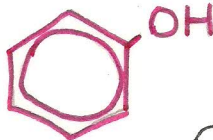


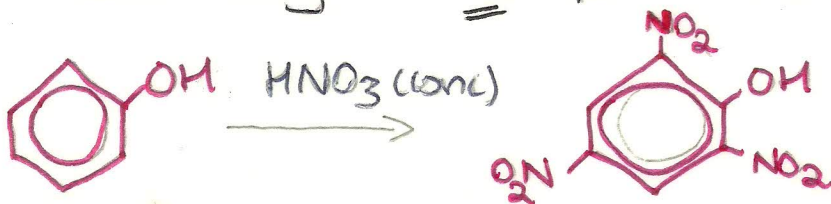
**PHENOL**



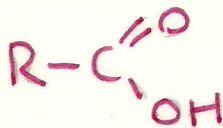
electrophilic substitution

Test for Phenols:  
 Add Iron(III) - chloride  $\rightarrow$  Purple colour.

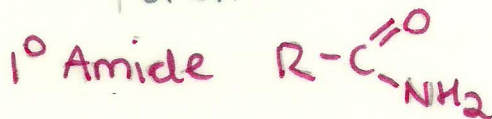
All reactions of **ARENES** but intensified by presence of -OH group. Multiple substitutions are likely. i.e for Nitration



Carboxylic Acid



Hydrolysis  $\uparrow$   $H_2O/H^+$   
or  $OH^-$



+  $NH_3$

careful!  
 $NH_3$  will  
attack  $-OH$   
group

Carbon chain  
Extension

Hydrolysis  $\uparrow$   $H_2O/H^+$   
or  $OH^-$

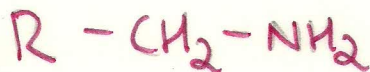
**NITRILE**



Reduction



1° Amine

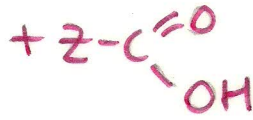
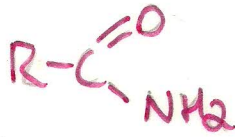
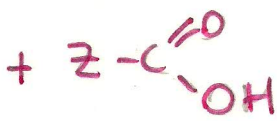
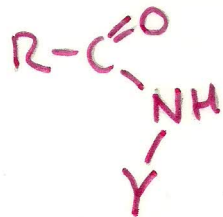


N.B  $-CN$

and  $CN^-$

are:



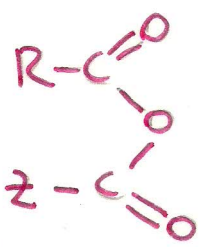
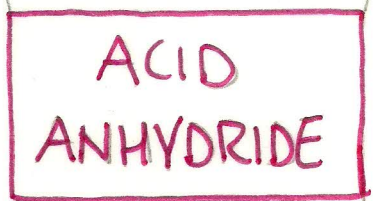


2° Amide

1° Amide

nucleophilic substitution

nucleophilic substitution



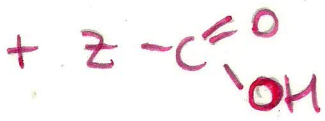
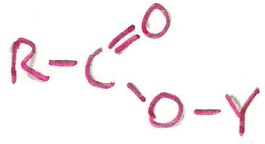
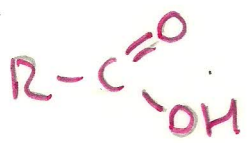
nucleophilic substitution

nucleophilic substitution



Carboxylic Acids

Ester



ACID ANHYDRIDES can be used as an alternative to ACYL CHLORIDES

