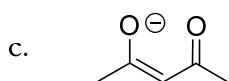
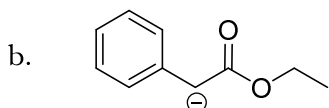
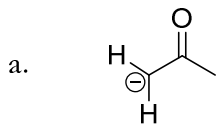


Experiment 41

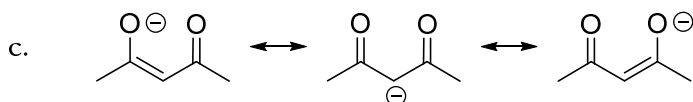
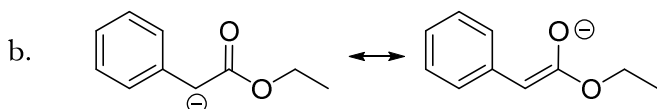
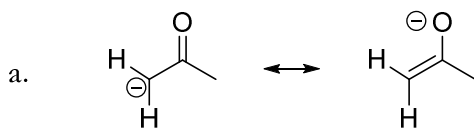
Synthesis of Frambinone by Aldol Condensation and Catalytic Hydrogenation

Study Questions

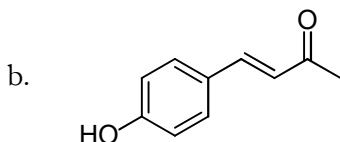
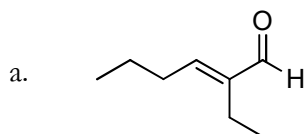
1) Draw the resonance structures for the following enolate ions:



Answer:

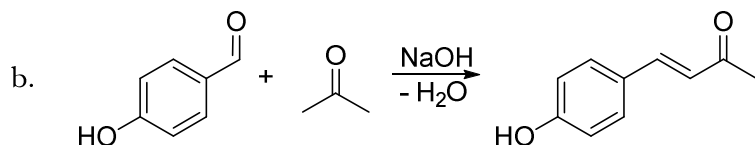
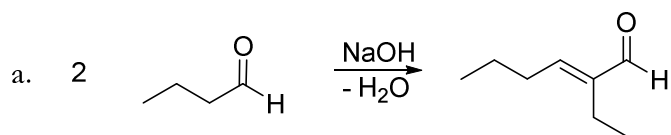


2) Using an aldol or crossed aldol condensation, suggest a synthesis of the following compounds:

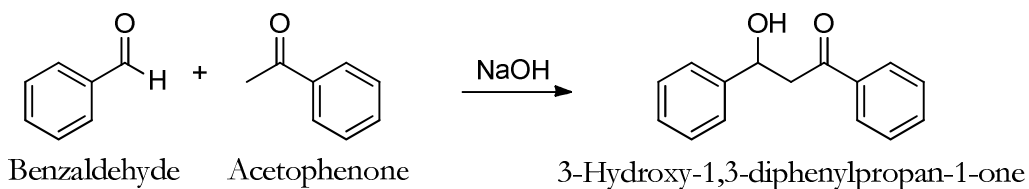


Answer:

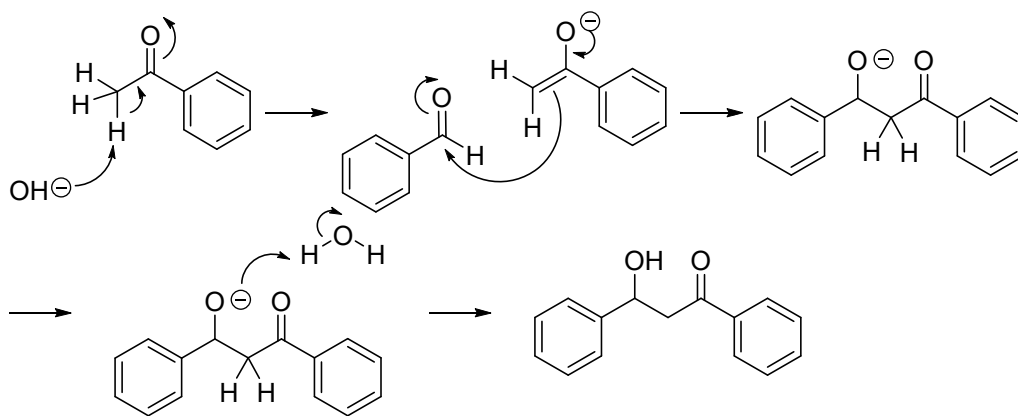
Experiment 41: Synthesis of Frambinone



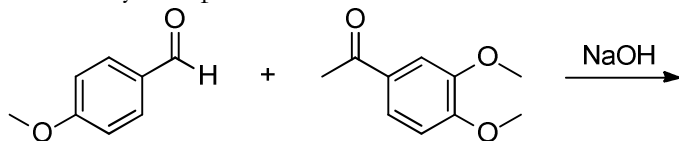
- 3) Draw the mechanism for the formation of 3-hydroxy-1,3-diphenylpropan-1-one from benzaldehyde and acetophenone.



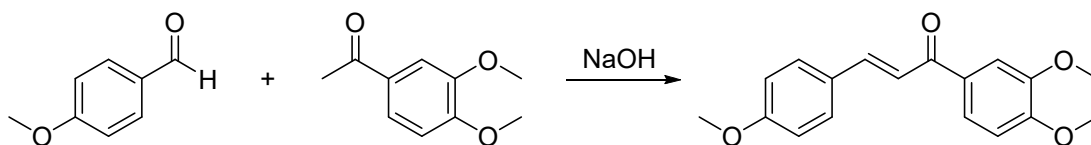
Answer:



- 4) Draw the structure of the product formed from the aldol reaction between p-anisaldehyde and 3,4-dimethoxyacetophenone.



Answer:



- 5) What is a catalyst? What is its role in a reaction? **Answer:** A catalyst is not consumed in the reaction; it increases the rate of a reaction without being consumed.
- 6) Usually a catalyst is used in substoichiometric amounts (i.e., 5 mol%), however, sometimes a catalyst is used in stoichiometric amounts (i.e., 1 molar equivalent). In such a case, is it still a catalyst? **Answer:** Yes, as long as it is not consumed.
- 7) During the workup of the catalytic hydrogenation step, the methanol solution of the crude product is rotovapped down, and then water and ether are added to perform an extraction. Would it be possible to leave the product dissolved in methanol and perform an extraction by simply adding water? Why or why not? **Answer:** No, water and methanol are miscible, so they would not separate into layers.

Experiment 41: Synthesis of Frambinone