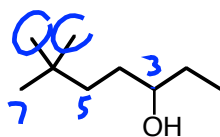
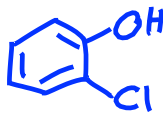


JASPERSE CHEM 360 TEST 1
Alcohols and Retrosynthesis

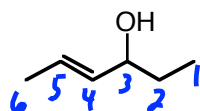
VERSION 2

1. Give Names or structures for the following: (9 points)

ortho-chlorophenol



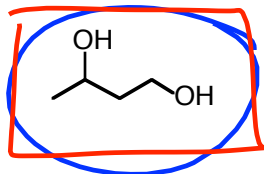
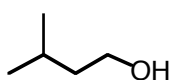
6,6-dimethylheptan-3-ol



E-hex-4-en-3-ol
trans-

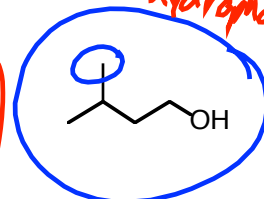
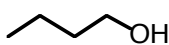
2. For each of the following pairs, circle the one that is higher boiling and put a square around the one with the higher water solubility. (4 points)

a.



more H-bond

b.



London hydrophobic

3. Of the listed four chemicals, circle those which would ionize methanol (convert it to sodium or magnesium methoxide)? (4 points)

Na

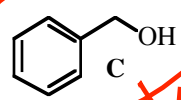
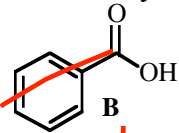
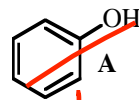
NaNH₂

NaOH

CH₃MgBr

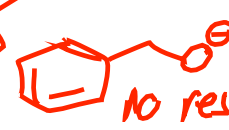
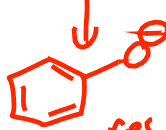
4. If an ether solution of the following three compounds was washed with NaOH/H₂O, which (if any) of the compounds would remain in the ether layer? Circle any that would. (3 points)

H⁺



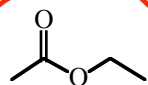
neutral ⇒ ether

ionized ⇒ water



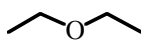
less stable

5. Of the following common solvents, circle those that are unsuitable as solvents for the preparation and reactions of Grignard reagents (assuming you want the Grignard reagent to react with something else). (3 points)



ethyl acetate

C=O



diethyl ether



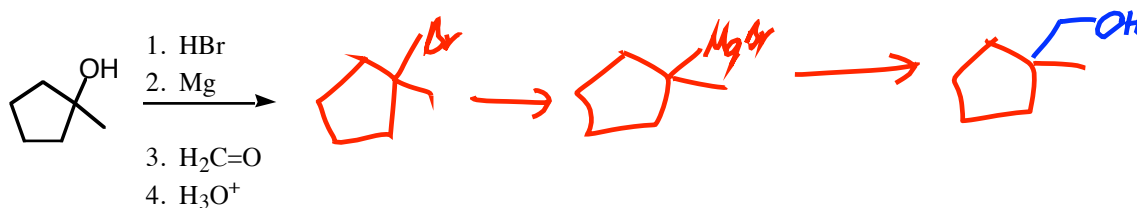
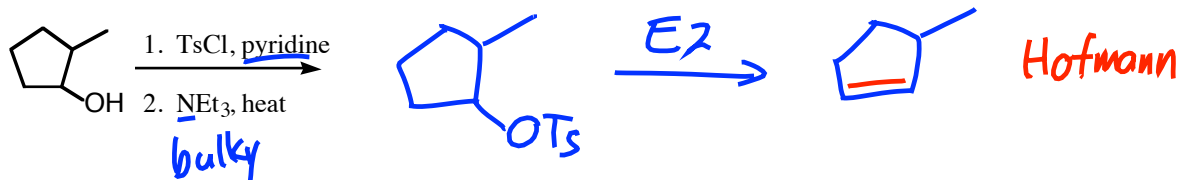
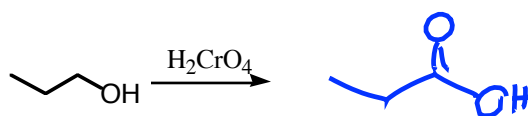
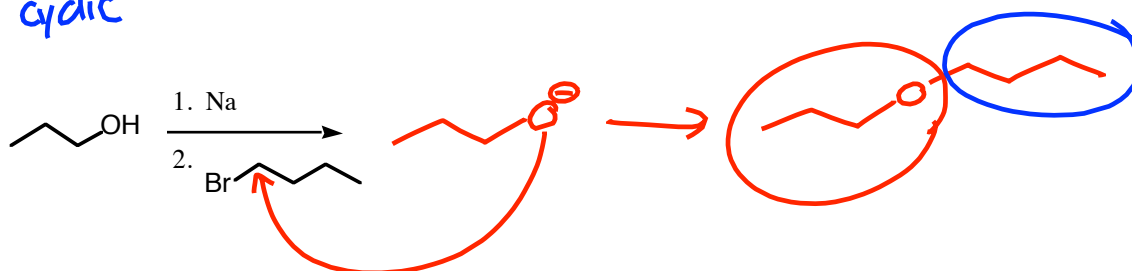
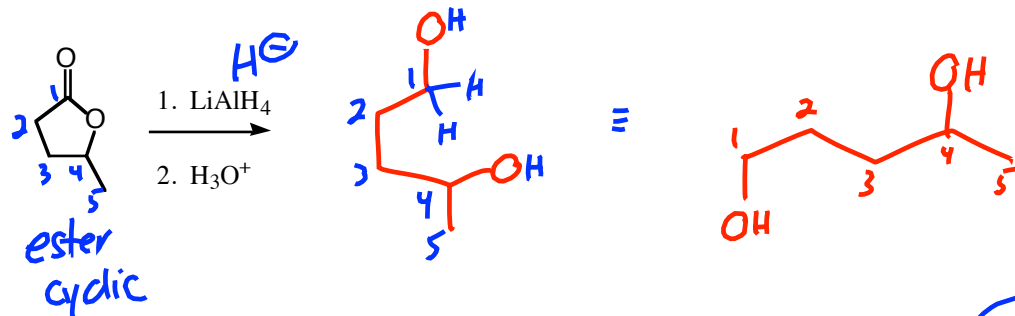
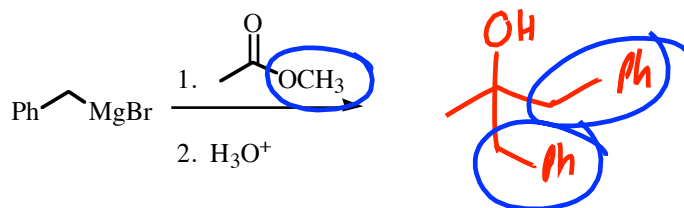
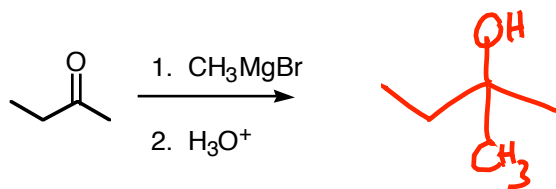
isopropanol

OH
NH

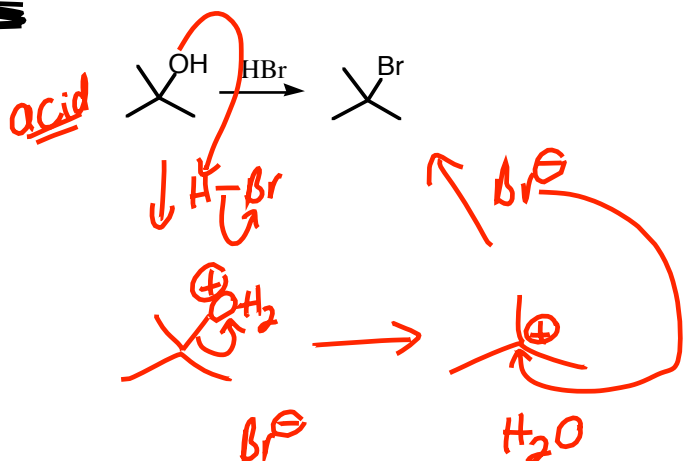
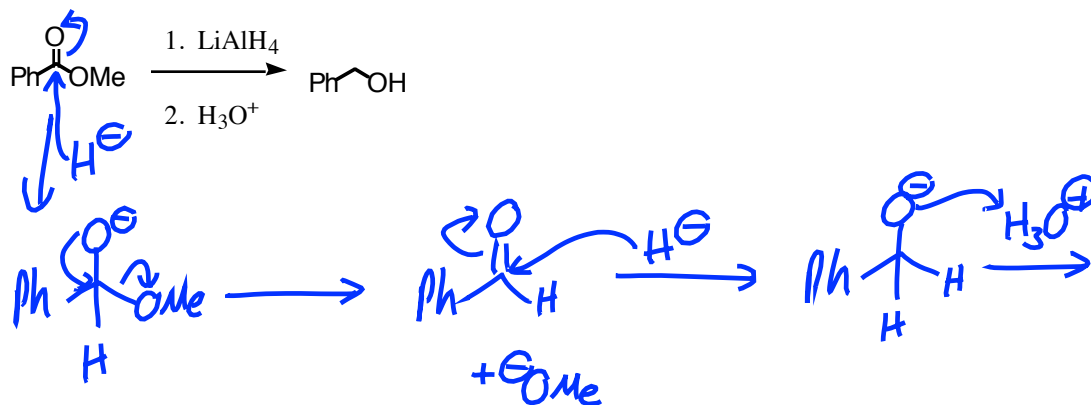
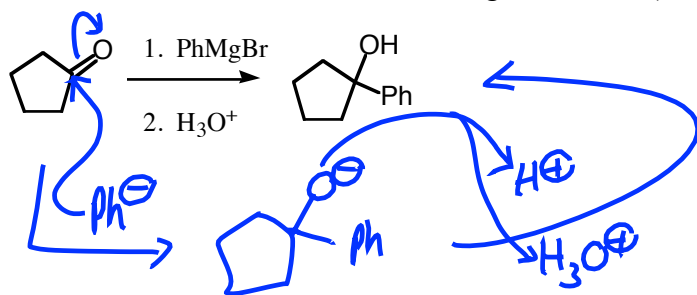


tetrahydrofuran

6. Give the major product of the following reactions. (3 points each)



7. Draw mechanisms for the following reactions. (3, 5, and 5 points)



8. Suggest a possible structure for an unknown A whose formula is C₆H₁₂O, and gives the following chemical test results: (Double check that your answer is consistent with all the data) 5 pt

Formula:

C₆H₁₂O

Hydrogenation Test

H₂/Pt

No reaction

Chromic Acid Test

H₂CrO₄

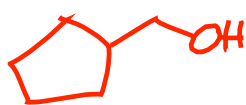
Turns green

Lucas Test

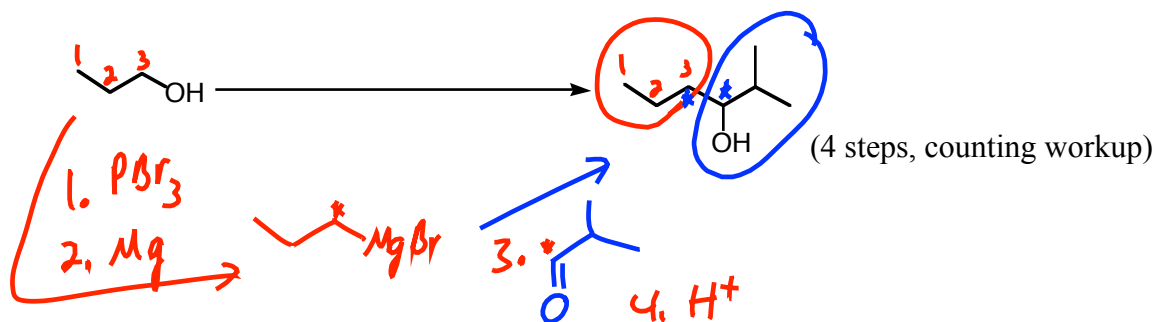
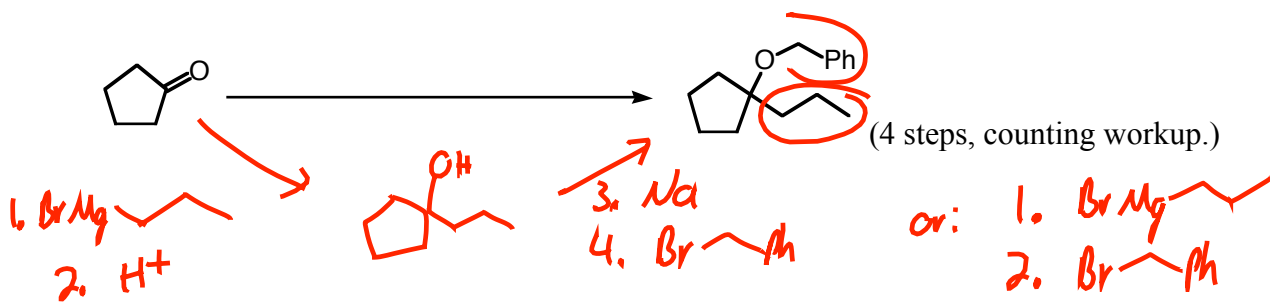
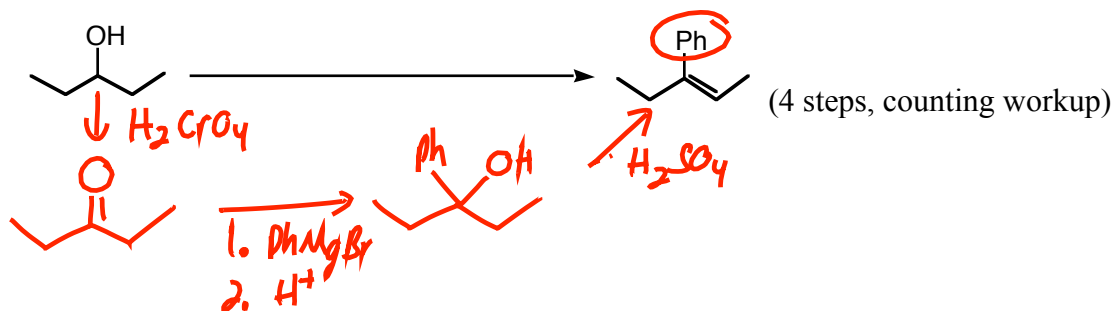
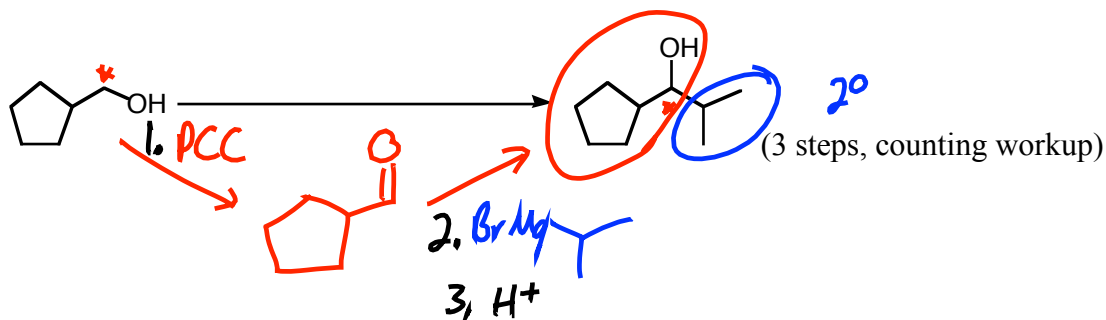
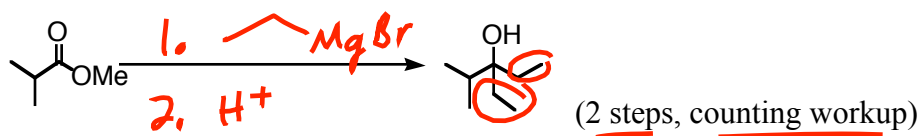
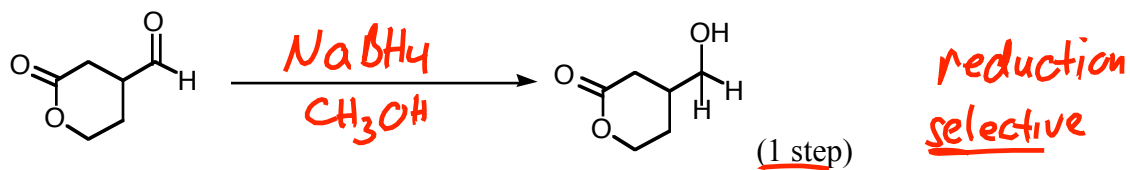
HCl/ZnCl₂

No reaction

1 EU alkene? ~~no~~ ~~no~~ ring?
1° or 2° alc
not 3° or 2°
1° alcohol



9. Provide reagents for the following transformations. ("workup" means H_3O^+ or H_2O steps)
(First two are 3 points each; last four are 5 points each)



10. Design syntheses for the following. Allowed starting materials (same as practice) include:
 bromobenzene
 cyclopentanol
 any acyclic alcohol or alkene with ~~4~~⁵ carbons
 any esters
 ethylene oxide
 formaldehyde (CH₂O)
 iodomethane
 any "inorganic" agents (things that won't contribute carbons to your skeleton)
 6 points each

