

Fourth Exam
CHEM 256 – Organic Chemistry II
Prof. Bastin
Spring 2015

Name Answers

Section _____

1. DO NOT START this exam until you are instructed to begin.
2. There are TWELVE pages including this cover sheet - make sure they are all here!
3. Provide *CLEAR, CONCISE* answers using unambiguous, carefully drawn structures and mechanisms. *Be sure to read each question VERY CAREFULLY.*
4. Do not provide mechanisms for synthesis and product prediction problems.
5. You may only use a pen or pencil and the materials provided in this packet on this exam.
6. If you have papers and/or books with you, they are to be left on the floor **AT THE FRONT OF THE ROOM**. If you need scrap paper please ask.
7. Cell phones must be **OFF and placed on the table at the FRONT of the ROOM**.
8. Any talking, gesturing, or other inappropriate actions will result in the immediate confiscation of your exam. The offending student(s) will receive a zero on the exam, a letter grade reduction in the course, and be reported to the Associate Provost office.

1) _____/14 pts

2) _____/16 pts

3) _____/16 pts

4) _____/14 pts

Total: /100 pts

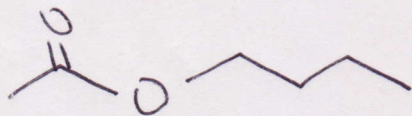
5) _____/10 pts

6) _____/10 pts

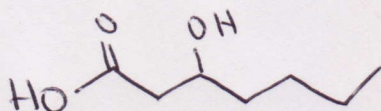
7) _____/20 pts

1) (14 pts) Provide structures for the following compounds.

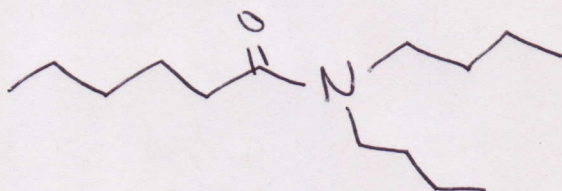
a) Butyl acetate



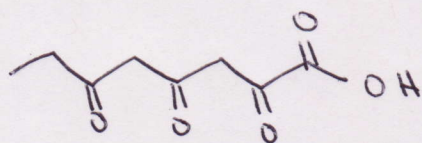
b) 3-hydroxyheptanoic acid



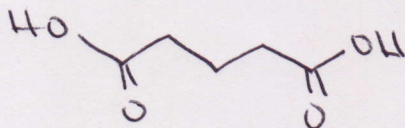
c) *N,N*-dibutylhexanamide



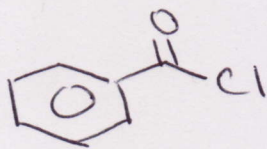
d) 2,4,6-trioxooctanoic acid



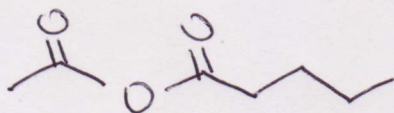
e) Glutaric acid



f) Benzoyl chloride

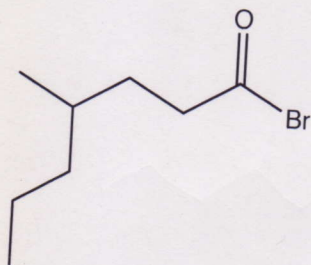


g) ethanoic pentanoic anhydride



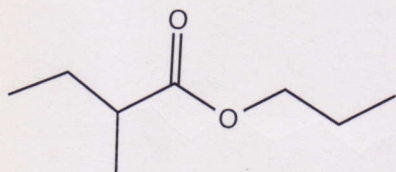
2) (16 pts) Provide either common or IUPAC names for the following compounds?

a)



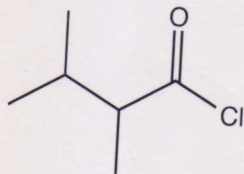
4-methylheptanoyl bromide

b)



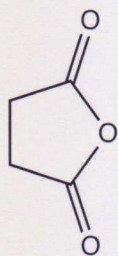
propyl 2-methylbutanoate

c)



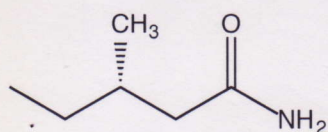
2,3-dimethylbutanoyl chloride

d)



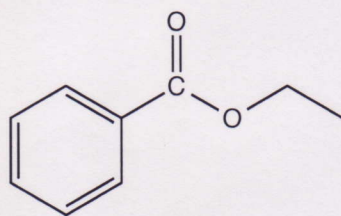
succinic anhydride

e)



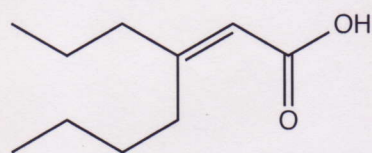
(S)-3-methylpentanamide

f)



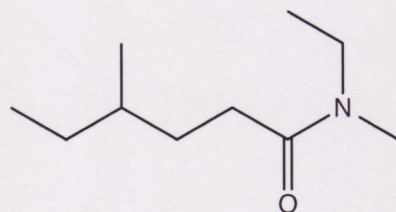
ethyl benzoate

g)



(Z)-3-propyl-2-heptenoic acid

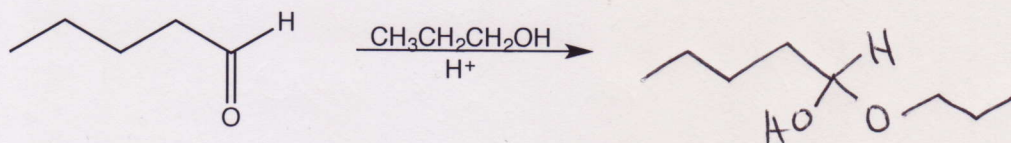
h)



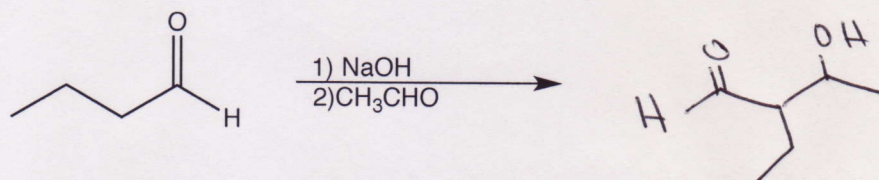
N-ethyl-N,4-dimethylhexanamide

3) (16 pts) Draw the organic product(s), if any, of the following reactions. Indicate stereochemistry where relevant.

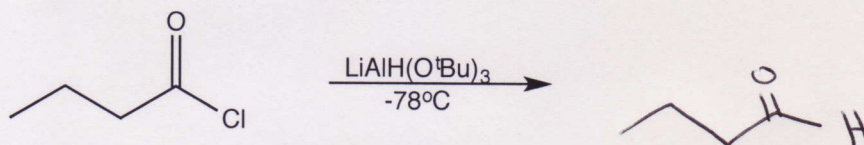
a)



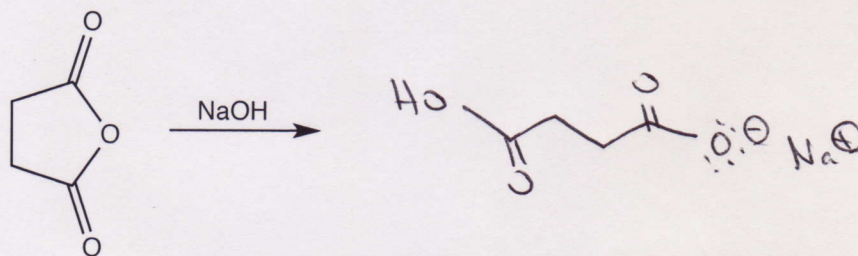
b)



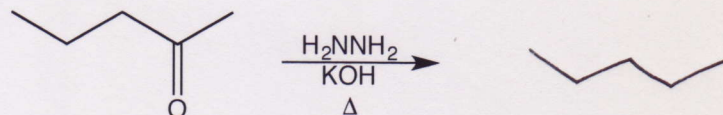
c)

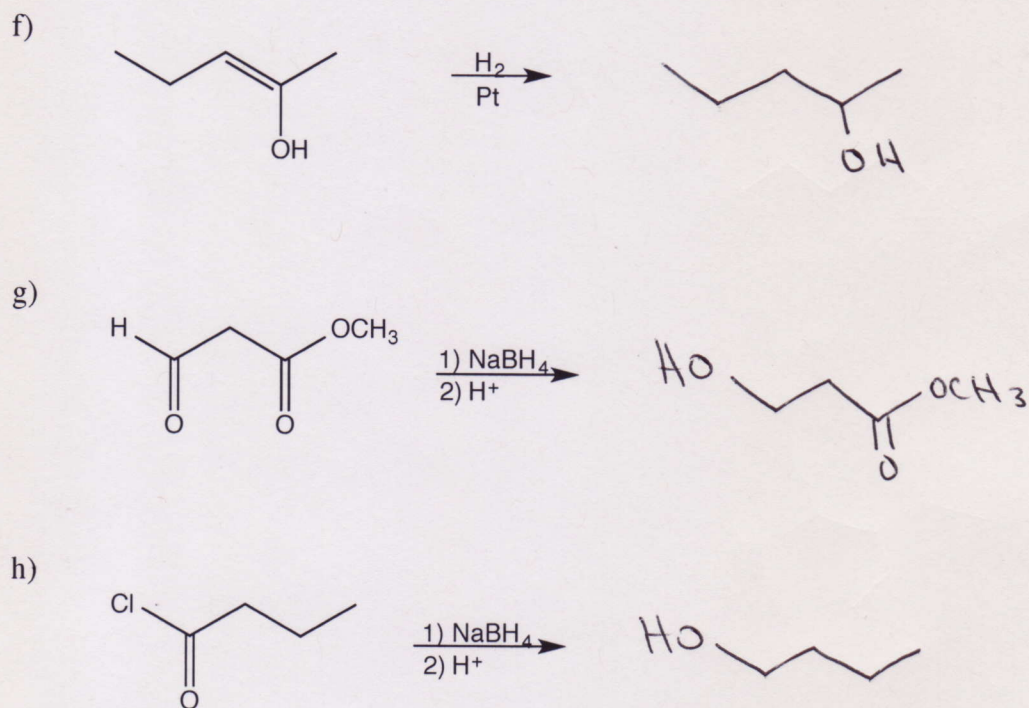


d)

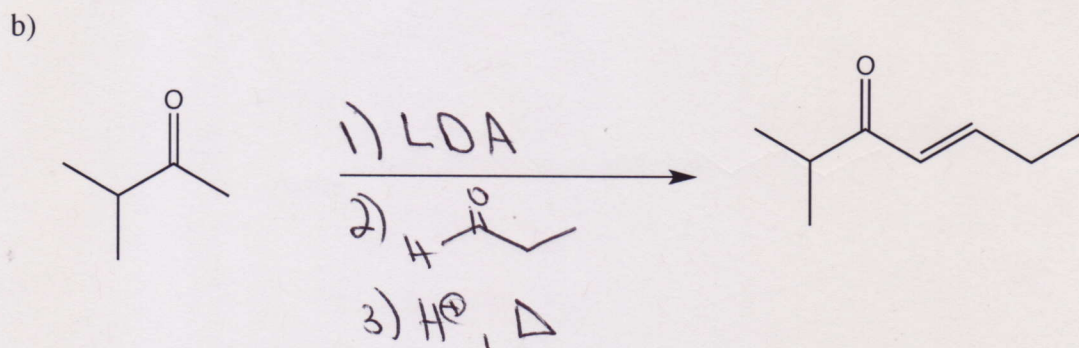
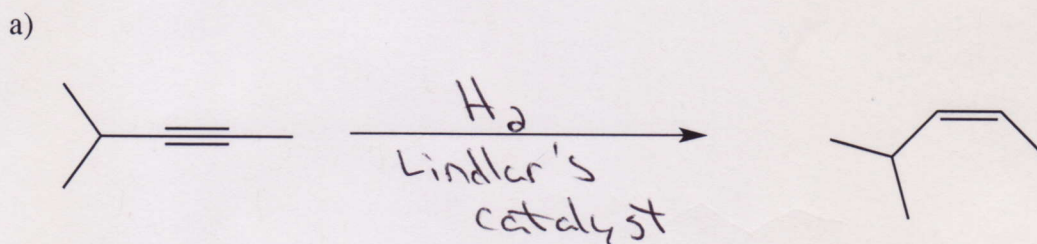


e)

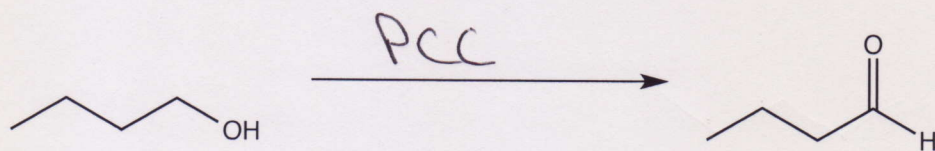




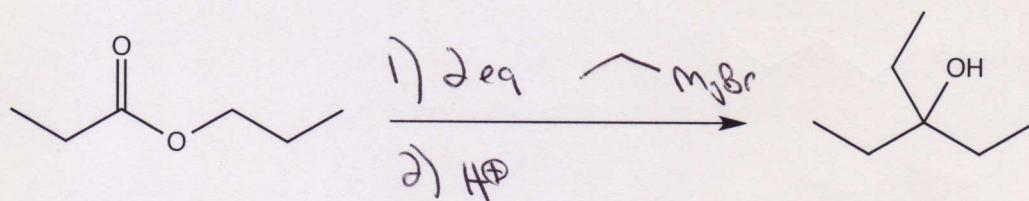
4) (14 pts) Provide the reagents needed to bring about the following transformations.



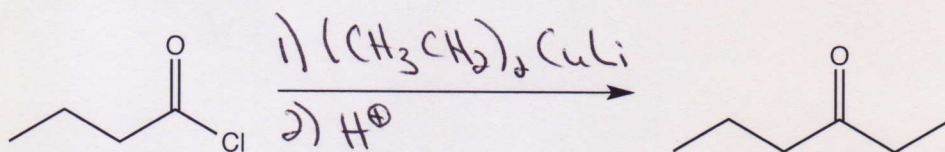
c)



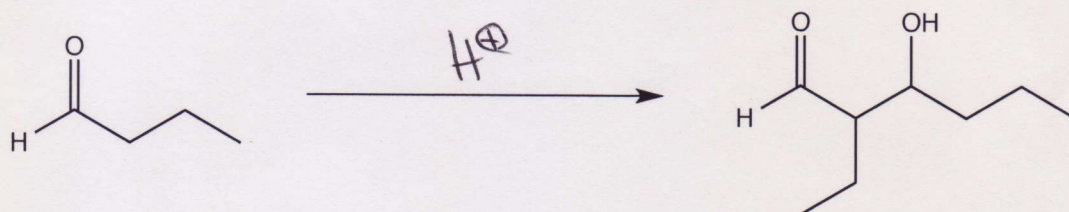
d)



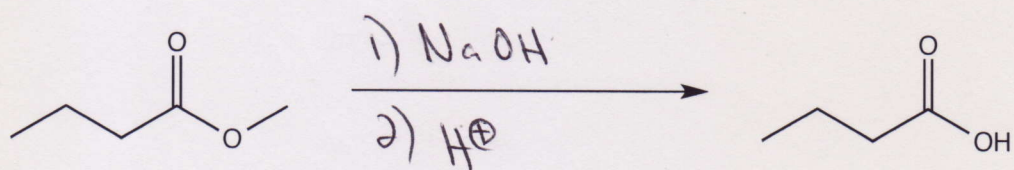
e)



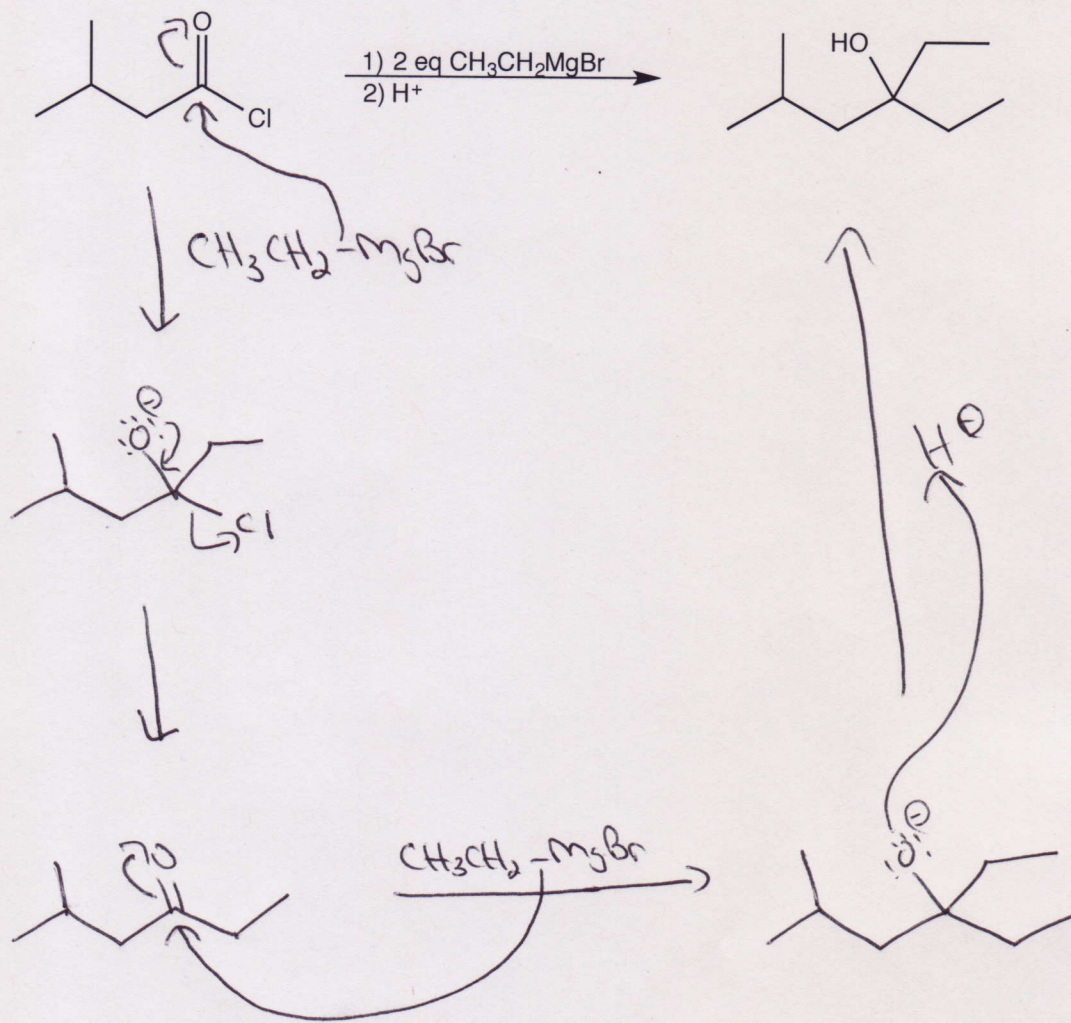
f)



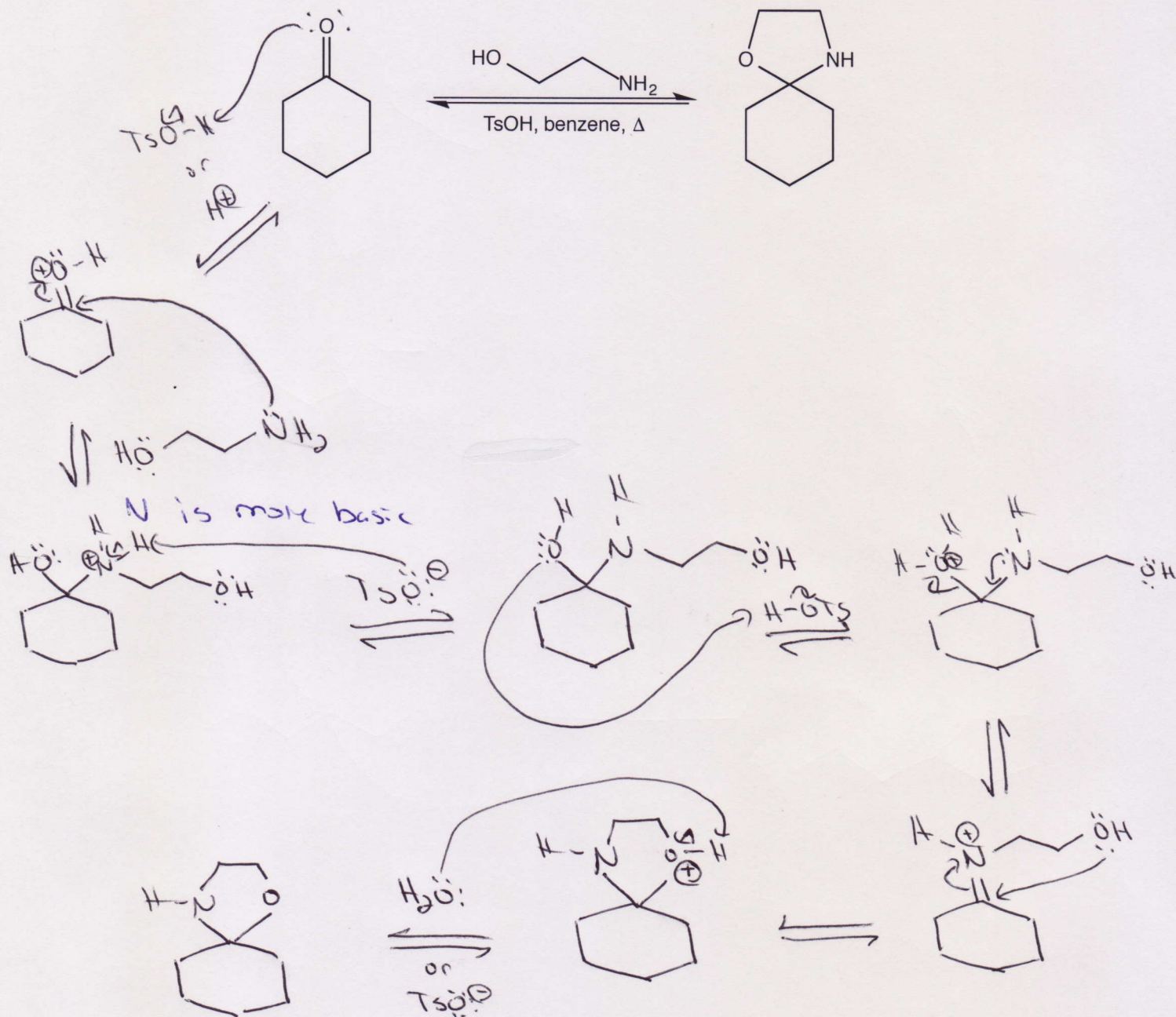
g)

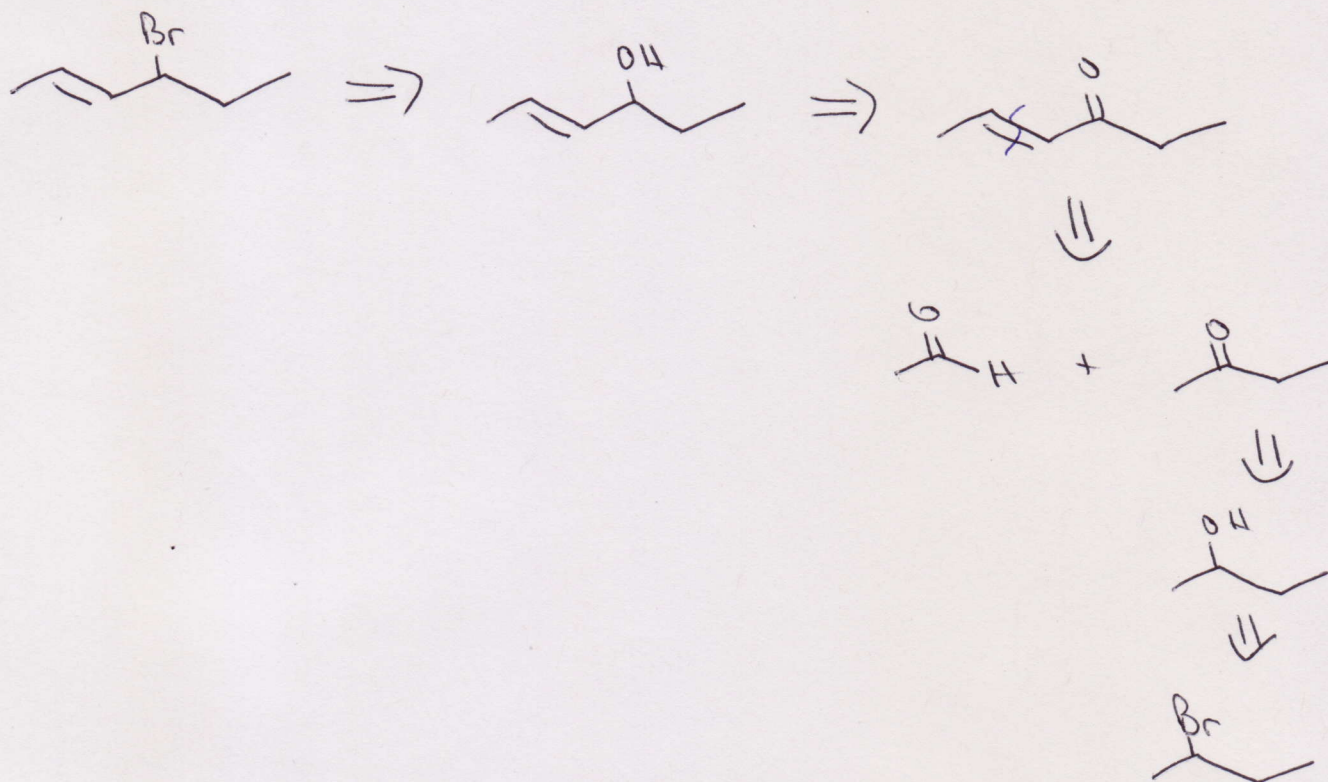
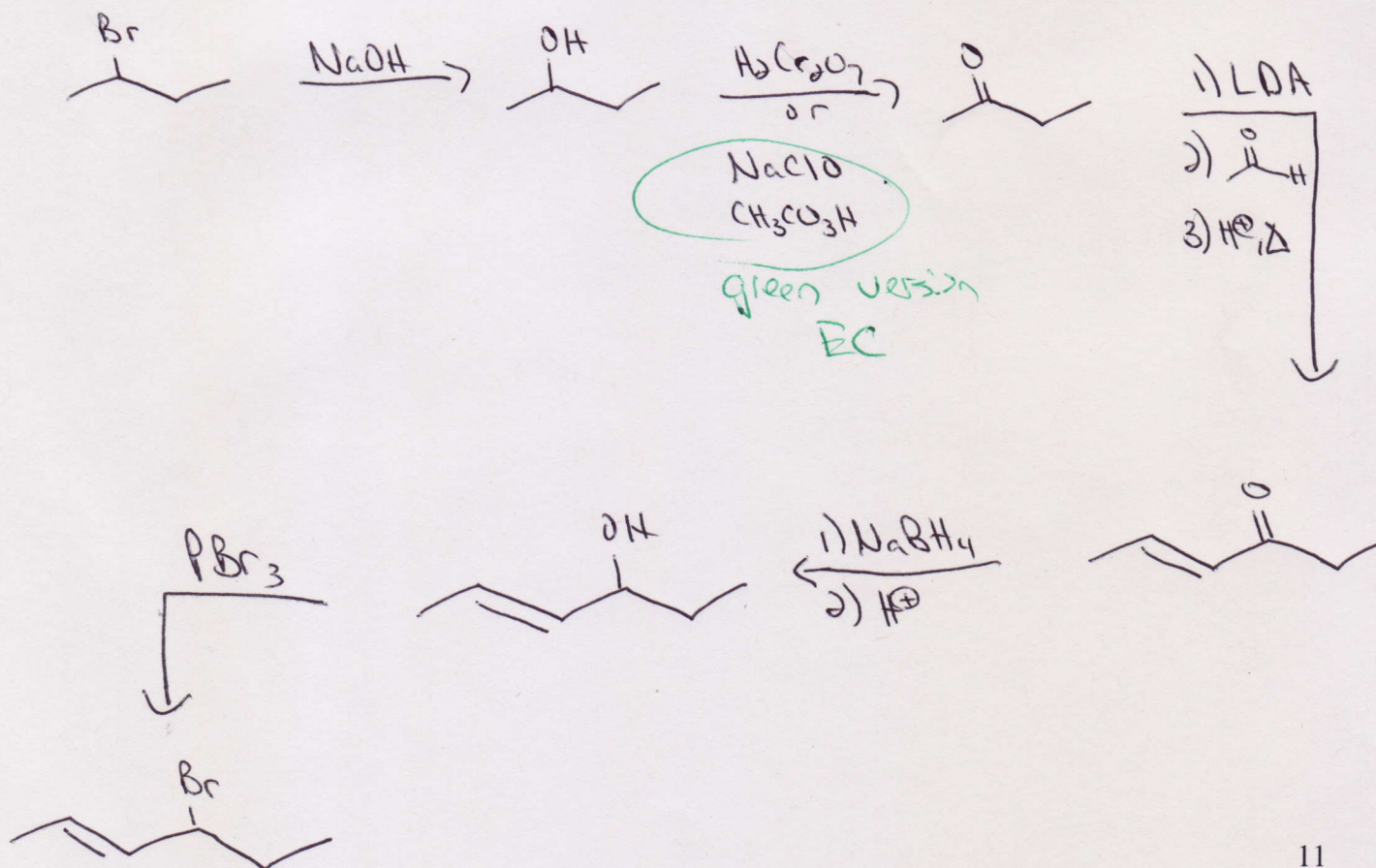


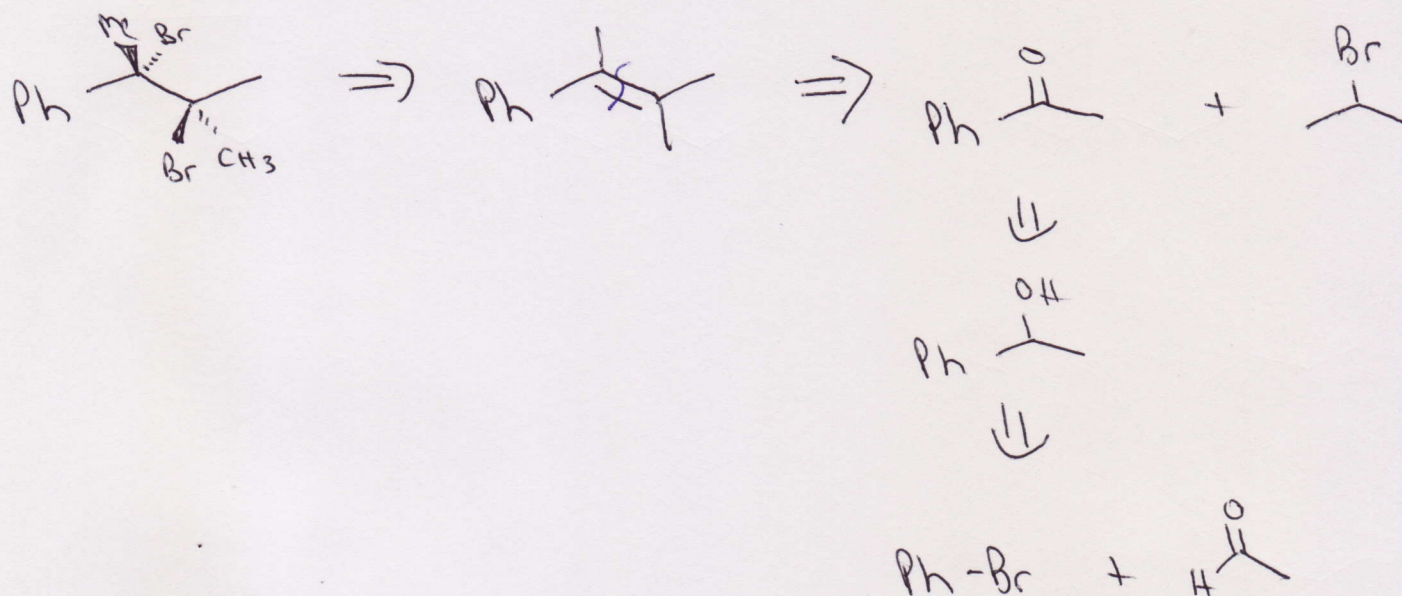
- 5) (10 pts) Draw the complete, detailed mechanism for the following reaction. TsOH is a relatively acidic compound.



- 6) (10 pts) Draw the complete, detailed mechanism for the following reaction. TsOH is a relatively acidic compound.



RetrosynthesisSynthesis

RetrosynthesisSynthesis