

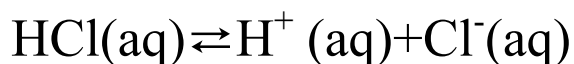
5:6:A**Acid-base reactions**

ACIDS	BASES
Sour taste	Bitter taste
Color changes in plant-based pH indicators; Acid turns litmus red	Color changes in plant-based pH indicators; Base turns litmus blue
Acids burn exposed skin: severity depends on the concentration (Molarity) of the acid	Bases feel slippery. May cause some burning and irritation.
Acids react with metals above Hydrogen in the Activity series to produce a metal salt and H ₂ gas	
Acids react with carbonates and bicarbonates to produce salts and CO ₂ (g)	
Acids are electrolytes and conduct electricity	Bases are electrolytes and conduct electricity.
Arrhenius acids: dissociate in aqueous solutions to produce H ⁺	Arrhenius bases: dissociate in aqueous solutions to produce OH ⁻
Brønsted-Lowry Acid: A proton (H ⁺) donor	Brønsted-Lowry Base: A proton (H ⁺) acceptor

5:6:B

Acid dissociations:

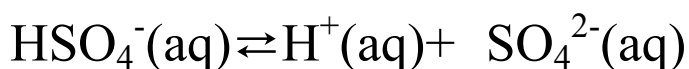
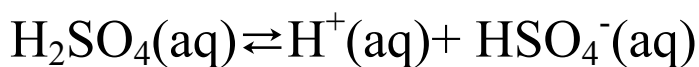
Monoprotic:



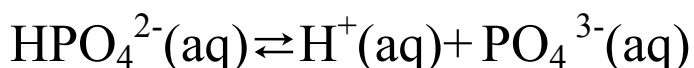
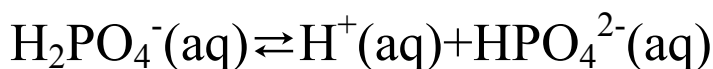
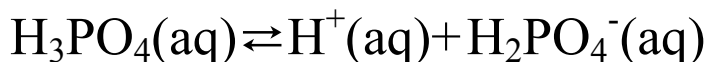
H^+ may be written in aqueous media as the hydronium ion: H_3O^+



Diprotic: (two step dissociation)

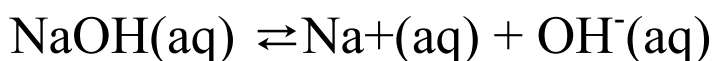


Triprotic (three step dissociation)

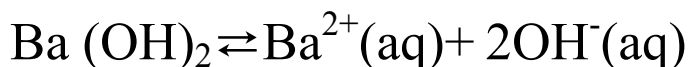


Base dissociations:

Monobasic:



Dibasic:

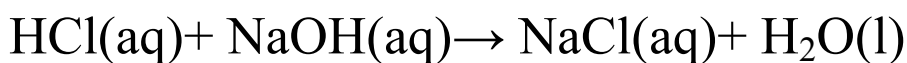


5:6:C ELECTROLYTES:

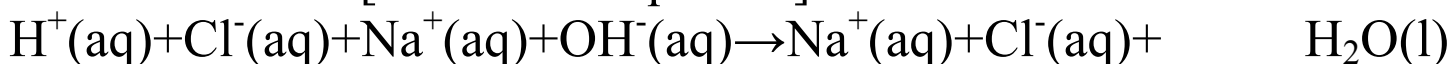
An electrolyte is a substance that when dissolved in water conducts electricity.

Strong Electrolytes	Weak Electrolytes
HCl, HNO ₃ , H ₂ SO ₄ , NaOH, Ba(OH) ₂ , any ionic compound	H ₃ CCOOH (acetic acid), any haloacid except HCl, NH ₃ (ammonia), H ₂ O
**Non-electrolytes: Any organic compound and most covalently bonded compounds	

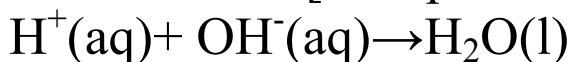
A reaction between an acid and a base is a neutralization reaction and always produces a salt and water. Since a salt consists of a cation other than H⁺ and an anion other than OH⁻, a salt is always an ionic compound and will dissociate to produce ions.



[Molecular equation]



[Complete ionic equation]



[Net ionic equation]

Na⁺ and Cl⁻ are spectator ions.

5:7:A**GRAVIMETRIC ANALYSIS/ TITRATIONS**

Gravimetric analysis is a technique based on the measurement of mass.

A 0.7889 g mass of an unknown ionic compound is dissolved in water. The unknown compound is known to contain bromide ions. An excess of $\text{AgNO}_3(\text{aq})$ is added in order to precipitate the chloride ions as AgBr . If 1.1211 g of precipitate forms, what is the percent by mass of the Br in the original compound?

$$1.1211 \text{ g AgBr} @ 187.80 \text{ g/mole} = 5.9696 \times 10^{-3} \text{ mole AgBr}$$

$$5.9696 \times 10^{-3} \text{ mole AgBr} \times \frac{1 \text{ mole Br}}{1 \text{ mole AgBr}} \\ = 5.9696 \times 10^{-3} \text{ mole Br}$$

$$5.9696 \times 10^{-3} \text{ mole Br} @ 79.90 \text{ g/mole} = 0.477 \text{ g Br}$$

$$\text{Mass Percent Br} = \frac{0.477 \text{ g Br}}{1.1211 \text{ g sample}} \times 100\% = 42.55 \%$$