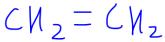


$\text{NaOH(aq)}$   
reflux

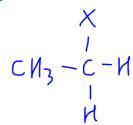
$\text{NaBH}_4(\text{aq})$ , r.t.  
or 1.  $\text{LiAlH}_4$ , dry ether  
2.  $\text{H}_2\text{O}$ , r.t.  
 $\approx \text{H}_2(\text{g})$ , Pt, heat



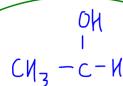
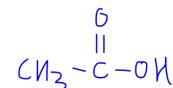
1. conc  $\text{H}_2\text{SO}_4$ , r.t.  
2.  $\text{H}_2\text{O}$ , heat  
OR  
 $\text{H}_2\text{O(g)}$ , conc  $\text{K}_3\text{PO}_4$   
 $350^\circ\text{C}$ , 70 atm

conc  $\text{H}_2\text{SO}_4$   
 $170^\circ\text{C}$   
OR  
 $\text{Al}_2\text{O}_3$   
heat

$\text{PCl}_5$  or  $\text{SOCl}_2$   
anhydrous, r.t  
 $\text{HBr}$  or  $\text{PBr}_3$   
warm

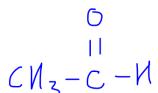
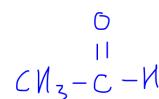


$\text{KMnO}_4$  or  $\text{K}_2\text{Cr}_2\text{O}_7$   
dil  $\text{H}_2\text{SO}_4$ , heat or reflux

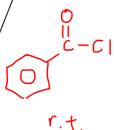
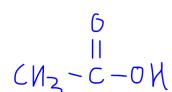


$4\text{P} + 8\text{R}$

$\text{K}_2\text{Cr}_2\text{O}_7$ , dil  $\text{H}_2\text{SO}_4$   
reflux with immediate distillation



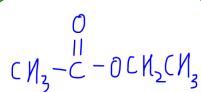
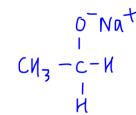
1.  $\text{LiAlH}_4$ , dry ether  
2.  $\text{H}_2\text{O}$ , r.t.



r.t.

$\text{Na(s)}$   
r.t.

$\text{I}_2$   
 $\text{NaOH(aq)}$   
warm



$\text{CH}_3 - \text{C} - \text{OH}$   
conc  $\text{H}_2\text{SO}_4$ , reflux

or  $\text{CH}_3 - \text{C} - \text{Cl}$ , r.t.

