

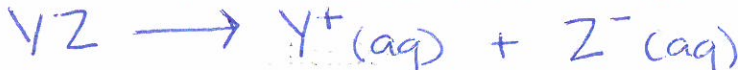
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Chemistry 12
ACID BASE PART II Lesson # ~~13~~ 14
HYDROLYSIS

The HYDROLYSIS OF A SALT is a reaction between WATER and the cation or anion (or both) contained in the salt so as to produce a neutral, acidic or basic solution.

Like STRONG ACIDS and STRONG BASES, all SALTS are said to IONIZE 100% in water (we don't have any saturated solutions)

The generic DISSOCIATION EQUATION for a SALT, YZ, in water:



Example 1. Write the dissociation equation for the following salts in water:

- $\text{NaCl} \rightarrow \text{Na}^+(aq) + \text{Cl}^-(aq)$
- $\text{K}_3\text{PO}_4 \rightarrow 3\text{K}^+(aq) + \text{PO}_4^{3-}(aq)$
- $(\text{NH}_4)_2\text{S} \rightarrow 2\text{NH}_4^+(aq) + \text{S}^{2-}(aq)$

Recall the term SPECTATOR IONS, in this unit spectator ions ARE THOSE THAT DO NOT REACT WITH WATER. The conjugates of the STRONG ACIDS AND BASES are spectator ions.

SPECTATOR CATIONS- ALKALI + ALKALINE EARTH METALS

SPECTATOR ANIONS- "5" conjugates of the six strong acids
ex. ClO_4^- , I^- , Br^- , Cl^- and NO_3^- (HSO_4^- acts like a W.A)

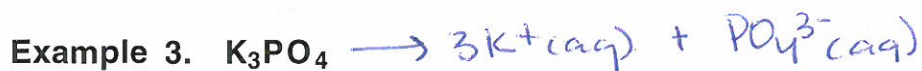
Determining the Behaviour of a salt in water involves FOUR steps:

- Write out the dissociation eqn.
- Discard any SPECTATOR IONS.
- Remaining ions act as either acid or base if both. (write out net ionic rxn \bar{c} water)
- The stronger K_a or K_b (larger) will dominate.

For the following Salts, determine if the solution that they produce when they are placed in water is ACIDIC, BASIC or NEUTRAL.

Ex. 2 NaCl

- $\text{NaCl} \rightarrow \text{Na}^+(aq) + \text{Cl}^-(aq)$
- discard both $\text{Na}^+ + \text{Cl}^-$
- Solution is NEUTRAL!



1.
2. discard K^+



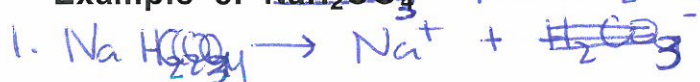
\therefore solution will be basic!



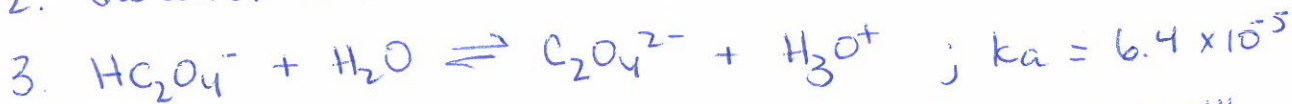
2. discard Cl^-



\therefore solution will be acidic!



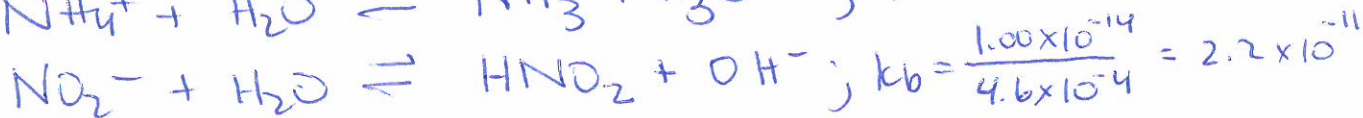
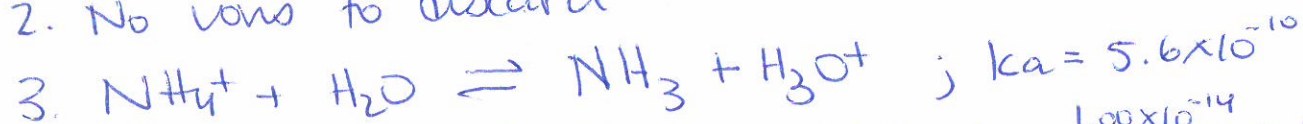
2. discard Na^+



4. B/c $k_a > k_b$ the solution is acidic!



2. No ions to discard



4. B/c $k_a > k_b$ the solution is acidic!

SEATWORK/HOMEWORK: Exercises 69-73, 88, 92+93
PLO's: N1-N4