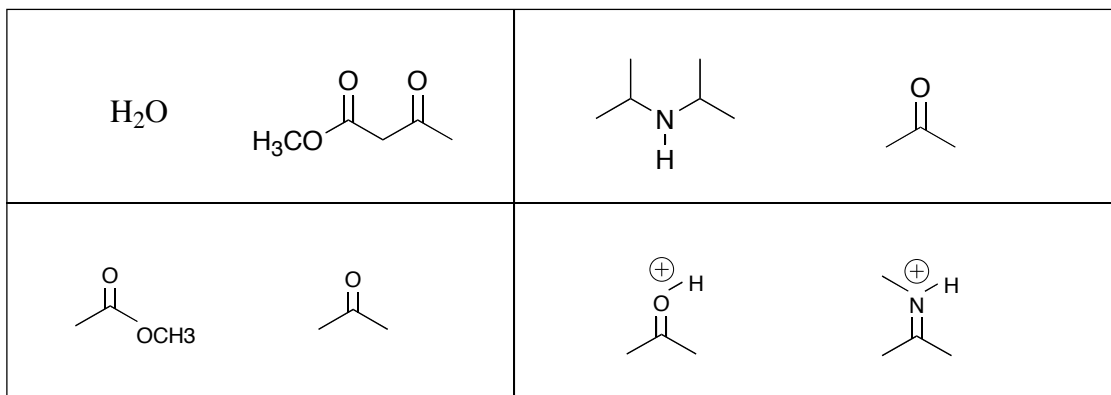
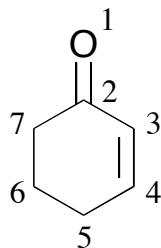


Name: _____

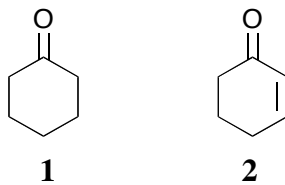
1) (25 pts) a) Circle the stronger Brønsted acid for each of the following pairs of compounds.



b) Indicate all of the electrophilic atoms in cyclohexenone using the atom numbering shown.



c) Which carbonyl compound is more stable, cyclohexanone (**1**) or cyclohexenone (**2**)?

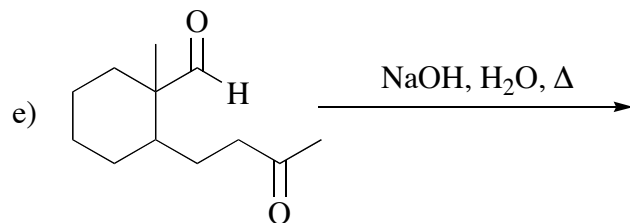
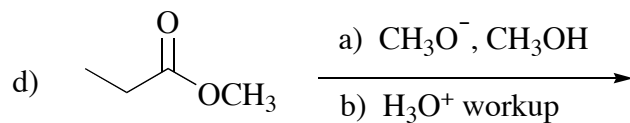
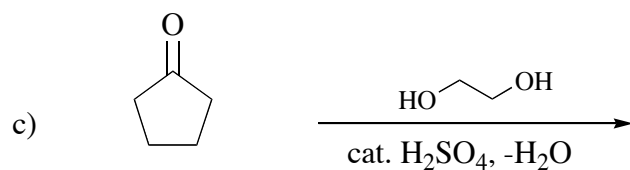
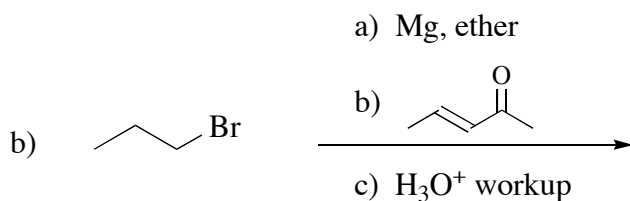
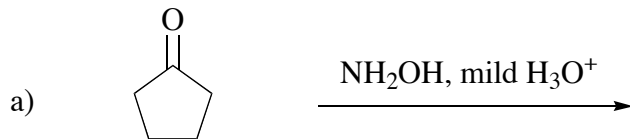


d) Complete the drawing showing the most important resonance contributors to the structure of cyclohexenone.



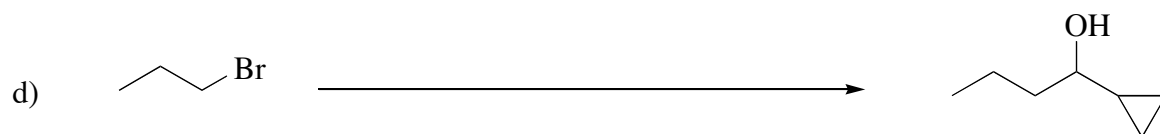
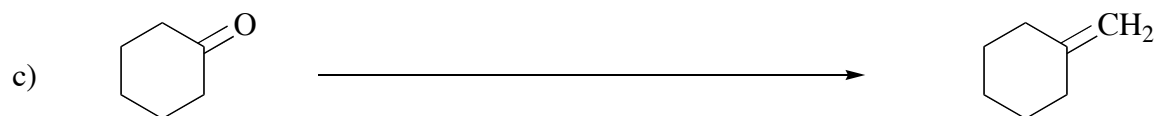
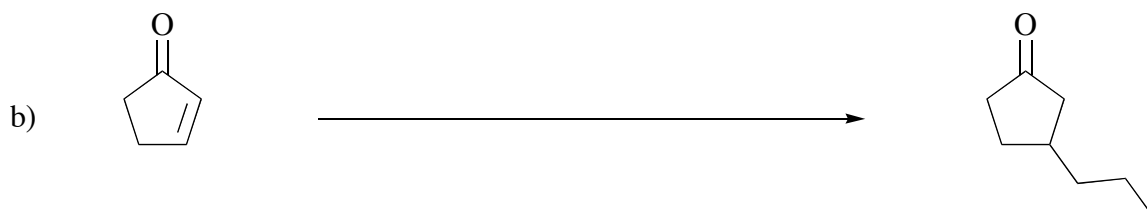
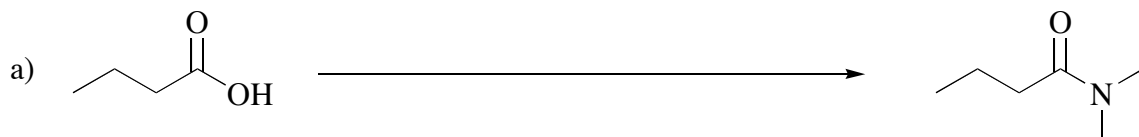
Name: _____

2) (25 pts) Give the single major product of each of the following reactions (ignore stereochemistry for this question).



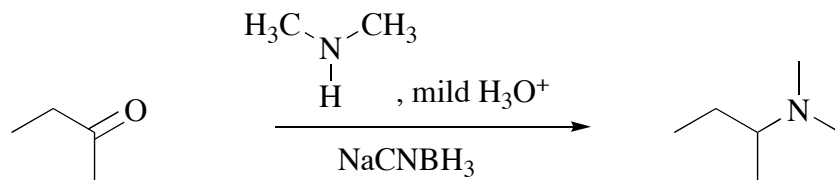
Name: _____

3) (25 pts) Propose reagents for accomplishing the following transformations. NOTE: more than one step may be required! Try to make your synthesis efficient (i.e. the desired product should be the major product, and generally a shorter synthesis is better than a longer one). For this question, you may use any organic or organometallic reagent you need. For example, if you need a Grignard reagent, you can use it without showing how to make it.



Name: _____

4) (25 pts) a) Propose an arrow-pushing mechanism for the following transformation. Please be sure to show all the intermediates in your mechanism, but do not show transition states. You can use any single valid valence bond structure for your intermediates.



Name: _____

(4) – continued

b) Propose reagents for accomplishing the following transformation.



c) Propose an arrow-pushing mechanism for the following transformation.

