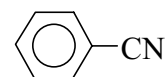
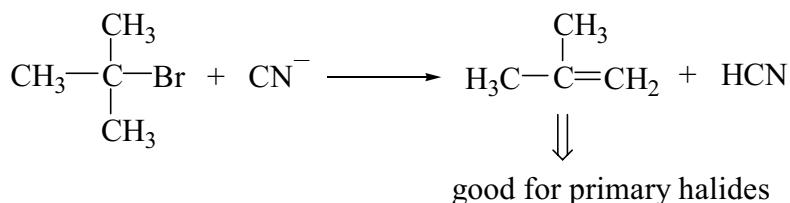
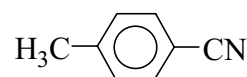


CH₃CN
acetonitrile
(ethanenitrile)



benzonitrile



p-tolunitrile

irreversible rxn : relationship between structure and rate

reversible rxn : relationship between structure and equilibrium

$$\Delta G^\circ = \Delta H^\circ - T\Delta S^\circ \iff \Delta G^\circ = -2.3RT \log K_{eq} \iff K_{eq}$$



instead of ΔG° , ΔH is considered.



so long as closely related compds are compared, the differences in ΔH are proportional to those in ΔG° .

ex) acidity of

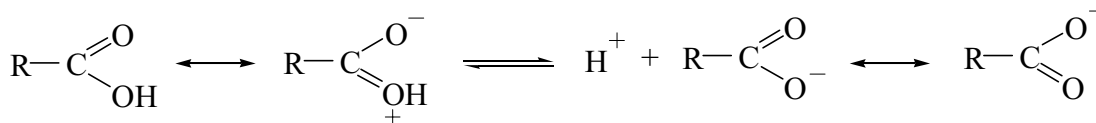
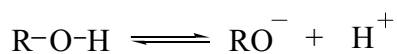
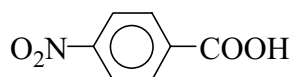
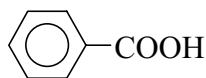
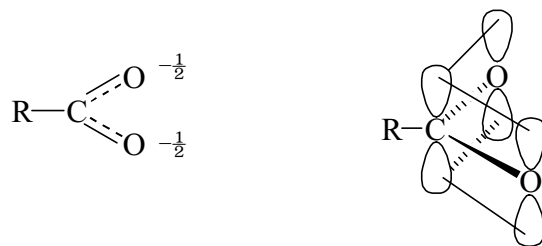


Fig 19.3 ⇐ more acidic ⇐ greater stabilization



G—COOH electron - withdrawing G : stabilize the anion more than the acid

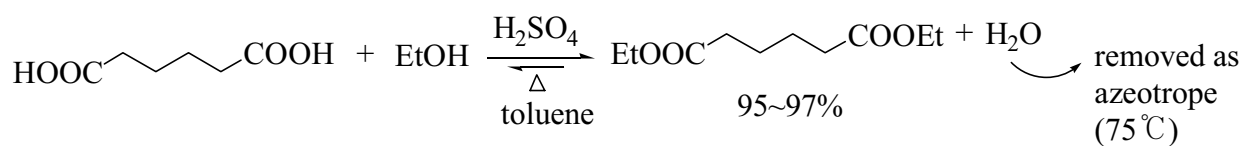
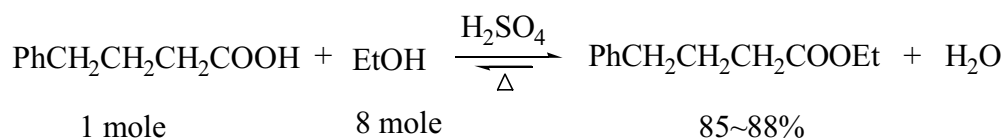
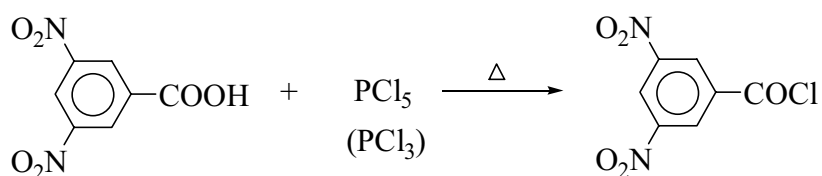
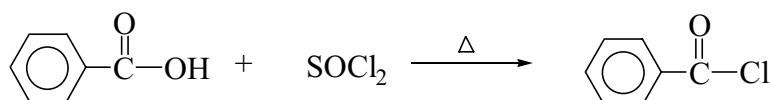
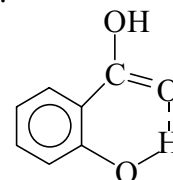
⇓
increase acidity

electron - donating G : stabilize the acid more than the anion

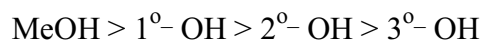
⇓
decrease acidity

⇓
Table 19.2 : inductive effect decreases with distance.

unusually high acidity of due to



reactivity
in esterification
& hydrolysis



due to steric effect (difficult to make esters of tert-alc or hindered acids)

