Acid - Base Properties of Salt (Pg 3)

Redoing TnSG 14.6 (Pg 689)

Type of salt*	Example	Comments	pH of solution
(A) cation : (2) anion : (1)	$LiClO_4$	neither react	No change in pH
(B) cation : (2) anion : (3)	KF	K^+ - no effect F^- - act as base (see (3))	basic
(C) cation : (4) anion : (1)	NH_4NO_3	NO_3^- - no effect NH_4^+ - act as acid (see (4))	acidic
(d) cation : (4) (3)	$CH_3NH_3NO_2$	NO_2^- - acts as base (see (3)) $CH_3NH_3^+$ - acts as acid (see (4))	pH of solution depends on K_a + K_b $K_a = K_b$ neutral $K_a > K_b$ acid $K_b < K_a$ basic [See Exercise 14.21 Pg 688]

* Types of ions are going to be referenced use other sheets number system (i.e. anion of strong acid = (1))

READ SECTION 14.8

ACID-BASE Property of SALTS

① strong acid :

	Corresponding "Anion of strong acid"
$HClO_4$	ClO_4^-
$HClO_3$	ClO_3^-
HNO_3	NO_3^-
HI	I^-
HBr	Br^-
HCl	Cl^-
H_2SO_4	HSO_4^-

$A^- + H_2O \rightarrow$ No reaction (no pH change)

② strong base : all Group I & II metals

	corresponding "cation of strong base"
$LiOH$	Li^{+1}
$NaOH$	Na^{+1}
KOH	K^{+1}
$RbOH$	Rb^{+1}
$CsOH$	Cs^{+1}
$FrOH$	Fr^{+1}
$Mg(OH)_2$	Mg^{+2}
$Ca(OH)_2$	Ca^{+2}
$Sr(OH)_2$	Sr^{+2}
$Ba(OH)_2$	Ba^{+2}
$Ra(OH)_2$	Ra^{+2}

$X^+ + H_2O \rightarrow$ No reaction (no pH change)

READ SECTION 14.8

ACID-BASE PROPERTY OF SALTS

③ Weak acids (eg.):
[not all weak acids are list below]

	Corresponding "anion (or conjugate base) of weak acid"
HF	F^-
HNO_2	NO_2^-
$HC_2H_3O_2$	$C_2H_3O_2^-$
$HOCl$	OCl^-
$[Al(H_2O)_6]^{3+}$	$[Al(OH)(H_2O)_5]^{+2}$
HCN	CN^-

$$A^- + H_2O \rightleftharpoons HA + OH^-$$

(eg $F^- + H_2O \rightleftharpoons HF + OH^-$)

④ weak bases (eg):
[not all weak bases are listed below]

	Corresponding "cation (conjugative acid) of weak base"
NH_3 (not strong like I said !!!)	$\ddot{N}H_4^+$
CH_3NH_2	$CH_3\ddot{N}H_3^+$
C_5H_5N	$C_5H_5\ddot{N}H^+$
H_2NNH_2	$H_2NNH_3^+$

$$X^+ + H_2O \rightleftharpoons X + [H^+]$$

(eg $CH_3NH_3^+ + H_2O \rightleftharpoons CH_3NH_2 + [H^+]$