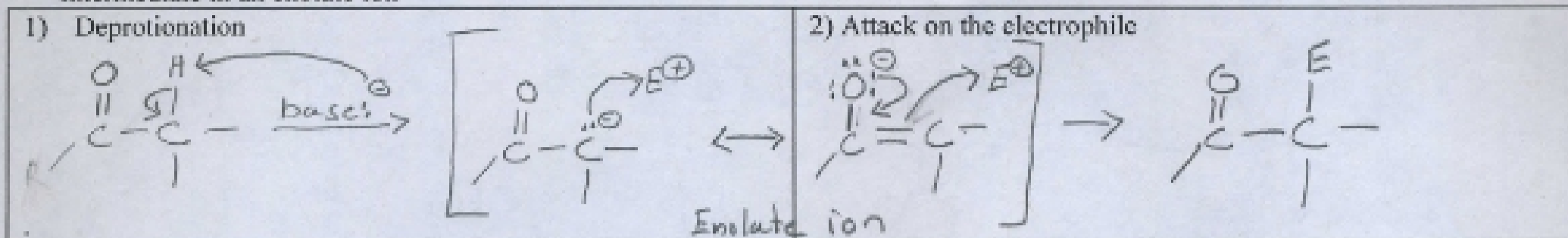
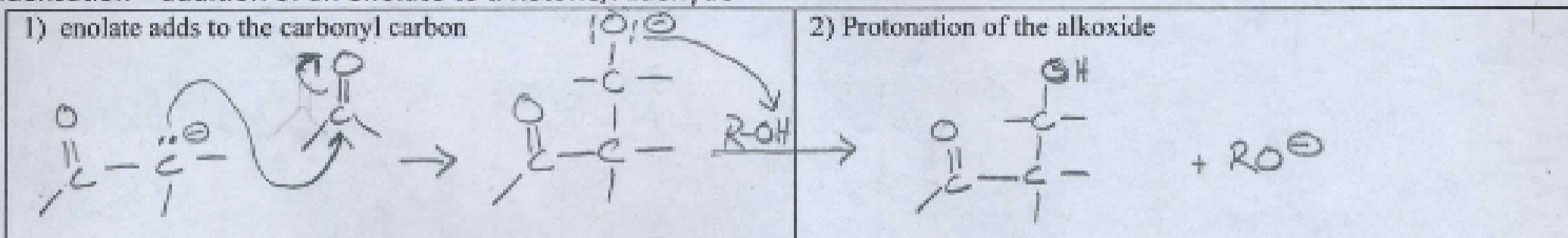


$\alpha$ -Substitution - the carbon next to the carbonyl carbon loses an H and is replaced with an electrophile

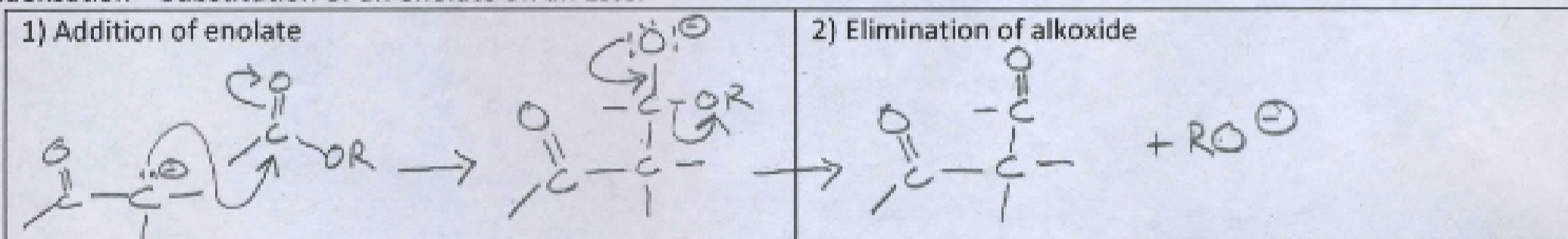
- Intermediate in an enolate ion



Condensation - addition of an enolate to a Ketone/Aldehyde

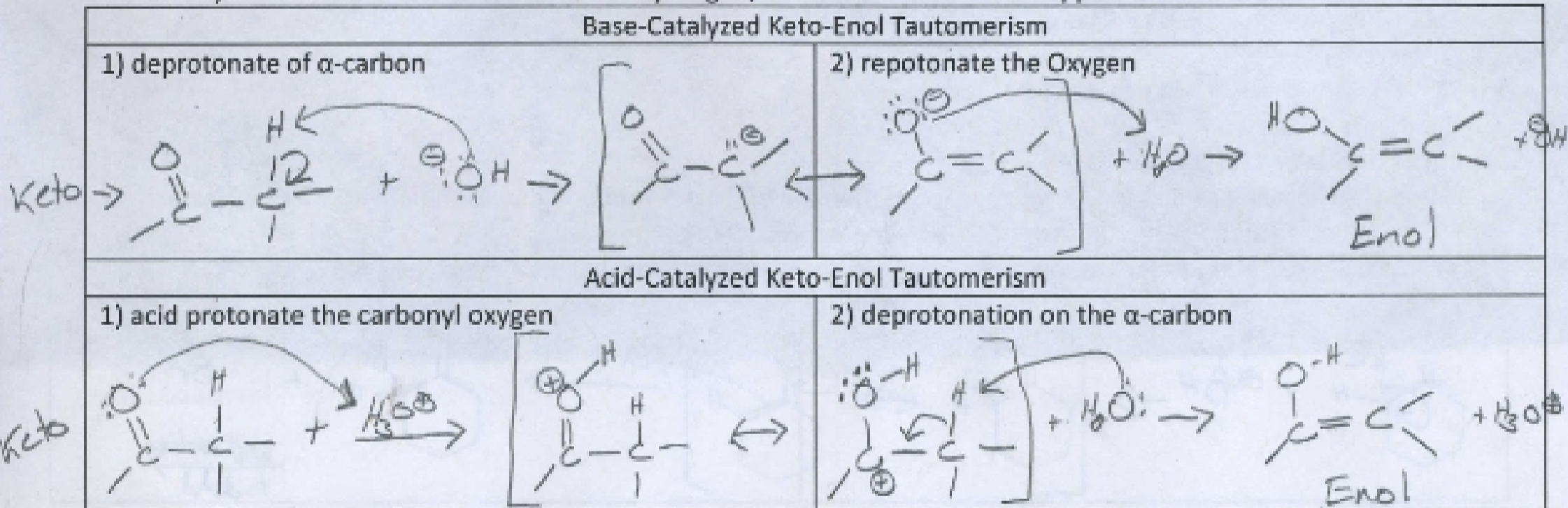


Condensation - Substitution of an enolate on an Ester



Keto-Enol Tautomerism

- Isomers that only differ in H placement - can be interconverted
- Keto form is generally favored at equilibrium
- When you have more than one enolizable hydrogen, a racemic mixture will happen



Acidity of  $\alpha$ -Hydrogens

- Greatly increased due to the resonances-stabilized enolate ion
- Comparable Acidity
  - Water pKa - 15.7
  - Alcohol pKa - 16-19
  - $\alpha$ -H of aldehyde or ketone pKa - 20
  - H of alkane or alkene pKa - 40, alkyne pKa - 25
- When an enolate ion reacts with an electrophile the equilibrium will shift to the right
  - Use an ultra strong base is needed, LDA lithium diisopropylamide