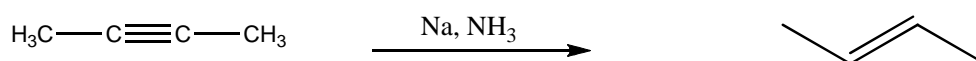
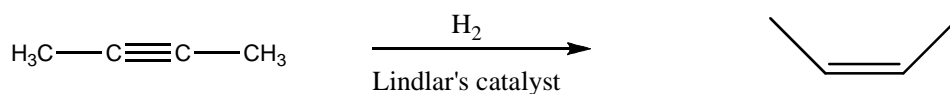
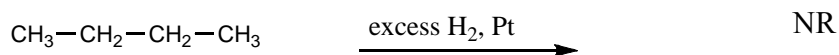
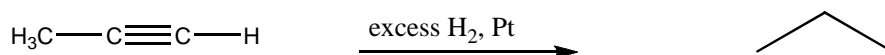
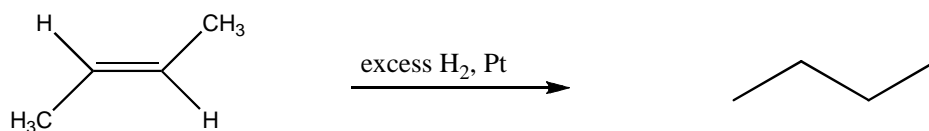
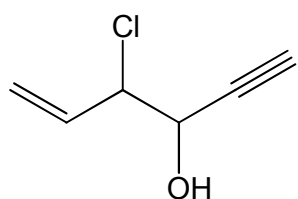


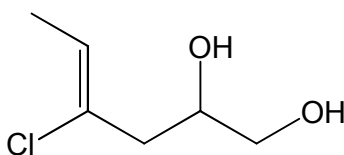
1) Give the products (if any) formed in the following reactions: (10pts)



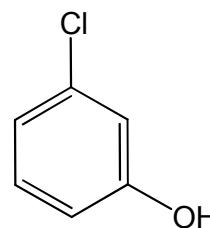
2) Name (in IUPAC form) the following three compounds. (12pts)



4-chlorohex-5-en-1-yn-3-ol



(Z)-4-chlorohex-4-ene-1,2-diol

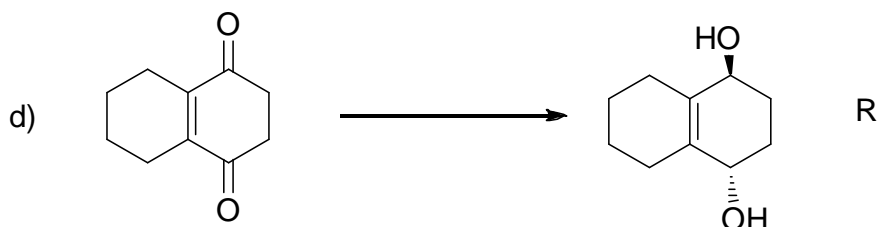
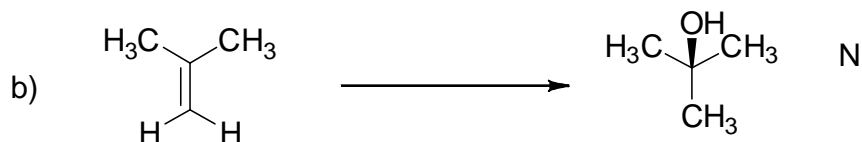
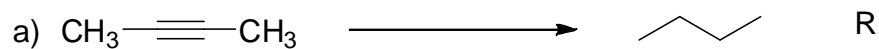


3-chlorophenol

Left:

Middle: OR 4-chlorohex-(4Z)-ene-1,2-diol

3) Indicate for each reaction if the process is an **oxidation**, **reduction** or **neither**. (8pts)

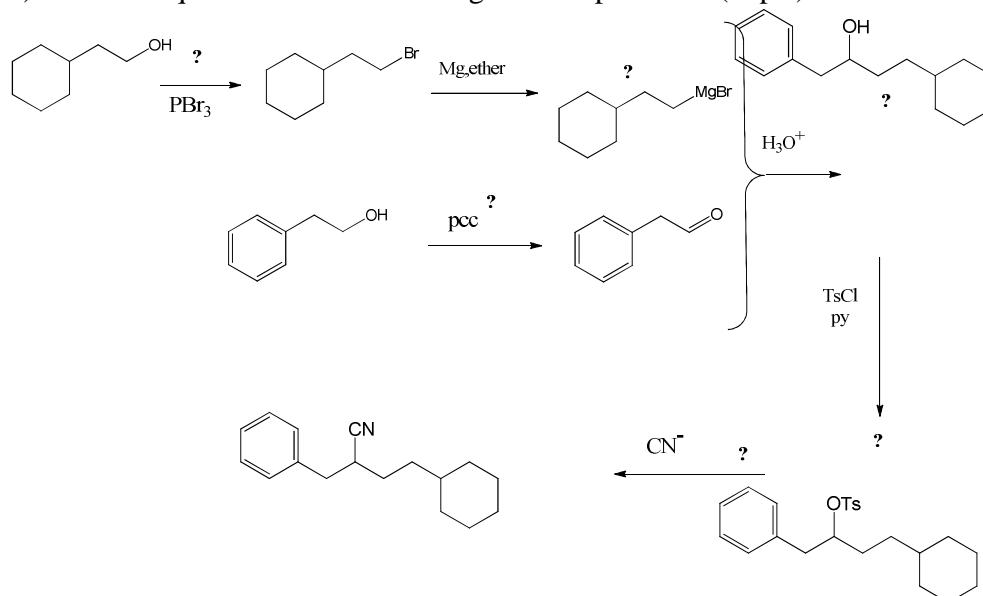


Adds H'S reduction

Adds =O or -OH Oxidation

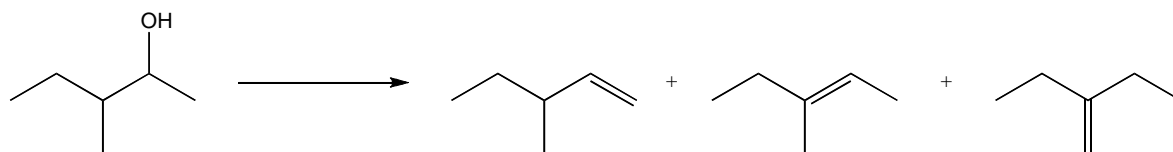
Adds H and OH neither (acid-base)

4) Fill in the question marks with reagents and products. (12pts)

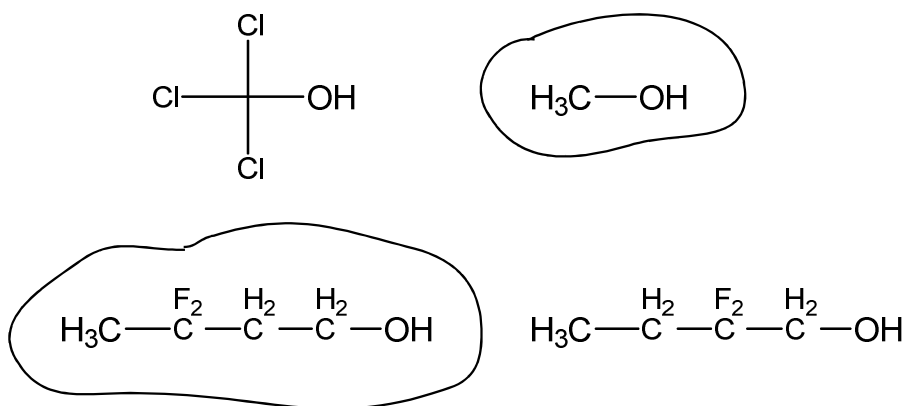


Since the final product was incorrectly drawn, the last 3 ? will not be graded. (You get at least 6/12 pts.)

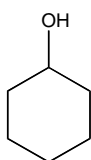
5) Explain the formation of **the three** products in this elimination reaction by drawing **all** mechanisms.. (15pts)



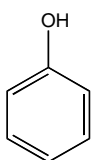
6) Alcohols are weak acids, circle the **weaker** acid of the pair on each line: (4pts)



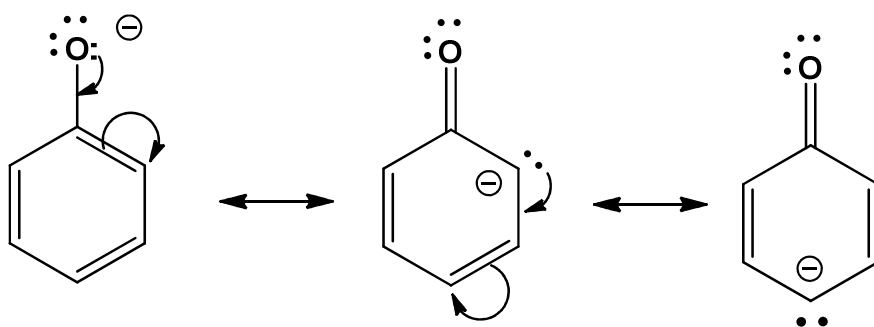
7) Explain why phenol is 10^8 times more acidic than cyclohexanol by writing at least two correct resonance structures for the phenoxide anion. (5 pts)



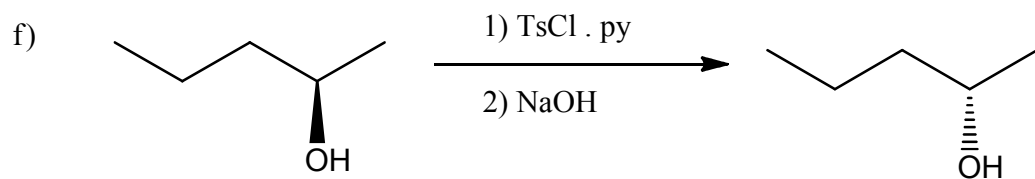
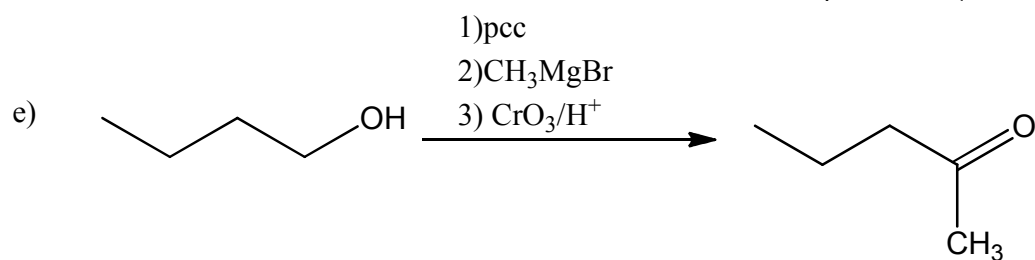
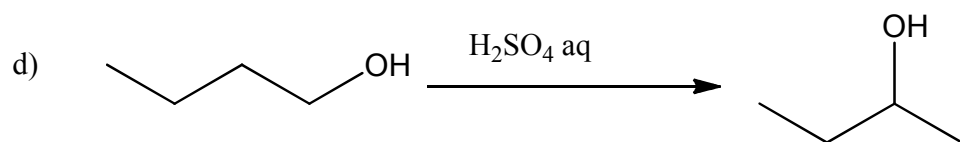
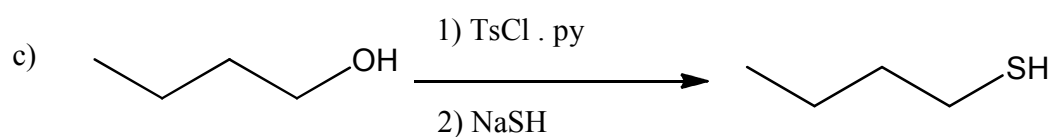
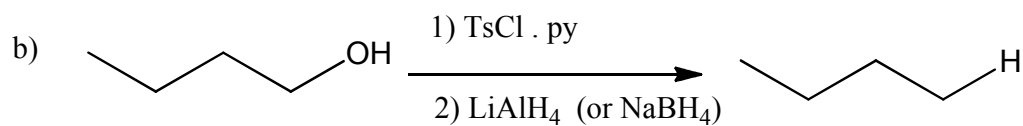
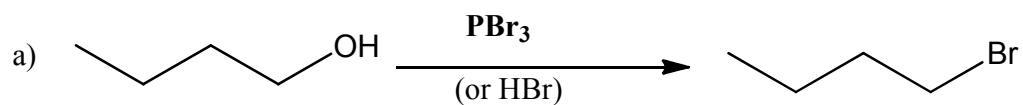
$\text{pK}_a = 18$



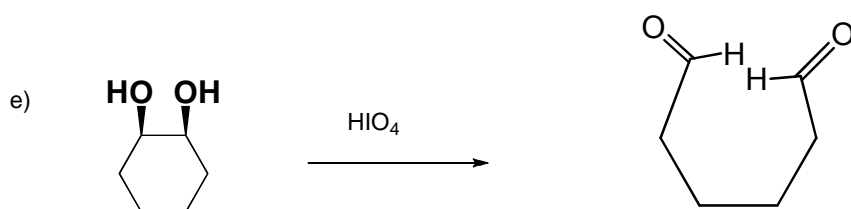
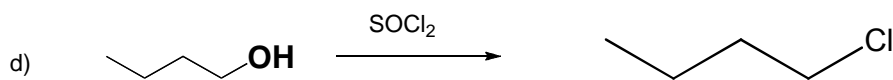
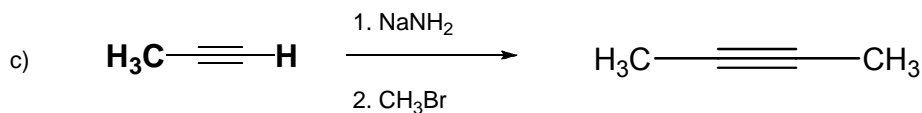
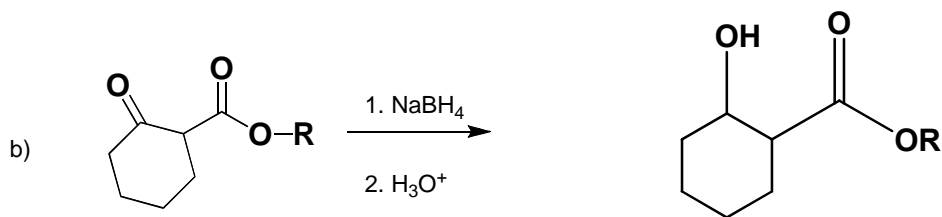
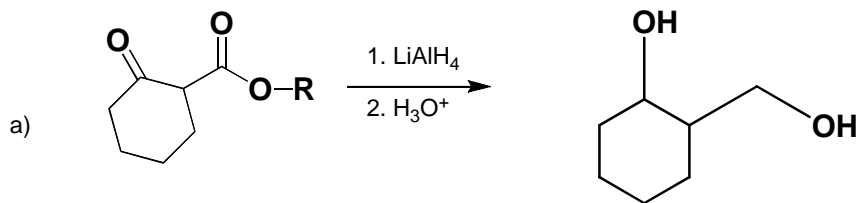
$\text{pK}_a = 10$



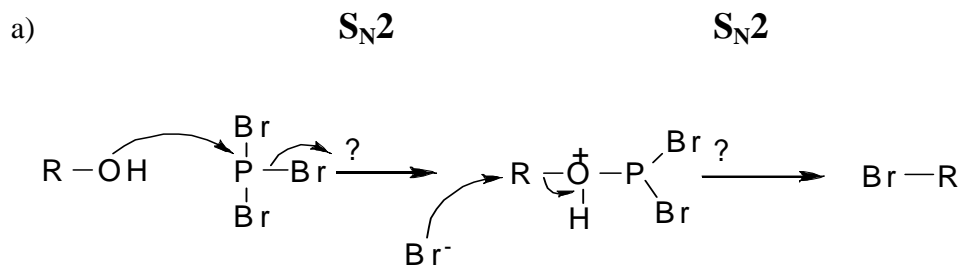
8) Give reagents for the following transformations (respecting order of use). (18pts)



9) Draw the products of the following transformations. (10pts)

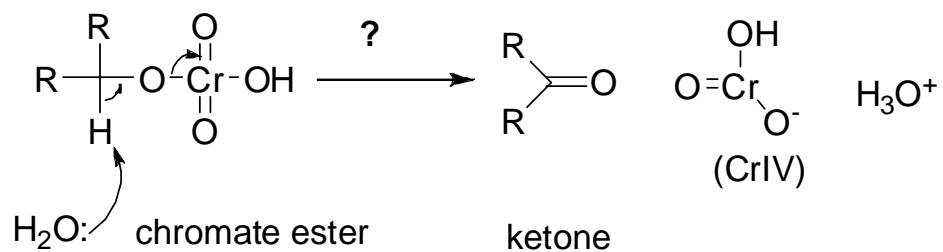


10) Write the abbreviations for the names of the mechanisms over the reaction arrows next to the question marks. These reactions come from Chapter 11. (6 pts)



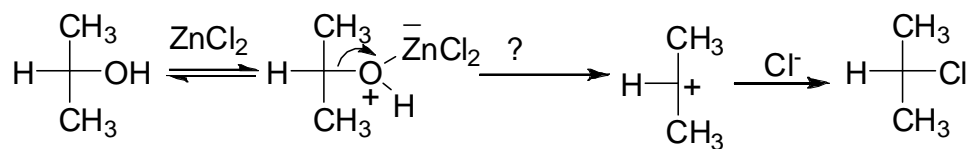
b)

E2



c)

S_N1



BONUS (2 pts) Give a plausible mechanism for the following elimination reaction:

