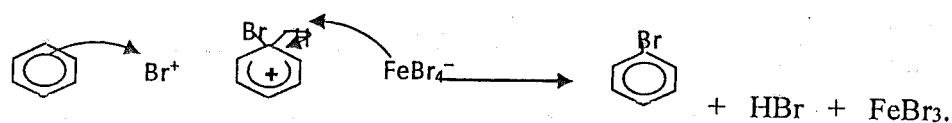


(ii) Recrystallisation

(iii) It should have a fixed melting point.

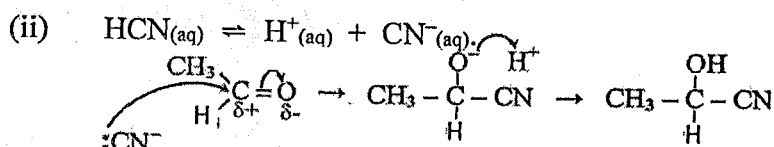
(b) (i) $C_6H_5OH > C_6H_6 > C_6H_5NO_2$.

The $-OH$ group in phenol is activating hence increases the electron density of the benzene ring making it more reactive towards electrophiles than benzene while the $-NO_2$ group in nitrobenzene is deactivating hence decreases the electron density of the benzene ring making it less reactive towards electrophiles than benzene.

(ii) $Br - Br^{FeBr_3} \rightarrow Br^+ + FeBr_4^-$.

(c) (i)

Conversion	Reagents	Reaction condition
a	$LiAlH_4$	Dry Ether
b	HCN (or KCN)	$NaOH$ (or $dil H_2SO_4$ $10-20^\circ C$)
c	$H^+/K_2Cr_2O_7$ (or H^+/MnO_4^-)	Warm (or room temp)

(iii) $CH_3CH_2OH + conc H_2SO_4/170^\circ C \rightarrow CH_2=CH_2 + H_2O$

(iv) Esterification

(d) (i) A functional group is an atom, a group of atoms or a bond that is responsible for the chemical properties of members of a homologous series.

(ii) A $CH_3CH_2Br + KCN \rightarrow CH_3CH_2CN + KBr$ (in alcohol under reflux)

B $CH_3CH_2Br + NaOH \rightarrow CH_3CH_2OH + NaBr$ (under reflux)