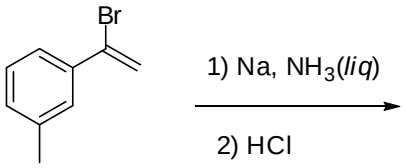
a.



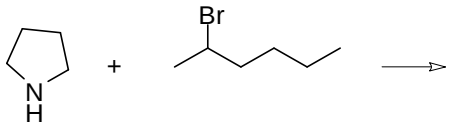
b.



c.

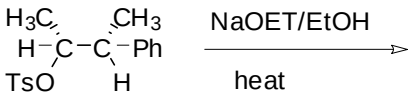


d.

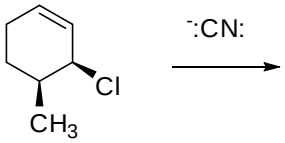


e.

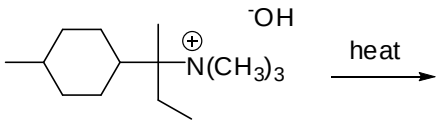
f.



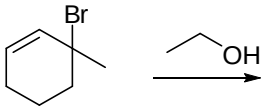
g.

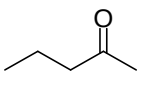


VIII. (10 pt) Show the products of the following reaction. Draw the Newman projection to show why the Hofmann product is the major product in the following elimination reaction.



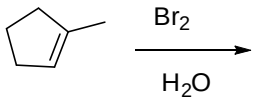
IX. (10 pt) Give the substitution products of the following reaction. Give a detailed mechanism.



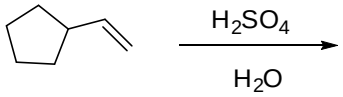
X. (8 pt) Make the following conversion: 1-pentene → 

XI. (15 pt) Show the products of the following reactions. When there is more than one indicate the major product.

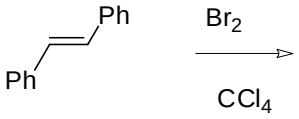
a.



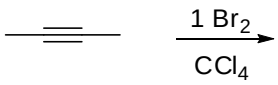
b.



c.



d.



XII. (10 pt) Make the following conversion: 2-methyl-1-propanol $\rightarrow$ *t*-butyl chloride.

XIII. (8 pt) Give the pKa of the following:

a. acetic acid b. water c. propyne d. propene

Merry Christmas
BF