141. (b)Hydrolysis of Fe^{3+}

$Fe^{3+} + 3H_2O \rightarrow Fe(OH)_3 + 3H^+$

142. (a) According to the Lewis concept.

143. (b) Conjugate base is obtained from the acid by loss of H^+.

144. (a) BF_3 accept electron pair from NH_3 so it is Lewis acid.

145. (a) CH_4has almost no acidic nature and thus $CH_3^-$is strongest base.

146. (a) $CuSO_4$is a salt of weak base, $(Cu(OH)_2)$ and strong acid (H_2SO_4).

147. (b) Weak acid consists of highest pK_a value and strongest acid consist of less pK_avalue.

148. (a) Phenolphthalein

Explanation (Word-Friendly):
Titration of sodium carbonate (a weak base) with sulphuric acid (a strong acid) occurs in two stages:
Stage 1:
$Na_2CO_3 + H_2SO_4 \rightarrow NaHCO_3 + NaHSO_4$
(pH remains in basic range — Phenolphthalein is used)
Stage 2:
$NaHCO_3 + H_2SO_4 \rightarrow CO_2 + H_2O + NaHSO_4$
(pH becomes acidic — Methyl orange is used)
But in regular titration, we detect only Stage 1, so Phenolphthalein is used.

149. (c)Because it gain and also lose the proton

$H_2O + H_2O \rightleftharpoons H_3O^+ + OH^-$

150. (a) $H_2O + H_2O \rightleftharpoons H_3O^+ + OH^-$

151. (c) $HBr + H_2O \rightleftharpoons H_3O^+ + Br^-$

152. (c) Because both are strong acid and strong base.

153. (d) $LiAlH_4$ is a nucleophilic and capable of donating electron pair, thus acts as a Lewis base.

154. (c) The solvent which neither accept proton nor donates.

155. (a) Because of F^- is a highly electronegative. So it is easily lose the electron and reaction occur rapidly.

156. (b) Strong acid can be used titrate both strong and weak base.

157. (b) H_3O^+ ion

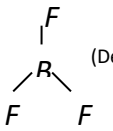
Explanation:
In water, free H^+ ions do NOT exist alone. They immediately combine with water molecules to form hydronium ion (H_3O^+).
Thus, the true acidic species in aqueous solution is H_3O^+.

158. (d) NH_3

Explanation:
A Lewis base = electron pair donor.
NH_3 has a lone pair of electrons on nitrogen → DONATES → acts as Lewis base.
B_2H_6 and AlH_3 are electron-deficient, hence Lewis acids.
$LiAlH_4$ is used as a reducing agent, but it does NOT act as a Lewis base.

159. (b) For a weak acid value of pKa will be vary high but in case of strong acid value of pKa will be vary low.

160. (d) Boron halides behave as Lewis acid because of their electron deficient nature *eg.*, as



(Deficiency of two electron for inert configuration)