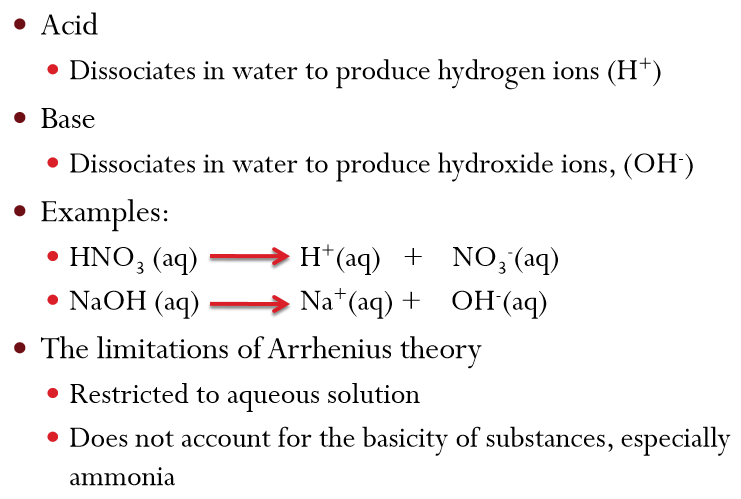
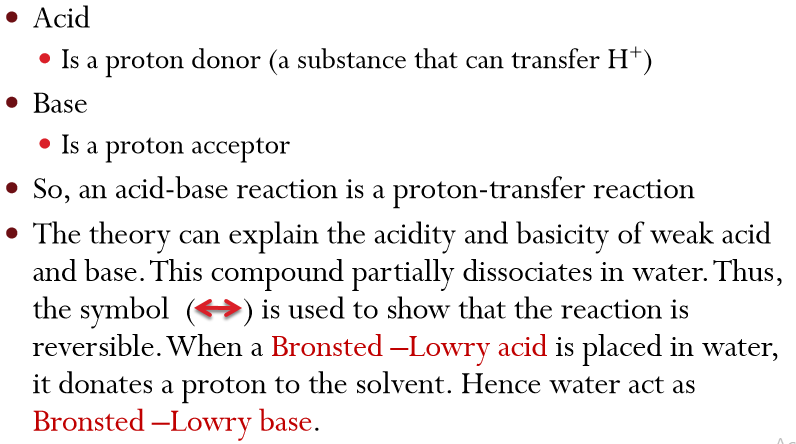
**IONIC EQUILIBRIUM**

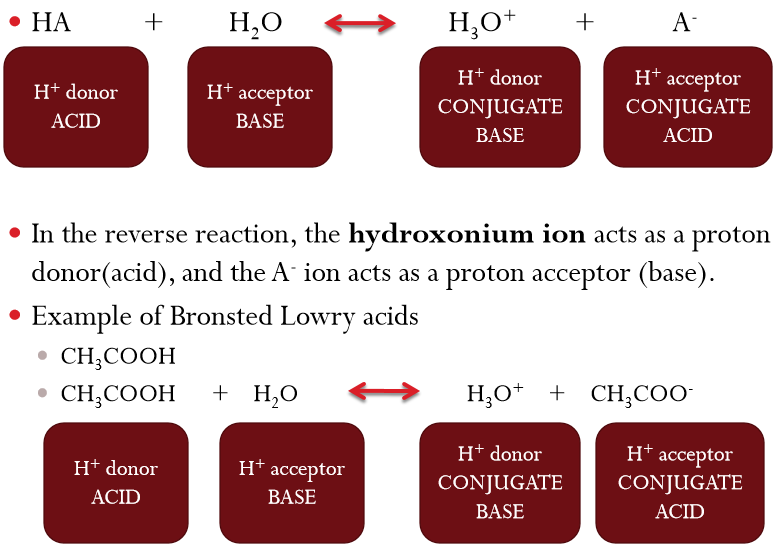
**Theory of Acids and bases**

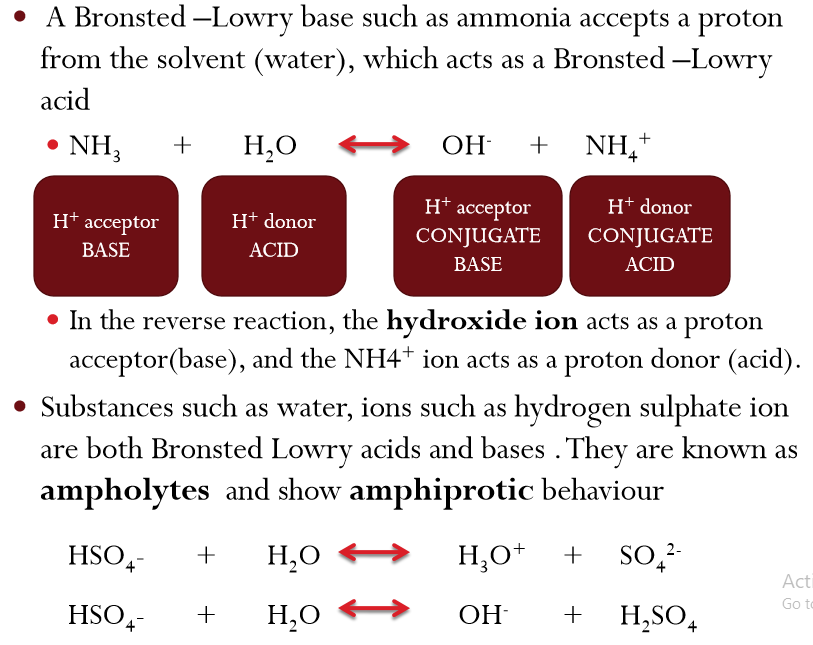
**Arrhenius Theory**



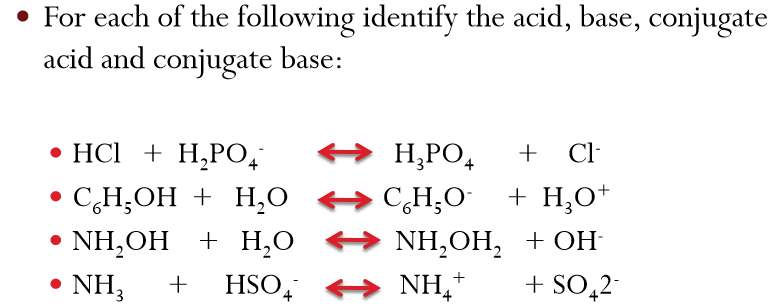
**BrØnsted – Lowry Theory**

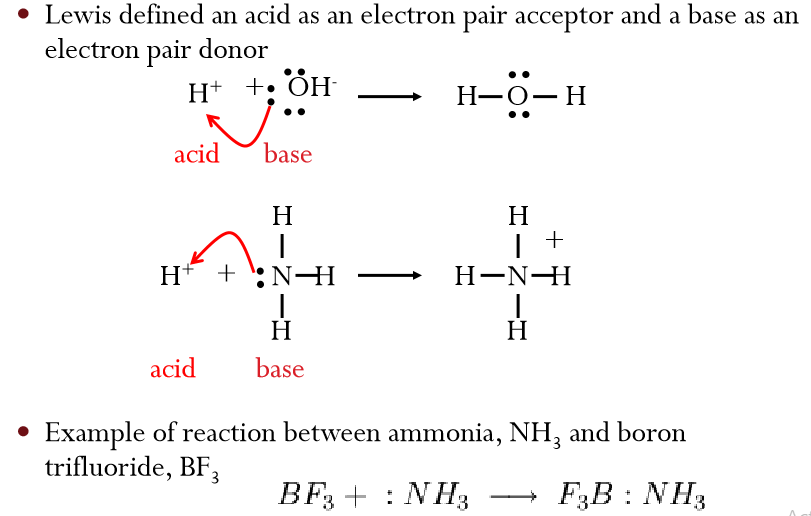




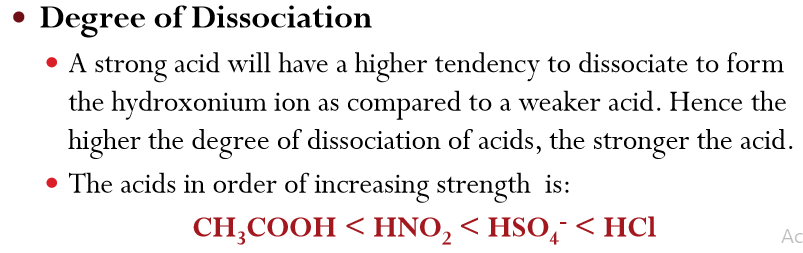


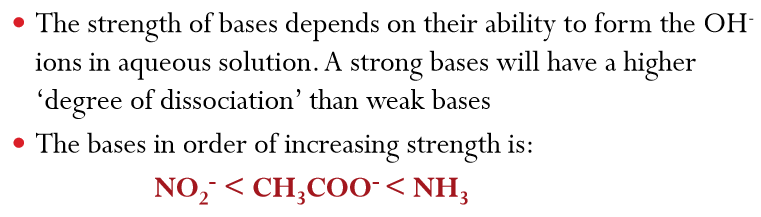
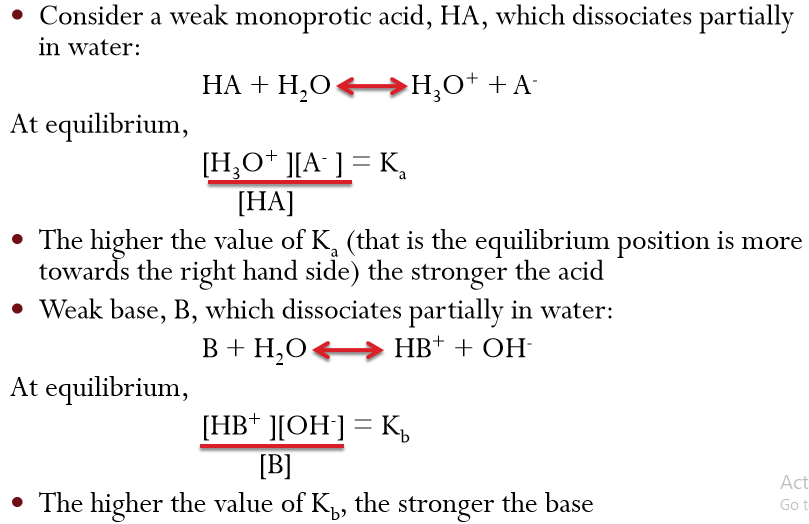
**Exercises**



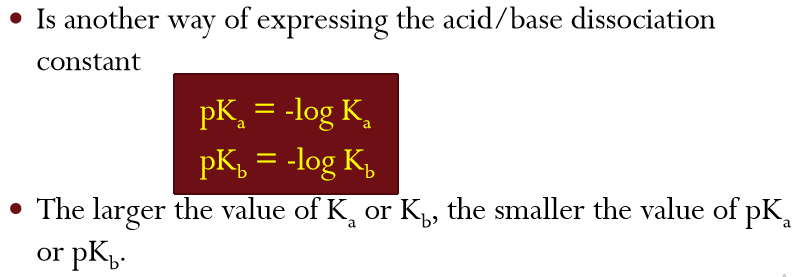
**Lewis Theory** 

**Relative Strength of Bronsted –Lowry Acids and Bases**

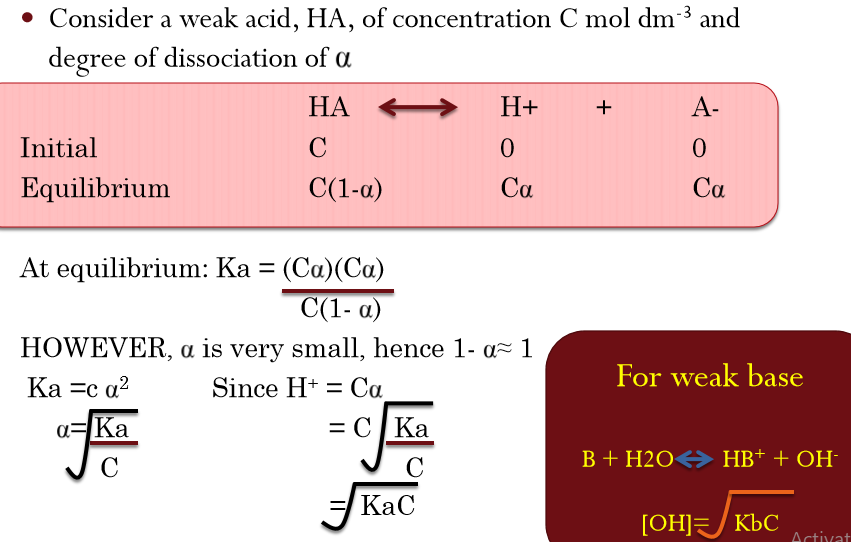


**Acid/Base Dissociation Constant (Ka and Kb)** 

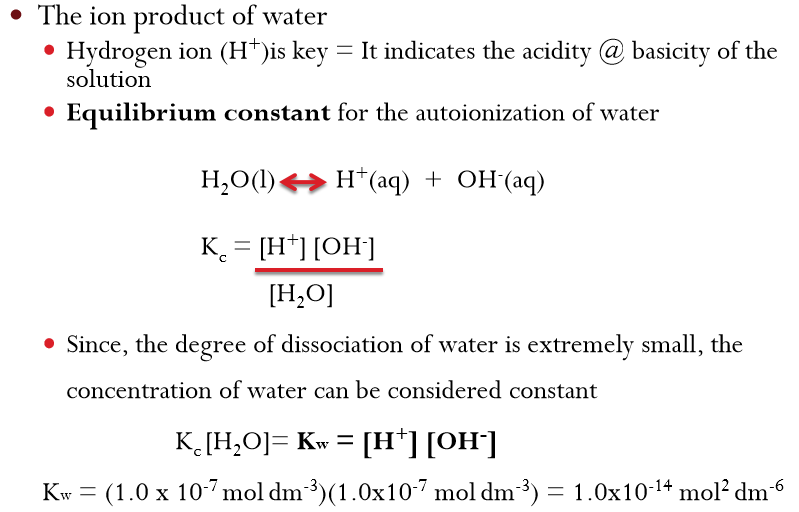
**pKa and pKb**

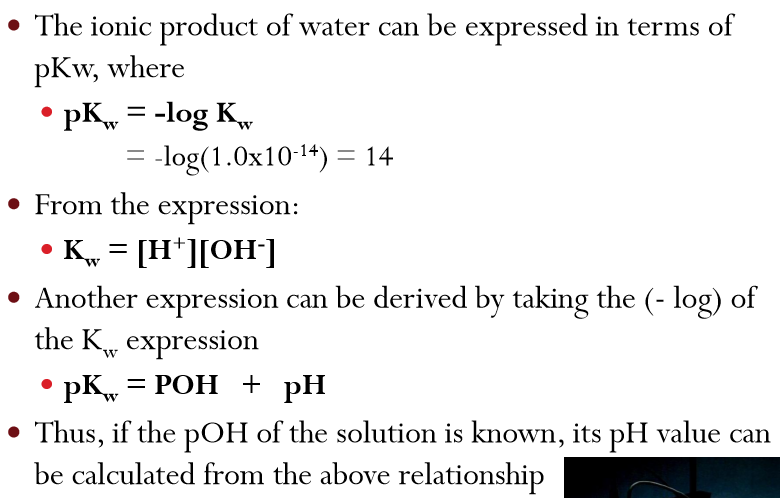


**Ostwald Dilution Law and Dissociation Constant**

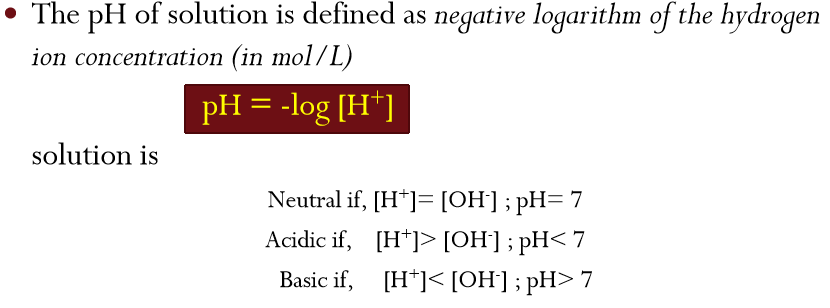


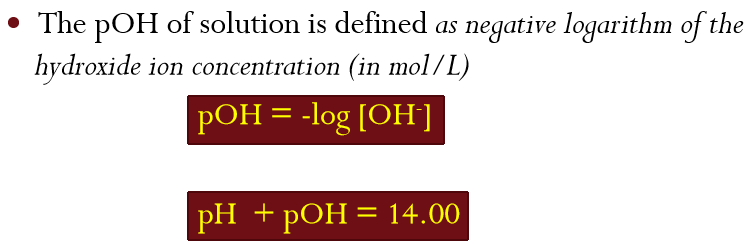
**Ionic Product of Water**



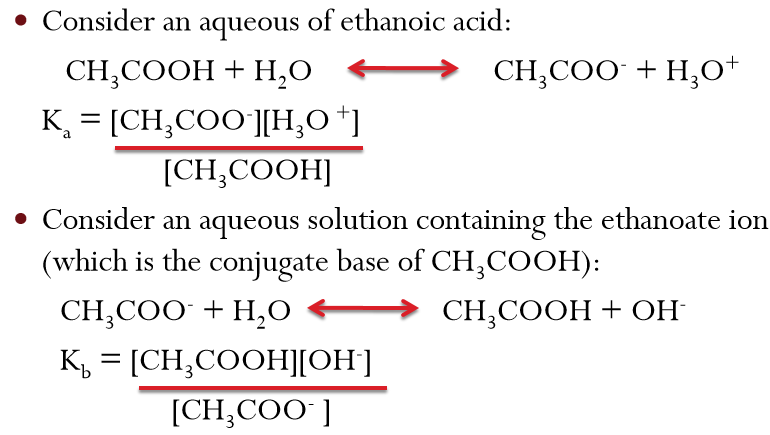


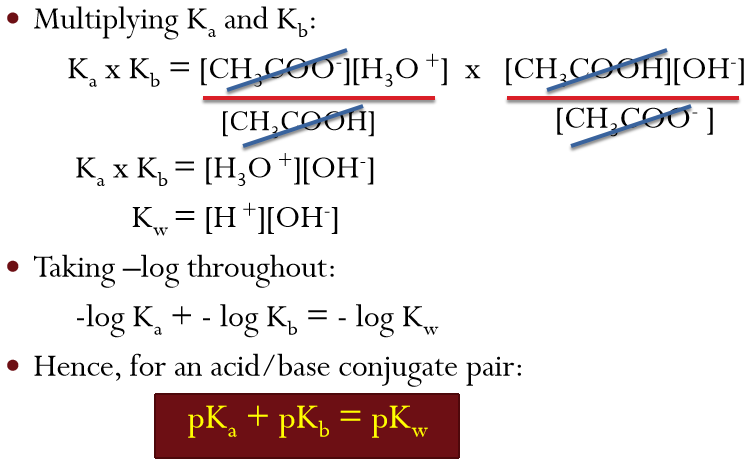
**Measurement of acidity and basicity**



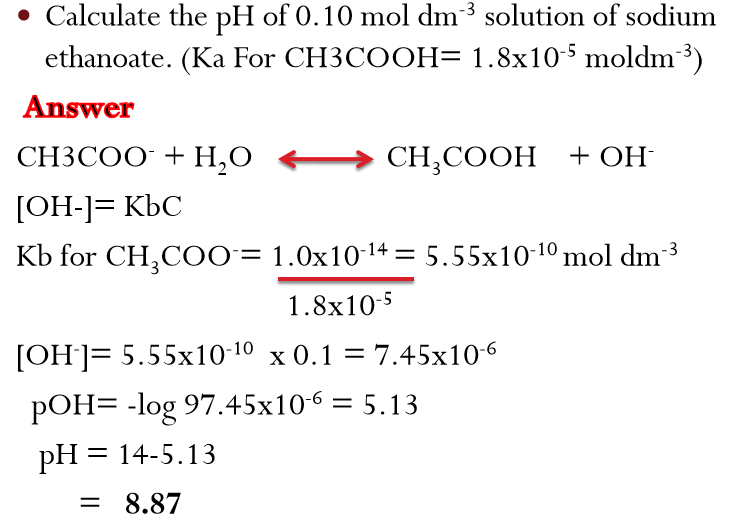


**Relationship between pKa, pKb and pKw**

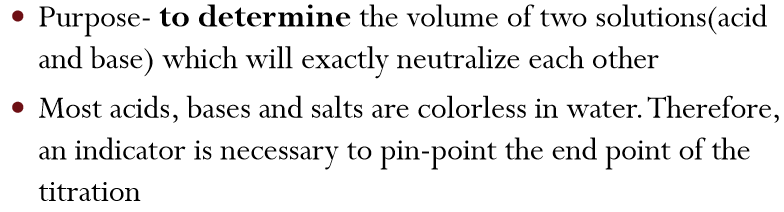




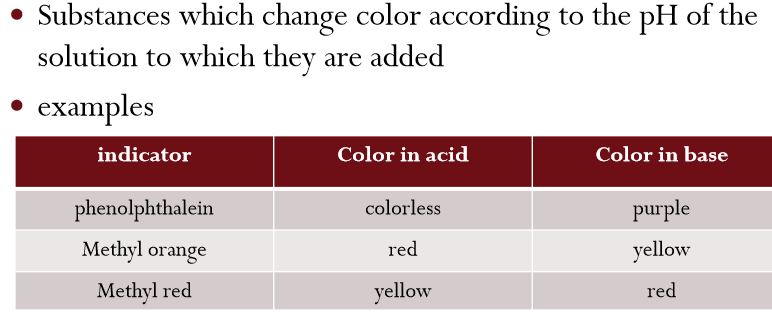
**Example**



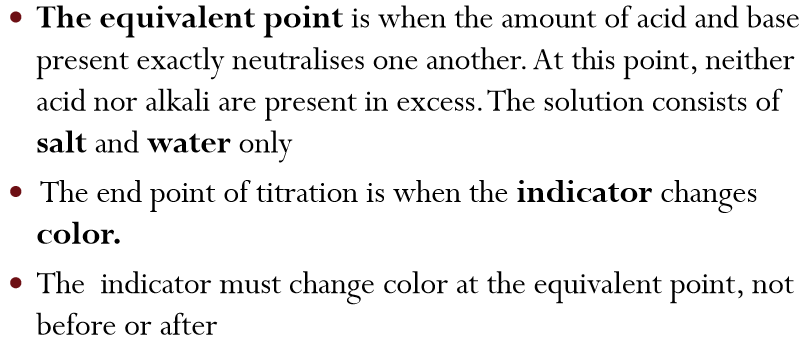
**Acid-Base Titration**



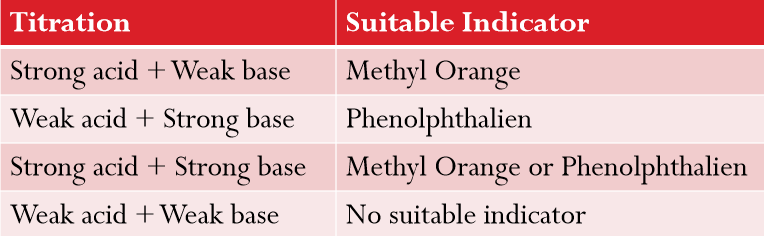
**Acid-Base Indicators**



**Equivalent point and End point of Acid Base Titration**

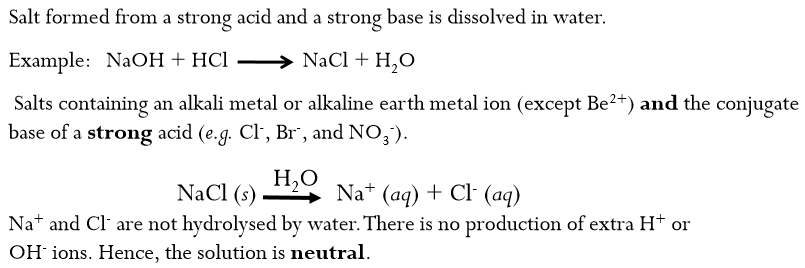


**Suitable Indicator**

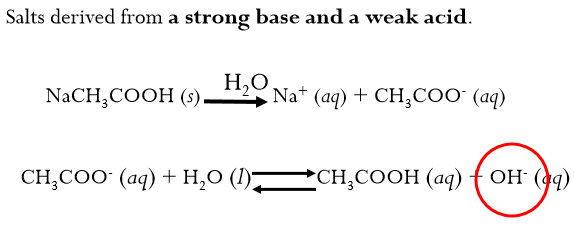


**Acid-Base Properties of Salts**

**Neutral Solutions:**

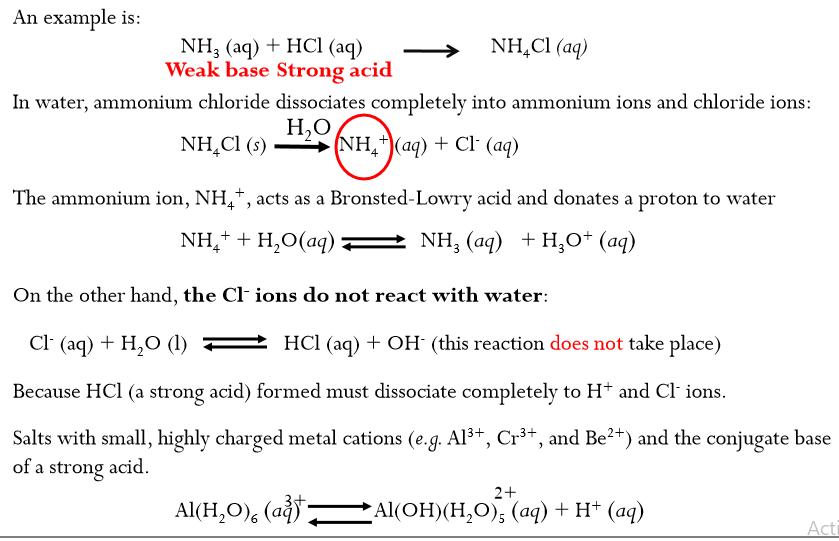


**Basic Solutions:**

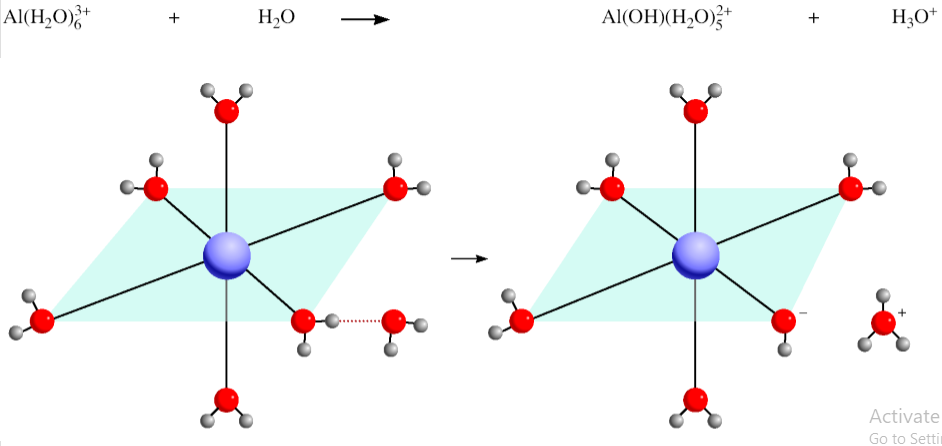


**Acid-Base Properties of Salts**

**Acidic solution.**

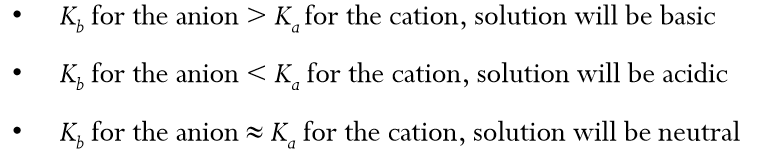


**Acid Hydrolysis of Al3+**

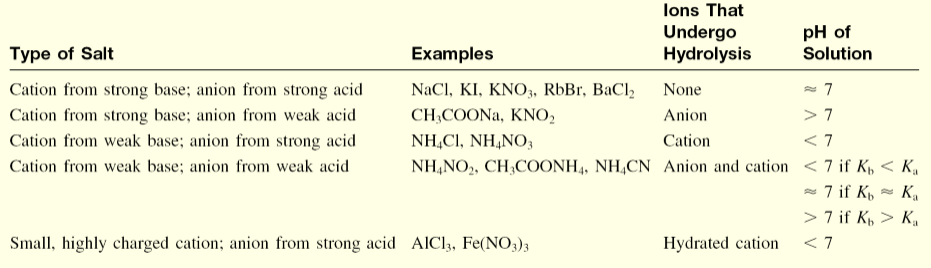


**Acid-Base Properties of Salts**

Solutions in which both the cation and the anion hydrolyze:

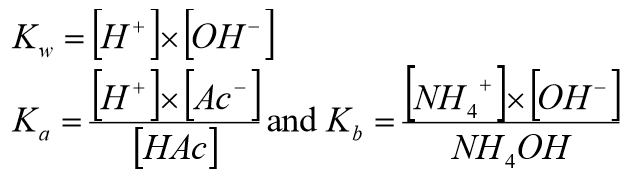


**Acid-Base Properties of Salts**

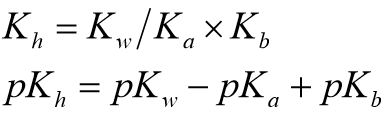


**Hydrolysis**

Remembering the following equations must hold simultaneously



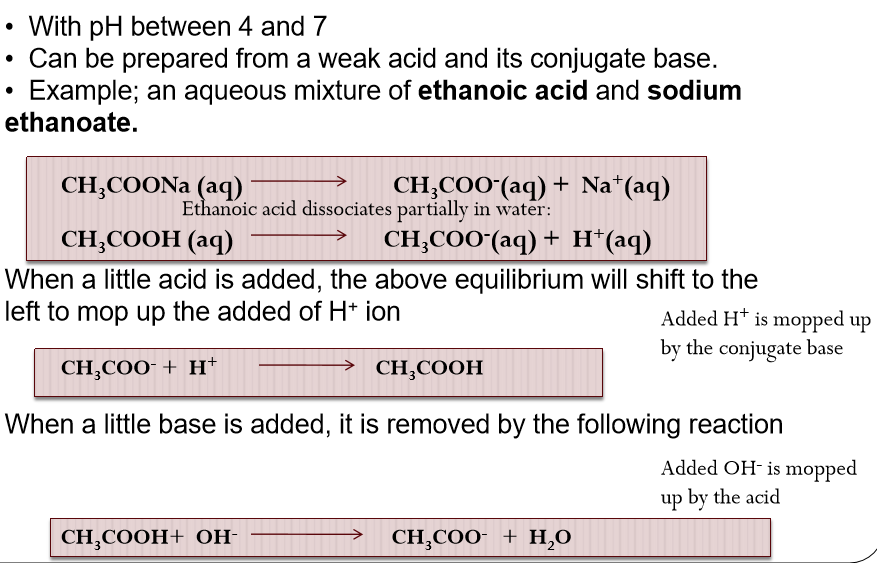
Also, it can be shown that



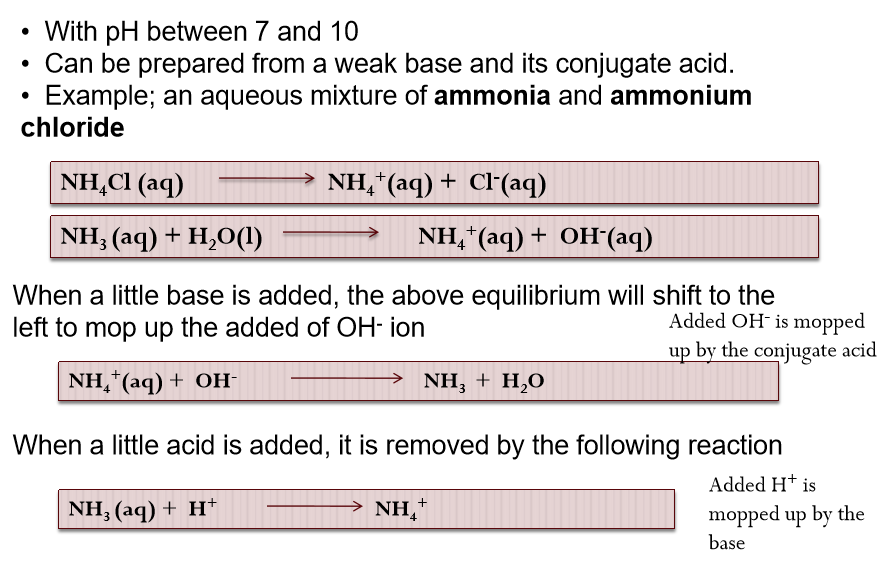
**Buffer System**

Is a solution of a weak acid and its salt to form acidic buffer solution or weak base and its salt to form basic buffer solution. A buffer solution has the ability to resist changes in pH upon the addition of small amounts of either acid or base.

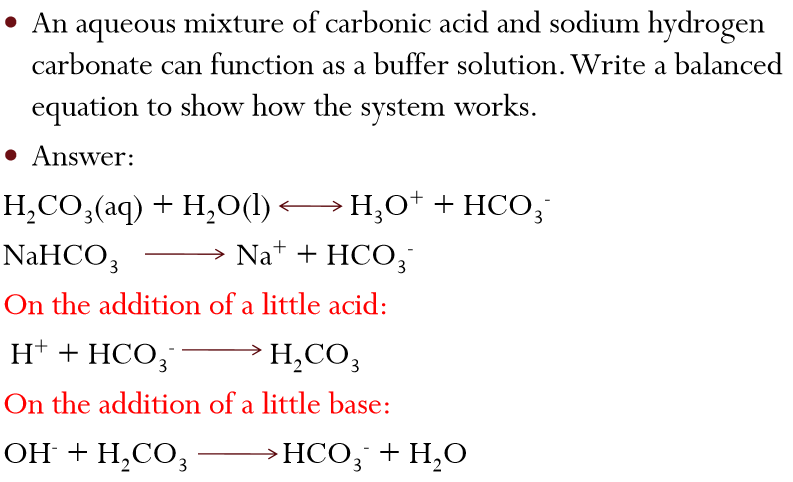
**Acidic Buffer Solution**



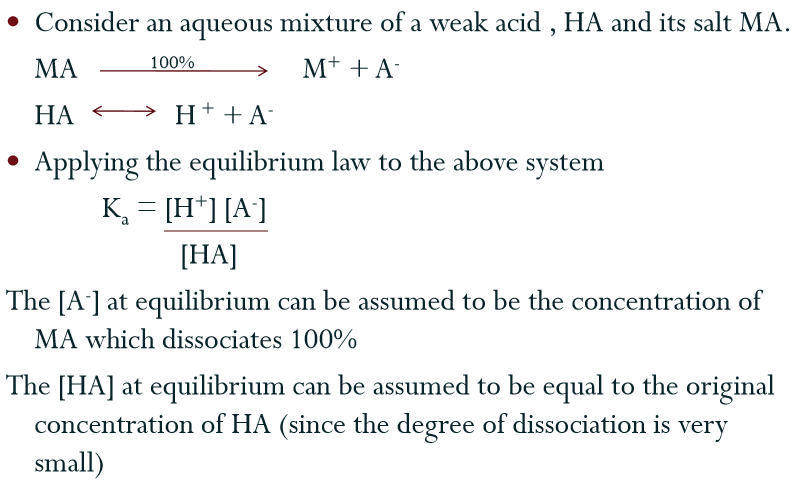
**Basic Buffer Solution**

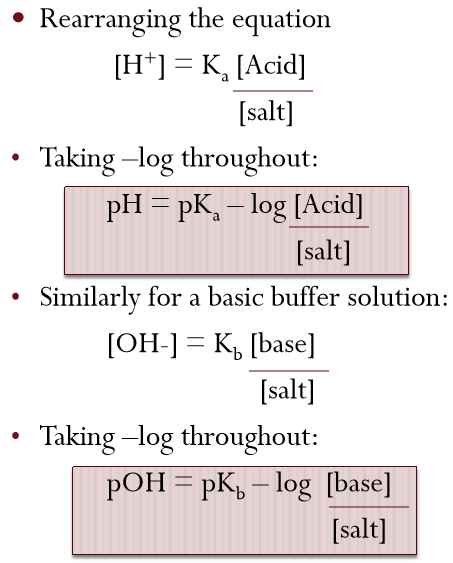


**Exercise**



**pH of Buffer Solutions**





**Theory and application of buffer system Maintaining the pH of blood**

