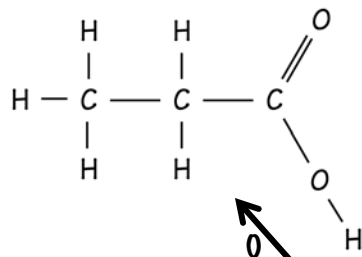


## CARBOXYLIC ACID

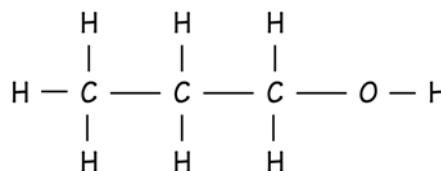


UI – orange  
Litmus – red  
Weak acid  $\approx \text{pH}4$

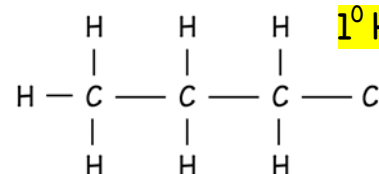
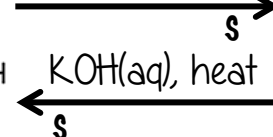
UI – blue  
Litmus – blue  
Weak alkali  $\approx \text{pH}10$

$\text{H}^+/\text{MnO}_4^- (\text{aq}), \text{heat}$  OR  
 $\text{H}^+/\text{Cr}_2\text{O}_7^{2-} (\text{aq}), \text{heat}$

## 1° ALCOHOL

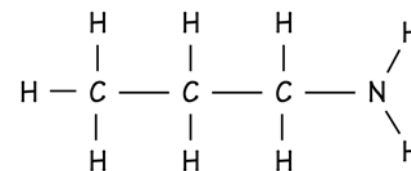


$\text{SOCl}_2$



## 1° HALOALKANE

$\text{NH}_3 (\text{alc}), \text{heat}$



## AMINE

## TYPES OF REACTION

O : oxidation

E : elimination C-C becomes C=C

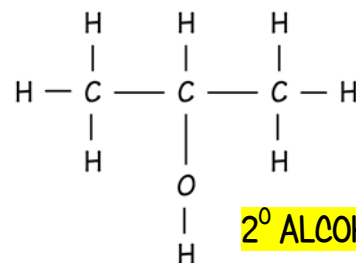
S : substitution C-C remains C-C

A : addition C=C becomes C-C

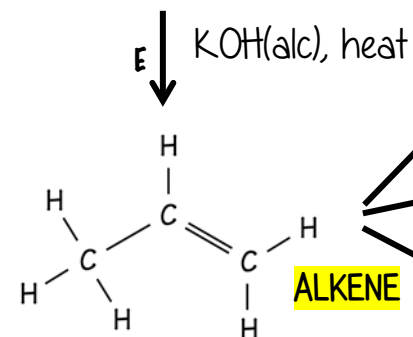
Minor  
Major

$\text{H}^+/\text{H}_2\text{O}, \text{heat}$

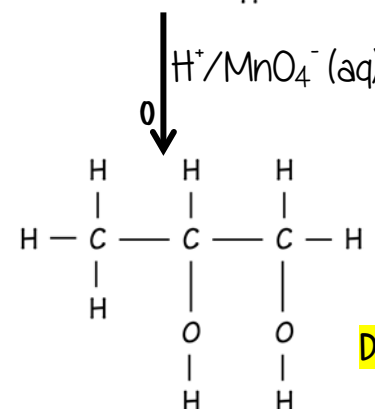
Conc.  $\text{H}_2\text{SO}_4, \text{heat}$



## 2° ALCOHOL



## ALKENE



## DIOL

And many other addition reaction e.g. with  $\text{Br}_2$ ,  $\text{HBr}$  etc as well as with more propene (polymerisation)