

**Chemistry 212**

**Test 2** (Chapters 17, 18 & 19 & 16.7-16.8)

Name Answer Key

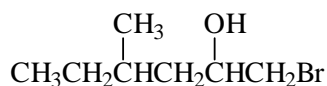
1 pm October 14, 2009 60 points

1. (2) Circle the species within each group that would have the lower value of the indicated property

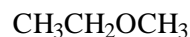
pK<sub>a</sub>: CH<sub>3</sub>OH or CF<sub>3</sub>OH

boiling point: CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>Cl or CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>OH

2. (2) Write the correct IUPAC name for each of the following (including the correct punctuation!):

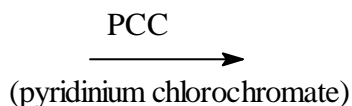
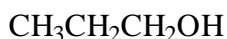
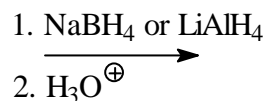
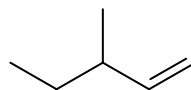
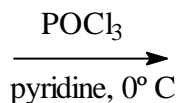
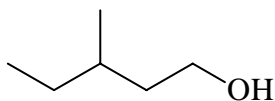
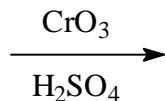
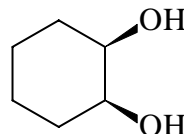
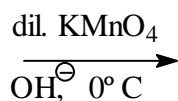
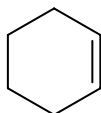
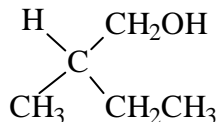
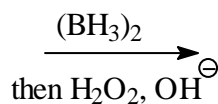
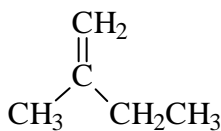
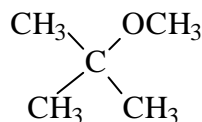
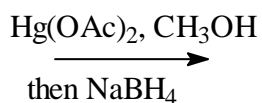
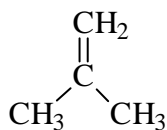


*1-bromo-4-methyl-2-hexanol*

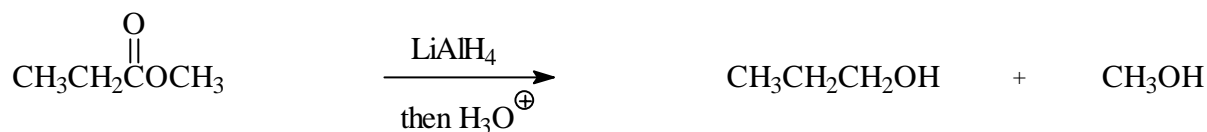
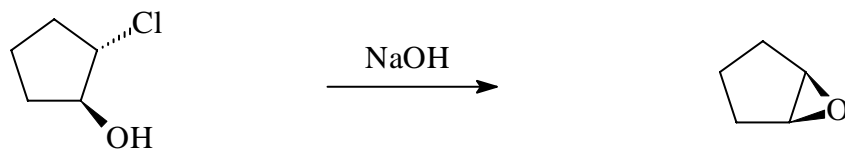
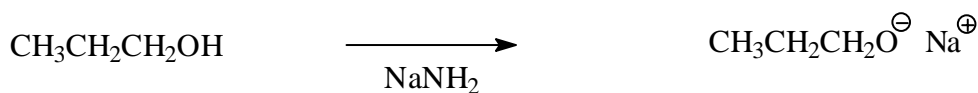
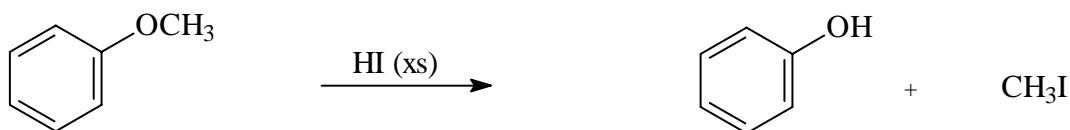
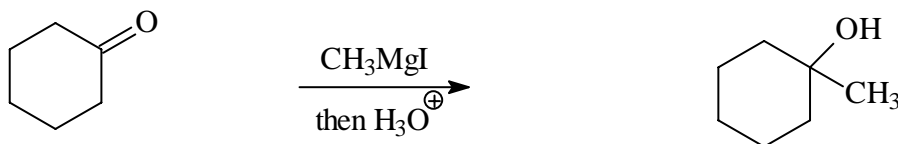
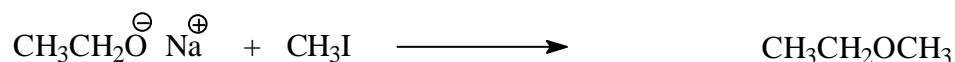
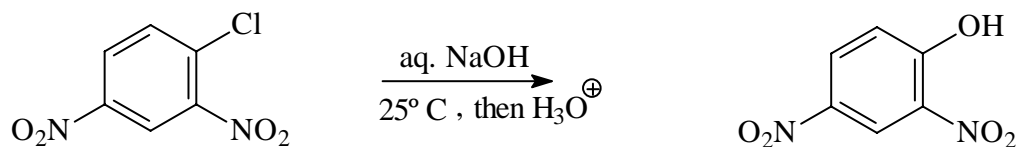


*ethyl methyl ether (or 1-methoxyethane)*  
(the 1 is optional)

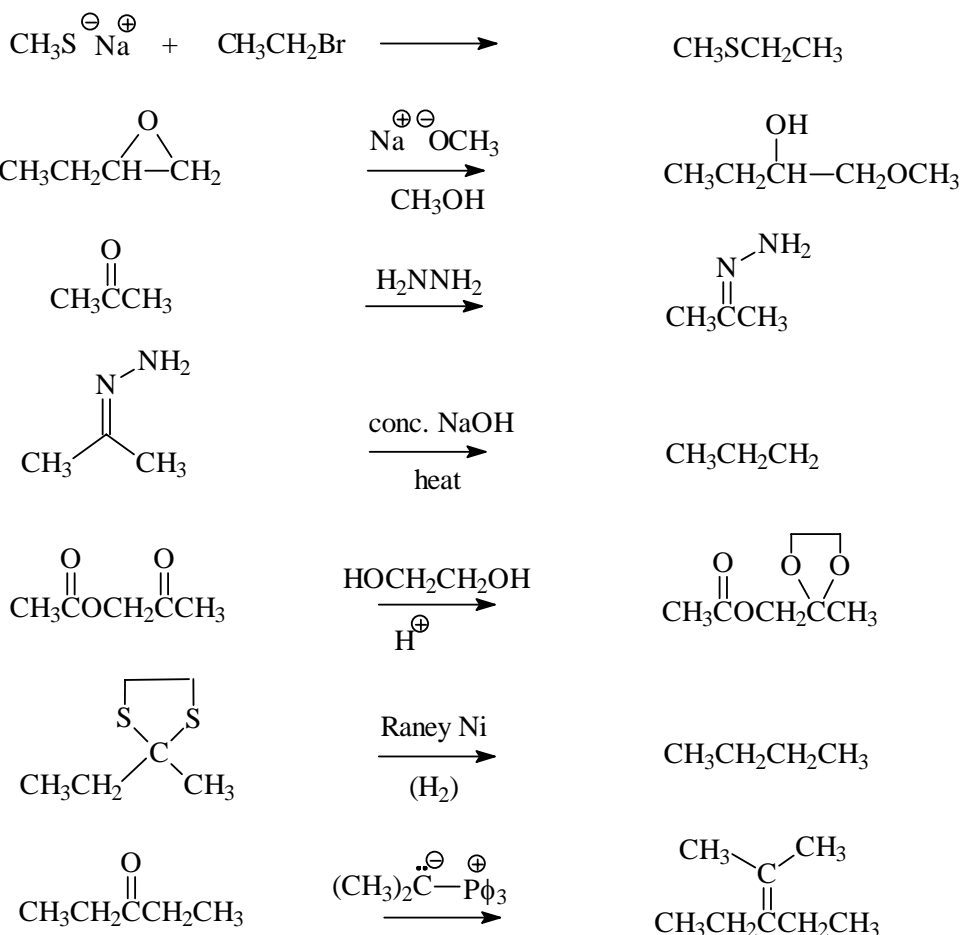
3. (14) Draw the structure of the major organic product of each of the following; if two products are formed in equal amounts, draw both products.



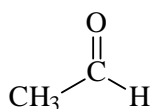
4. (18) Draw the structure of the major organic product of each of the following; if two products are formed in equal amounts, draw both products.



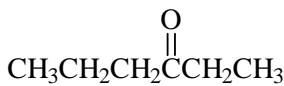
5. (14) Draw the structure of the major organic product of each of the following; if two products are formed in equal amounts, show both products.



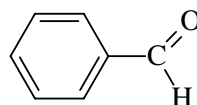
6. (4 points) Write the correct name under each of the following:



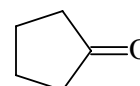
acetaldehyde



3-hexanone

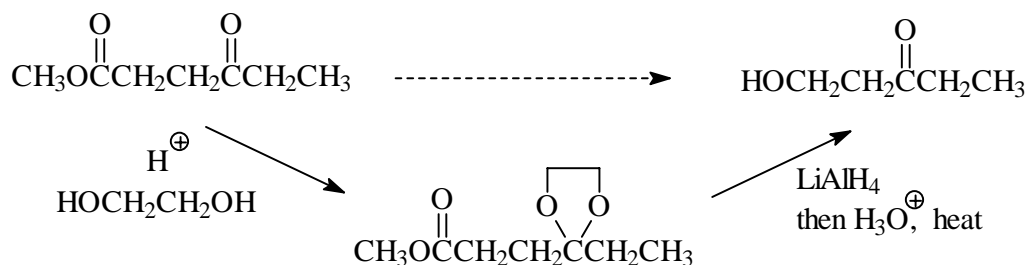


benzaldehyde



cyclopentanone

7. (3 points) Show how you could perform the following transformation. Be sure to indicate the reactants and conditions needed for each step, and draw the structure of the intermediate.



8. (3 points) Compound **J** ( $C_4H_8O$ ) is reduced to compound **K** ( $C_4H_{10}O$ ) using sodium borohydride ( $NaBH_4$ ). Compound **K** reacts with  $NaH$  (sodium hydride) to form an intermediate which then reacts with methyl iodide ( $CH_3I$ ) to give compound **L** ( $C_5H_{12}O$ ). The IR and proton NMR spectra of **J** are shown below. The proton NMR spectrum of **K** is also provided. Draw the correct structures of **J**, **K** and **L** next to the letters at the bottom of the page.

