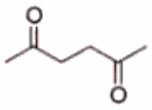
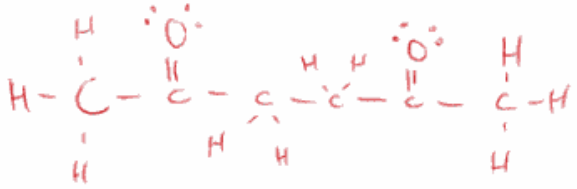
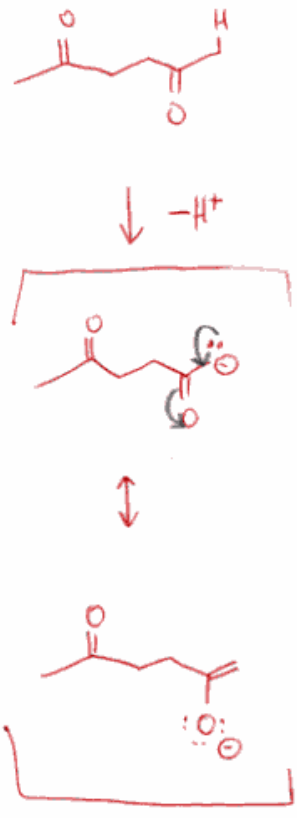
Mechanisms Quiz #2 **20 points** NAME:_____

1) Draw a correct Lewis structure (showing all hydrogens and including all lone pairs) for the molecule below.



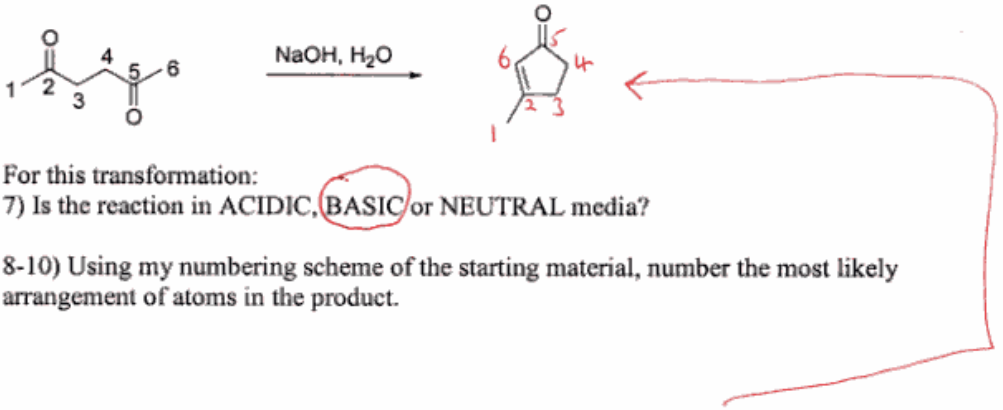


2-6) For the above compound briefly justify why the removal of a Proton from a CH_2 leads to a more stable anion (enolate) than removal of a Proton from a CH_3.



Both lead to resonance stabilized anions, however the R.H.S. enolate has the more highly substituted C=C and is therefore more stable.

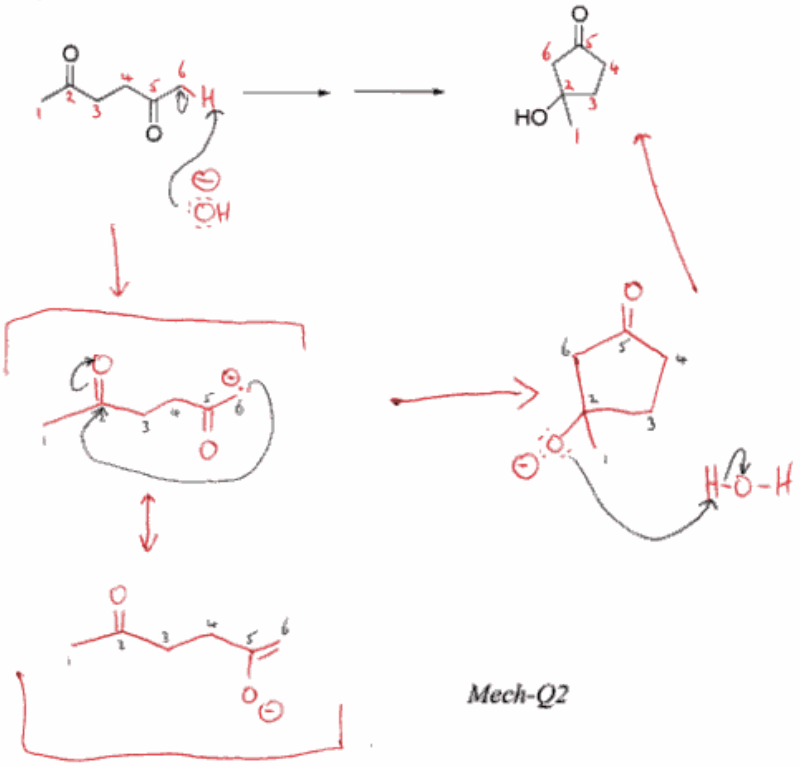
When exposed to the below reaction conditions, this diketone will cyclize to the α,β-unsaturated ketone as shown.



For this transformation:
7) Is the reaction in ACIDIC, BASIC or NEUTRAL media?

8-10) Using my numbering scheme of the starting material, number the most likely arrangement of atoms in the product.

The mechanism of product formation consists of two parts. Part one is anion formation, followed by ring closure, and part two is dehydration.
11-17) Removal of the most acidic proton in this case, does NOT lead to product formation, but removal of a different proton leads to an anion which can do an intramolecular nucleophilic addition to one of the ketone functionalities.
Using this information, and your numbering scheme, write a good mechanism for the 1st part of this transformation.



18-20) In the second part, the cyclic β-hydroxyketone then undergoes a dehydration to yield the product. Bearing in mind the reaction medium, write a good mechanism for formation of the final product.

Basic conditions so $\bar{O}H$ is an acceptable leaving group