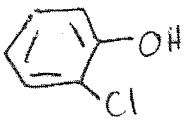
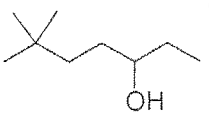
JASPERSE CHEM TEST 1 VERSION 2
Alcohols

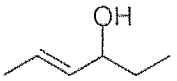
1. Give Names or structures for the following: (9 points)

ortho-chlorophenol



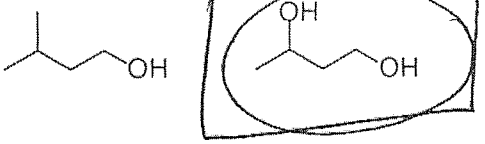


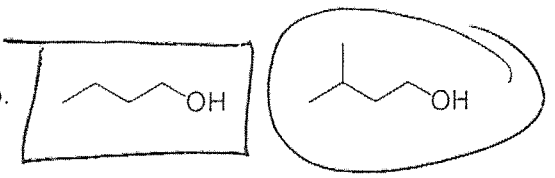
6,6-dimethylheptan-3-ol



trans-hex-4-en-3ol

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)

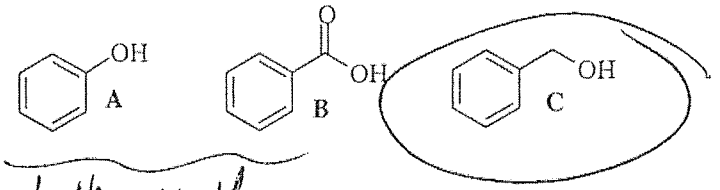
a. 

b. 

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

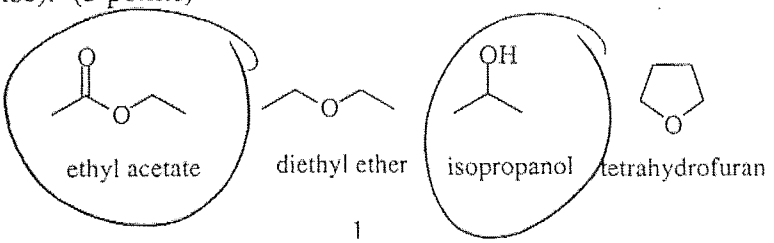
Na $NaNH_2$ NaOH CH_3MgBr

4. If an ether solution of the following three compounds was washed with $NaOH/H_2O$, which (if any) of the compounds would remain in the ether layer? Circle any that would. (3 points)

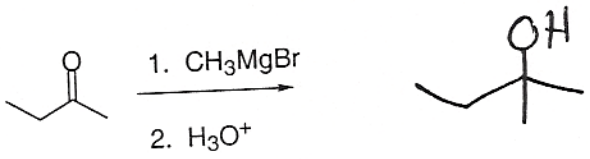


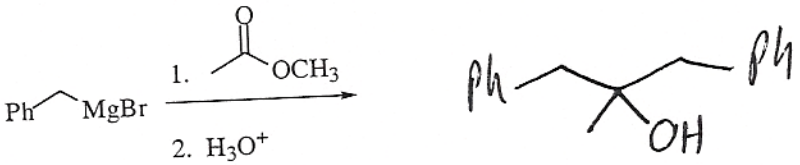
both would ionize, go to water layer

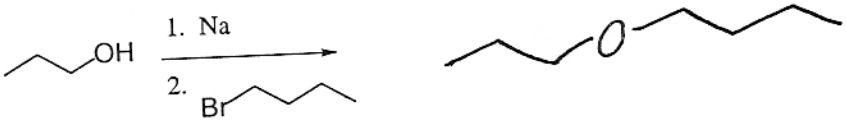
5. Of the following common solvents, circle those that are unsuitable as solvents for the preparation and reactions of Grignard reagents (assuming you want the Grignard reagent to react with something else). (3 points)

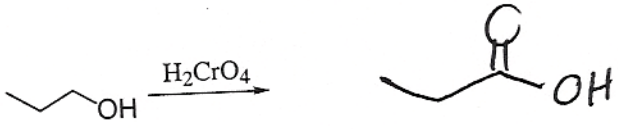


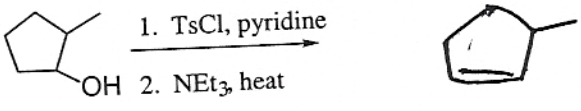
6. Give the major product of the following reactions. (3 points each)

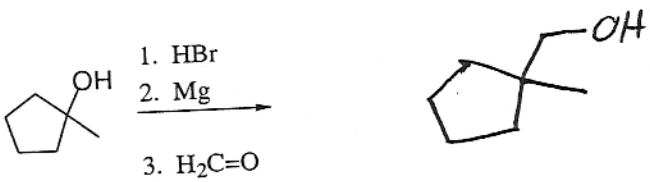




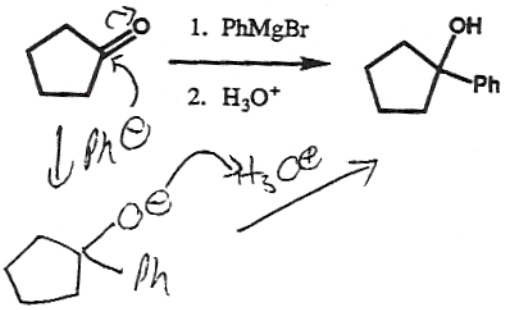


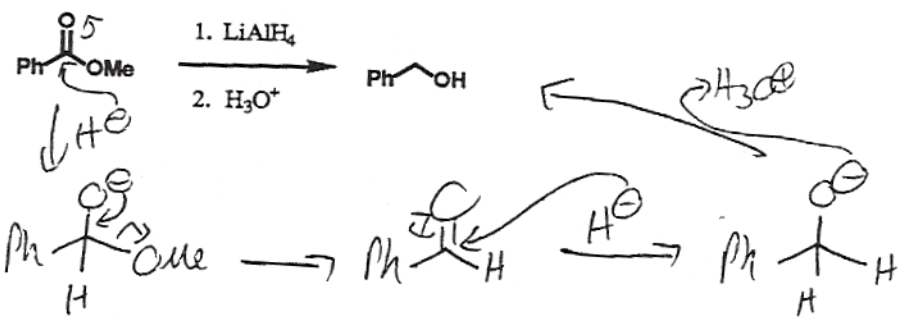


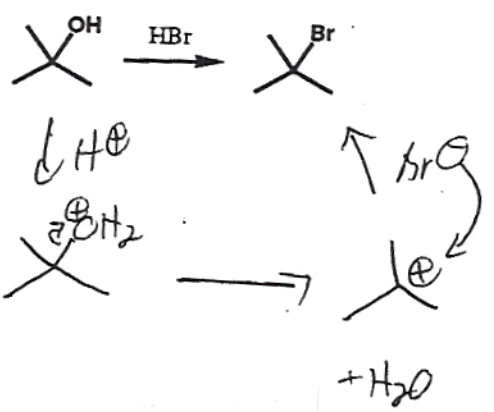




7. Draw mechanisms for the following reactions. (3, 5, and 5 points)

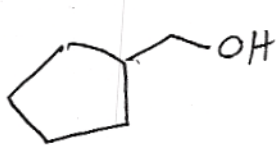




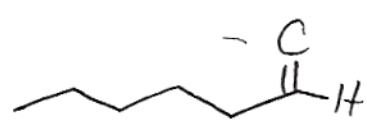


8. Suggest a possible structure for an unknown A whose formula is $C_6H_{12}O$, and gives the following chemical test results: (Double check that your answer is consistent with all the data) 5 pt

Formula:	$C_6H_{12}O$		EU=1
Hydrogenation Test	H_2/Pt	No reaction	NO alkene ⇒ ring
Chromic Acid Test	H_2CrO_4	Turns green	1° or 2° ROH
Lucas Test	$HCl/ZnCl_2$	No reaction	~~1° ROH~~

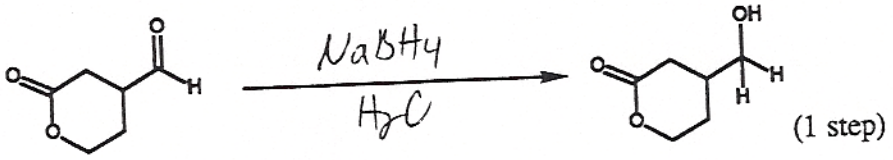


or

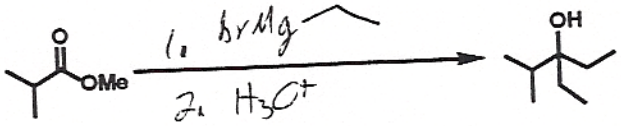


or something like that

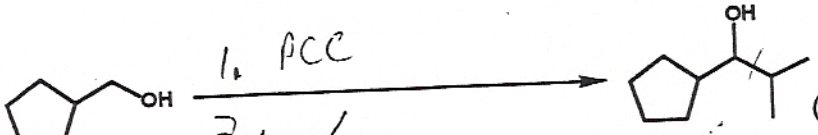
9. Provide reagents for the following transformations. ("workup" means H_3O^+ or H_2O steps)
(First two are 3 points each; last four are 5 points each)



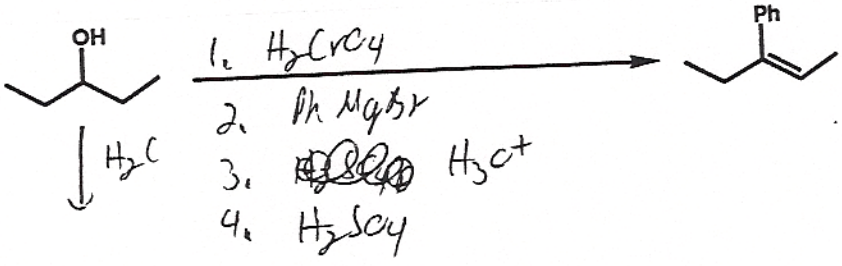
(1 step)



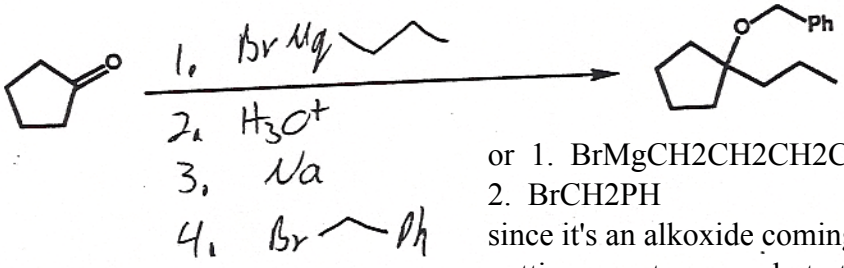
(2 steps, counting workup)



(3 steps, counting workup)

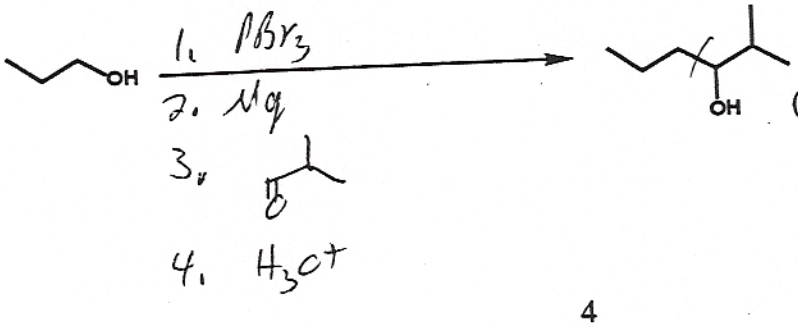


(4 steps, counting workup)



(4 steps, counting workup.)

or 1. BrMgCH2CH2CH2CH3
2. BrCH2PH
since it's an alkoxide coming out of the Grignard reaction, putting a proton on only to take it back off is redundant



(4 steps, counting workup)

10. Design syntheses for the following. Allowed starting materials (same as practice) include:
bromobenzene
cyclopentanol
any acyclic alcohol or alkene with ≤4 carbons
any esters
ethylene oxide
formaldehyde (CH_2O)
iodomethane
any "inorganic" agents (things that won't contribute carbons to your skeleton)

6 points each