

## Hw7(1): Alcohols, Phenols, Ethers

1. Explain the following terms:

(a) Solvation effect

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(b) Reducing agent

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(c) Oxidizing agent

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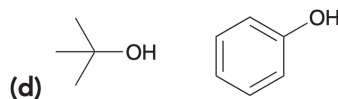
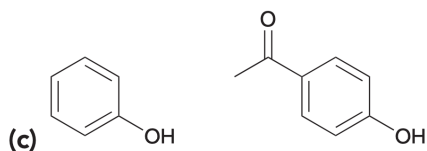
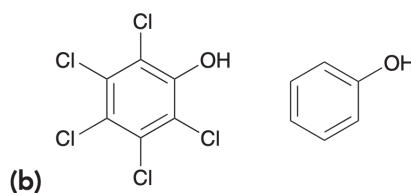
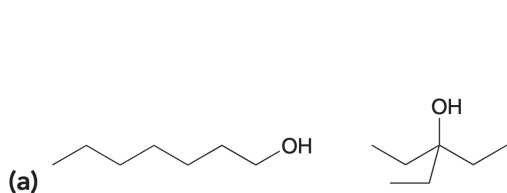
(d) Grignard reagent

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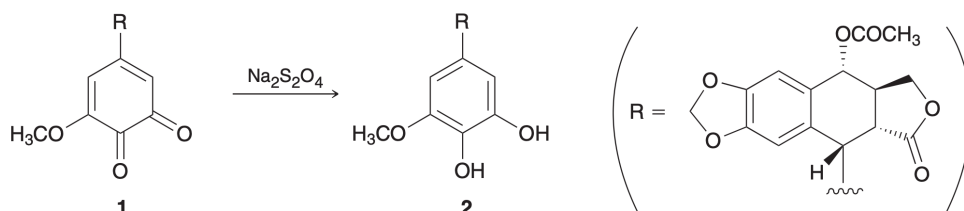
(e) Protecting group

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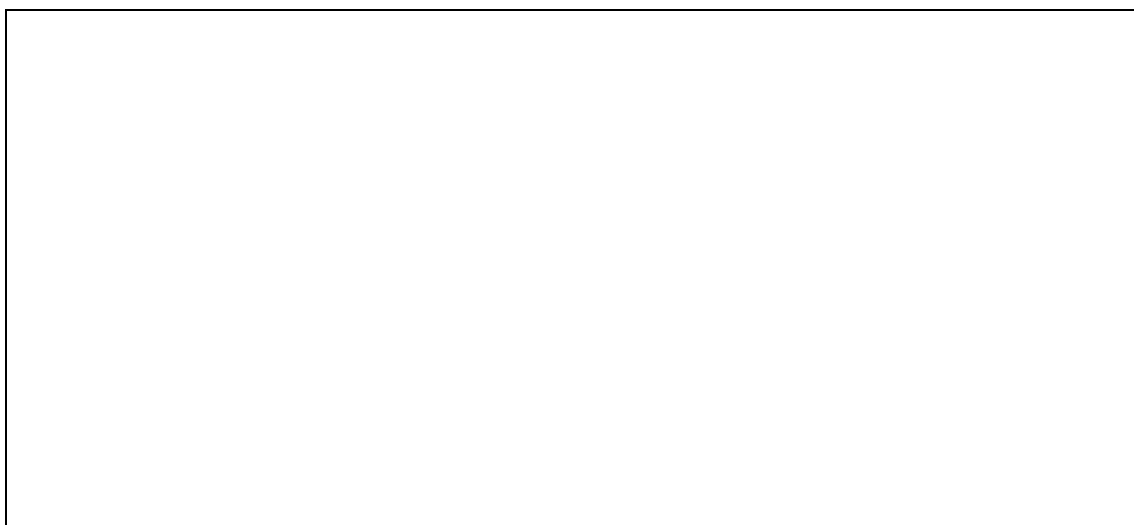
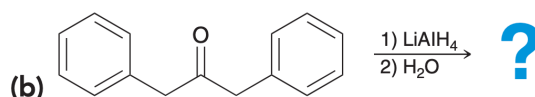
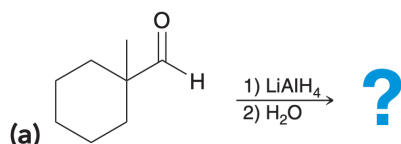
2. For each of the following pairs of alcohols, identify the one that is more acidic and explain your choice:

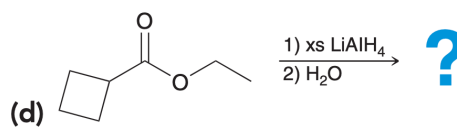
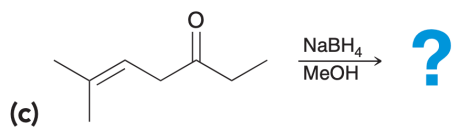


3. Compound **1** was converted into compound **2** and both compounds were evaluated for their cytotoxicity (ability to kill cells). It was observed (*Eur. J. Med. Chem.* **2003**, *38*, 899–911.) that compound **2** was four to ten times less cytotoxic than compound **1**. Determine whether the ring has been oxidized, reduced, or neither in this reaction. Try to determine the answer first by intuition and then use calculations to see if your intuition was correct.

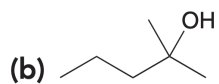
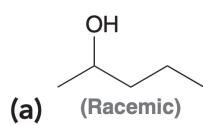


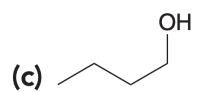
4. Draw a mechanism and predict the major product for each reaction:



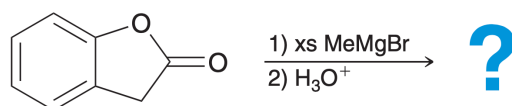


5. Show how you would use a Grignard reaction to prepare each compound below:

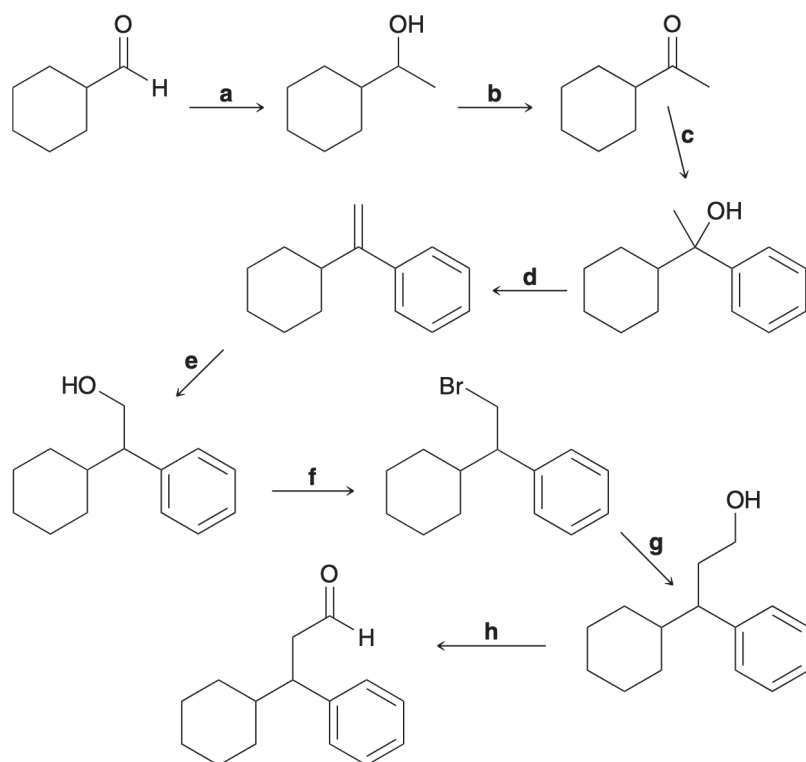




6. **(Challenge)** Draw a mechanism and predict the product for the following reaction. In this case,  $\text{H}_3\text{O}^+$  must be used as a proton source instead of water. Explain why.



7. Consider the following sequence of reactions and identify suitable reagents for **a–h**:



8. Identify reagents that can be used to accomplish each of the transformations shown here:

