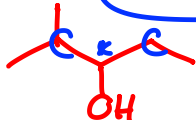


JASPERSE CHEM 360 TEST 1
Reactions involving Alcohols

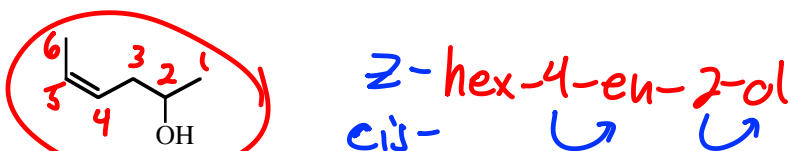
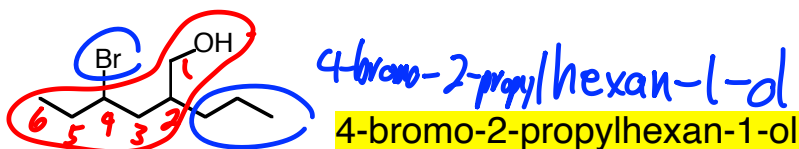
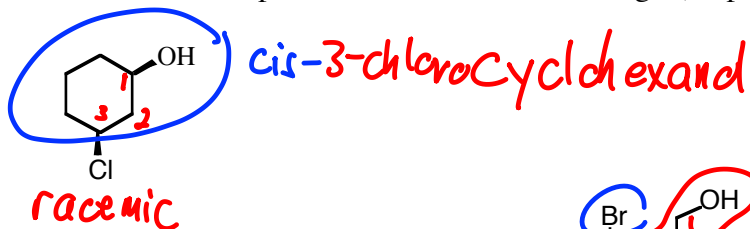
VERSION 3

1. 2-Methylpentan-3-ol is classified as: (3 points)

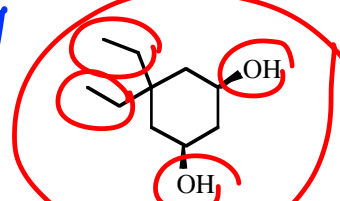
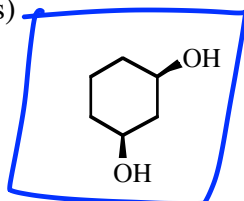
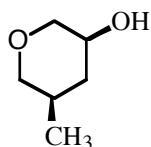
- a. a primary alcohol b. a secondary alcohol c. a tertiary alcohol d. none of the above



2. Provide acceptable names for the following: (10 points total)



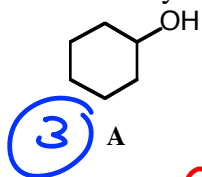
3. Circle the molecule with the highest boiling point. Put a square around the molecule with the highest water solubility. (4 points)



Extra C's raises bp

Max H-bonding, min C's
ideal for water.

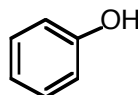
4. Rank the acidity of the following molecules, from 1 (strongest) to 4 (weakest). Explain very briefly why **A** and **B** have very different acidities.



H₂O

(2)

H₂O



CH₄

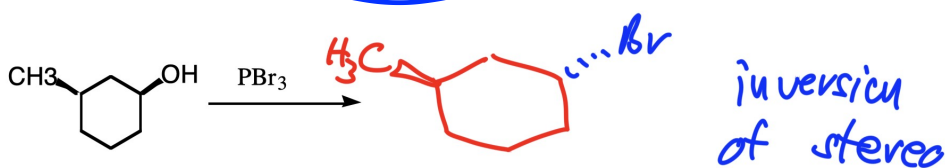
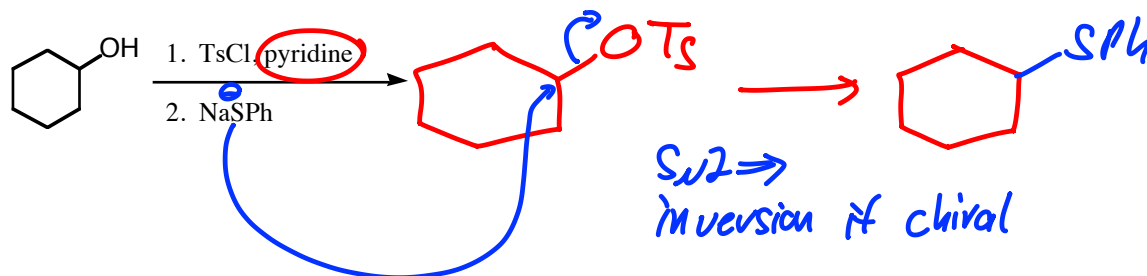
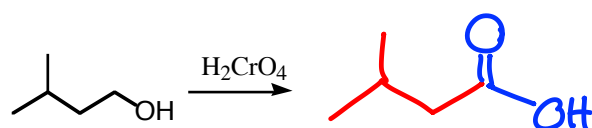
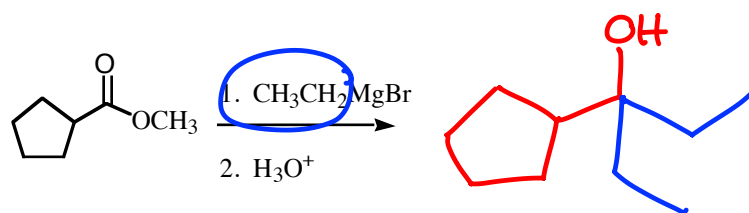
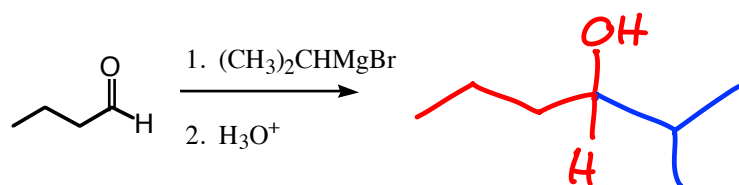
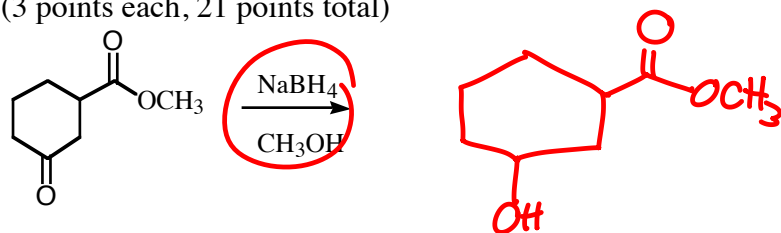
(4)

CH₃
=

Alcohol less acidic than water due to electron-donating effect of the alkyl group

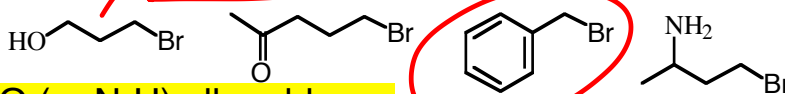
Phenols or acids are more acidic than water due to resonance stabilization

5. Draw the major products for the following reactions. (Assume excess quantities of reagents.)
(3 points each, 21 points total)



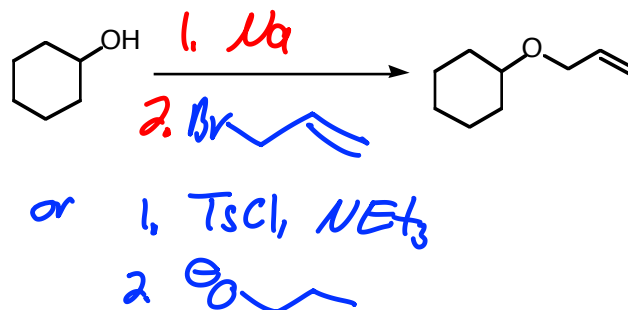
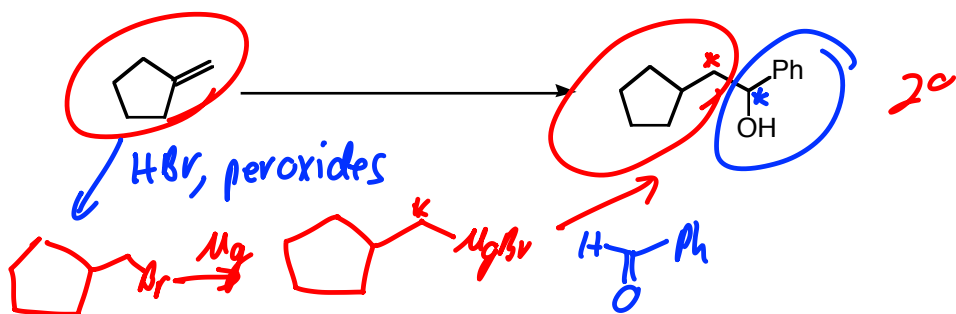
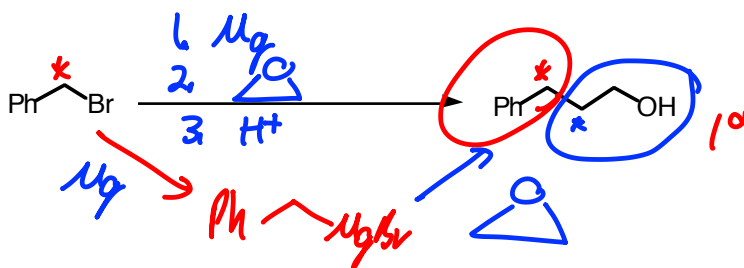
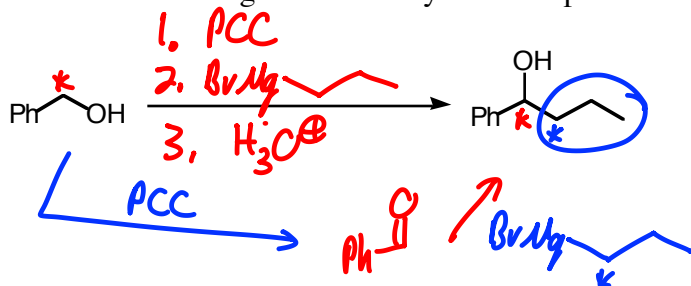


6. Which of the following would be suitable to use when forming a Grignard reagent? (3 points)



OH or C=O (or N-H) all problems for Grignard reagents.

7. Provide the reagents necessary to accomplish the following transformations (5 each, 20 total)

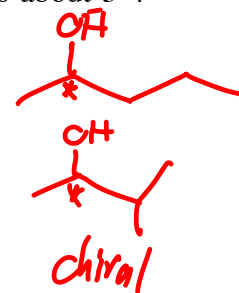
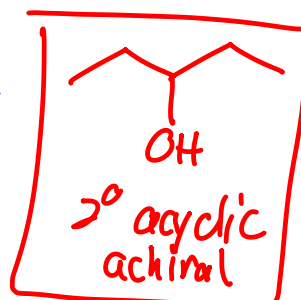


8. Draw a possible structure for an achiral molecule A with formula $C_5H_{12}O$, given that when H_2CrO_4 is added to A the solution turns green, and that the Lucas test with A takes about 3-4 minutes. (5 points)

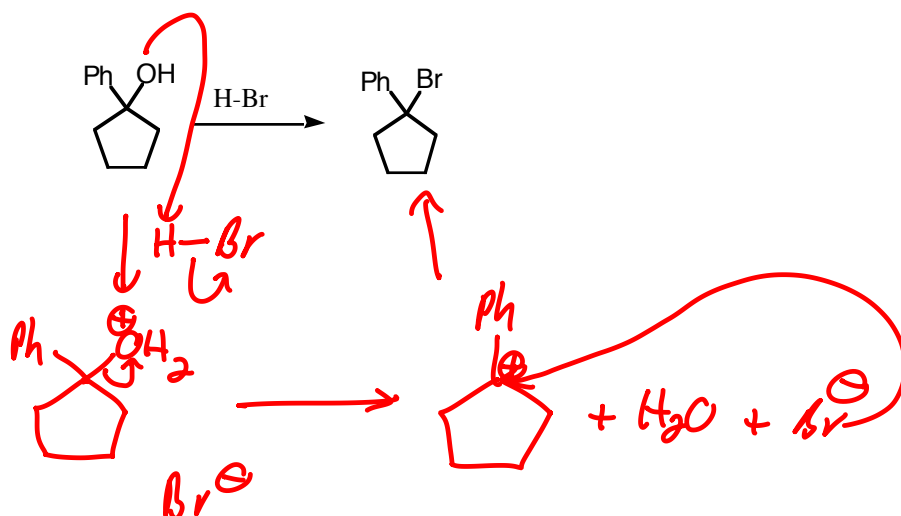
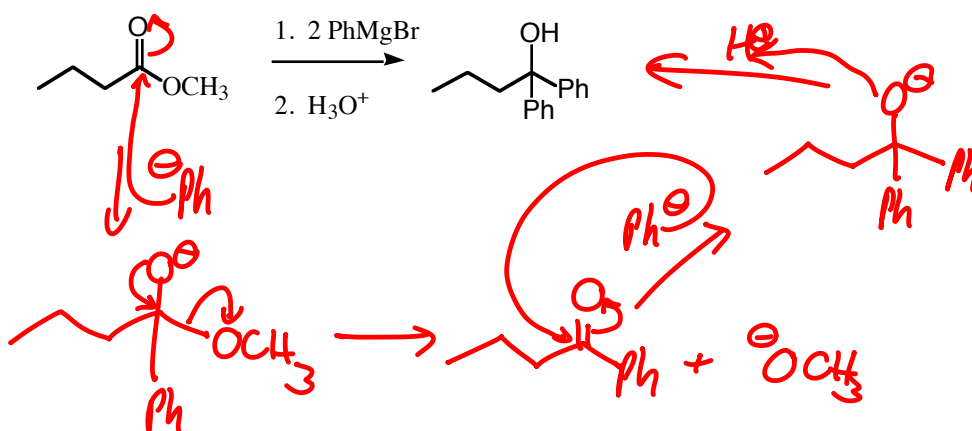
$$EU = 0$$

H_2CrO_4 positive \Rightarrow 1° or 2° alcohol

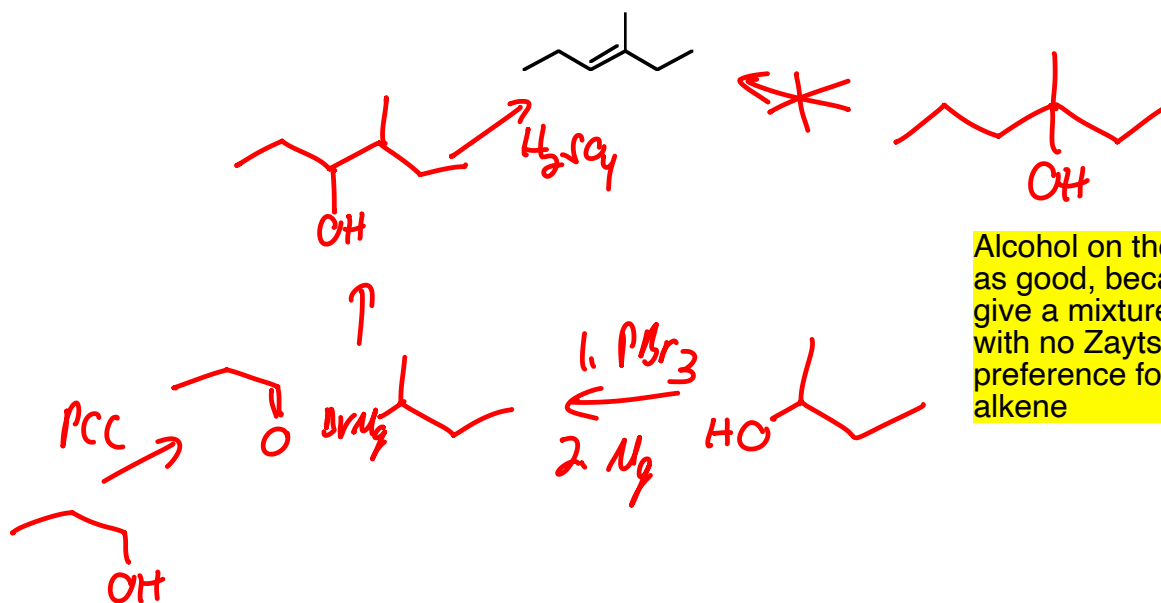
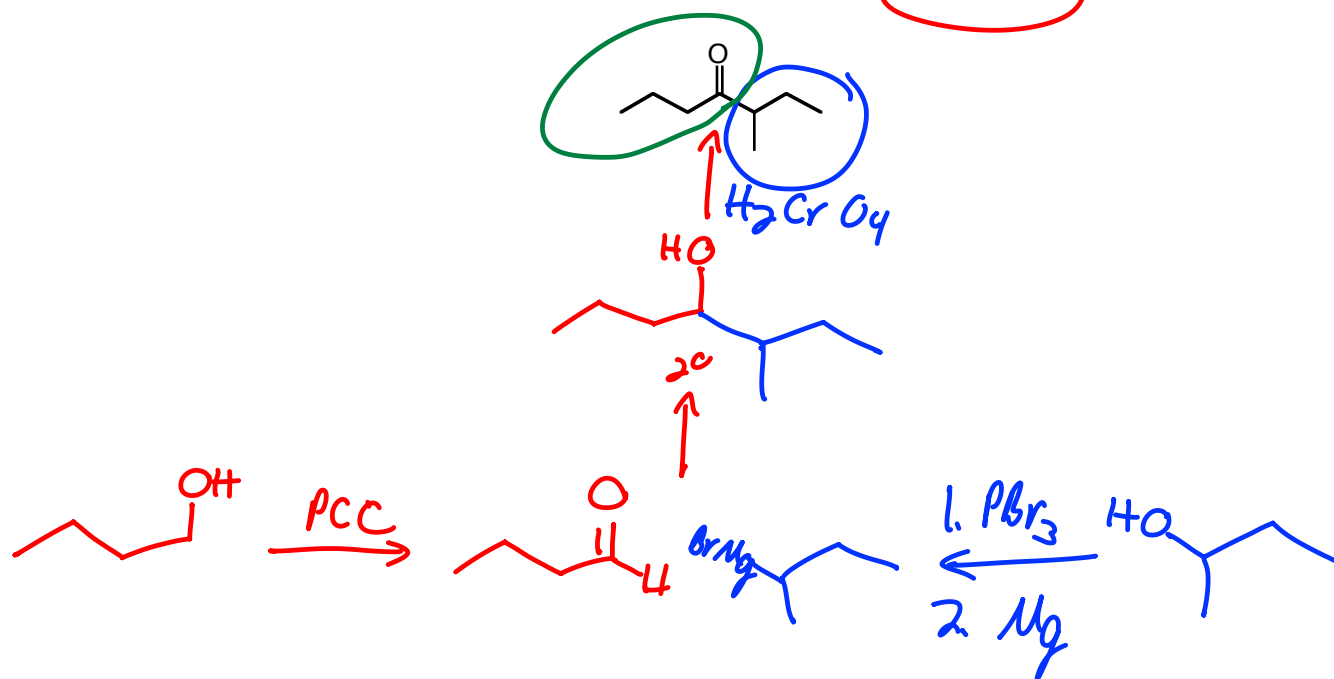
Lucas positive \Rightarrow 3° or 2°



9. Draw the mechanisms for the following transformations. Identify the slow step in each mechanism. (6 points each)



10. Design syntheses of the following, starting from alcohols of ≤ 4 carbons. (7 points each)



Alcohol on the right is not as good, because it would give a mixture of alkenes, with no Zaitsev preference for the desired alkene