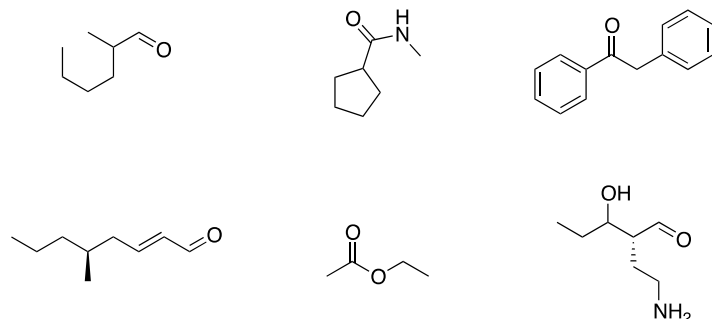


Problems - Set 3: Carbonyl compounds (part 1)

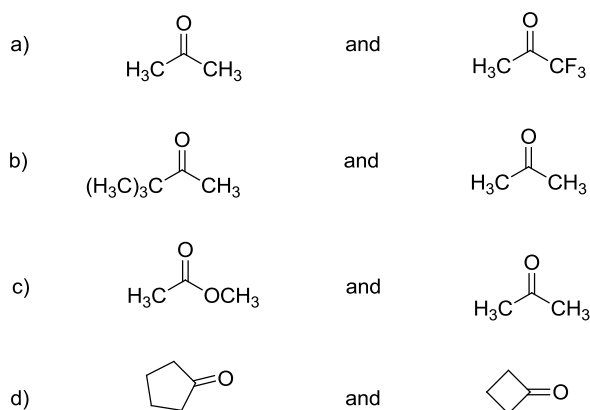
Problem 1

Give the IUPAC name of the following compounds



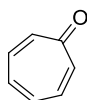
Problem 2

Arrange the following pair of compound in order of expected reactivity toward addition of common nucleophilic agent such as hydroxide ion to the carbonyl bond. Indicate your reasoning?



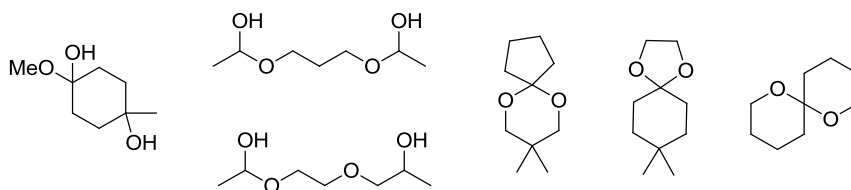
Problem 3

The ketone tropone (below) is exceptionally basic in character, forming much more stable salt with HCl than simple ketone? How can this be explained.



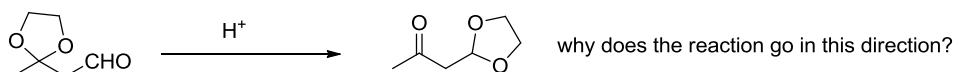
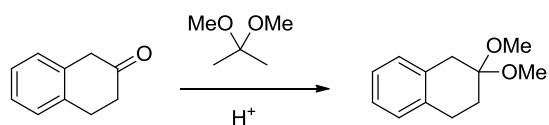
Problem 4

Each compound is a hemi(a)cetal or an (a)cetal. Draw the compounds used to make them and write mechanism for their formation.



Problem 5

How are the following (a)cetals formed, even though no alcohols are present? For the first reaction, a compound must be distilled from the reaction mixture if it is to go to completion. What is this compound and why it is necessary?



Problem 6

a) Cyclopropanone exists as the hydrate in water but 2-hydroxyethanal does not exist as its hemiacetal. Explain?



b) The triketone shown below is called **ninhydrin** and is used for the detection of amino acids. It exists in aqueous solution as a monohydrate. Which carbonyl group of the three ketones is hydrated and why?

