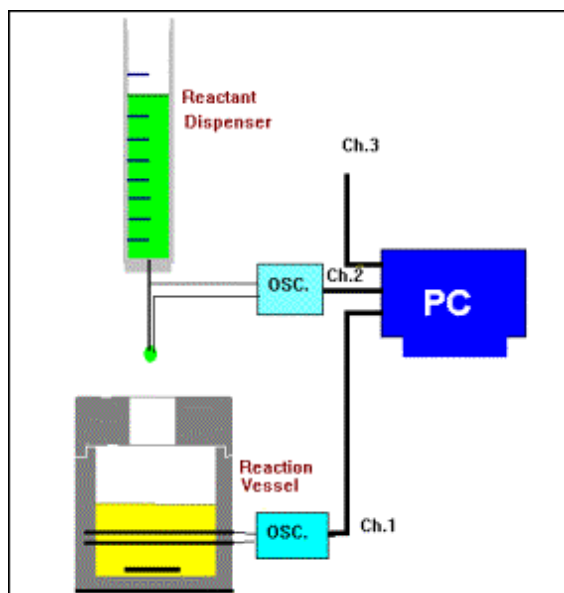




CONDUCTOMETRIC TITRATIONS

It is process of qualitative chemical analysis in which concentration of sample is determined which is done by adding a reagent (titrant) of known concentration in measured volumes to the sample (analyte)



TYPES OF CONDUCTOMETRIC TITRATIONS:

- Acid–base or neutral titrations
- Replacement or displacement titrations
- Redox titrations
- Precipitation titrations
- Complexometric titrations
- Non-aqueous titrations

ACID- BASE OR NEUTRAL TITRATIONS:

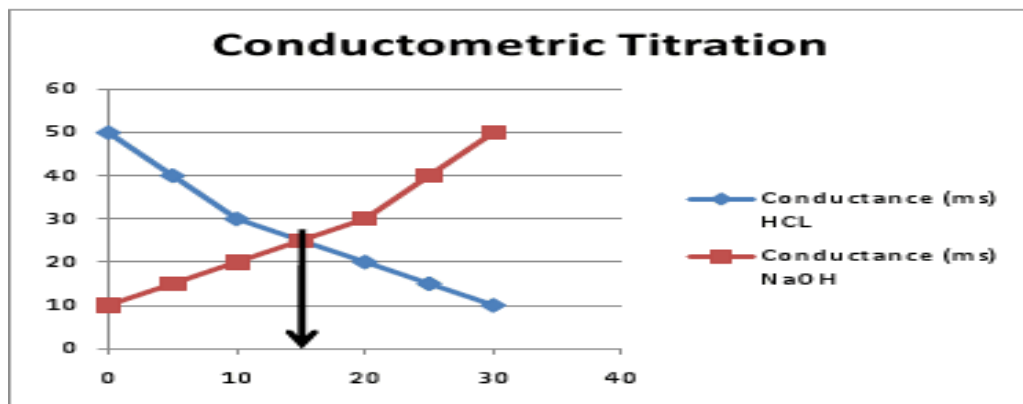
- STRONG ACID-STRONG BASE
HCl vs NaOH
- STRONG ACID-WEAK BASE
HCl vs NH_4OH
- WEAK ACID-STRONG BASE
 CH_3COOH vs NaOH
- WEAK ACID -WEAKBASE
 CH_3COOH vs NH_4OH

Strong acid strongbase:

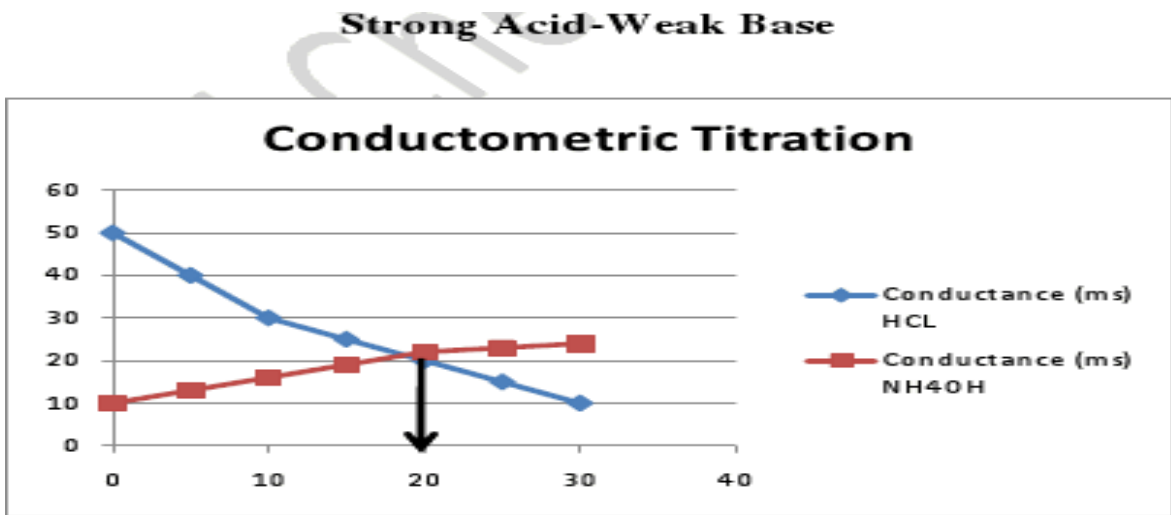
Fall in conductance due to replacement of high conductivity Hydrogen ions by poor conductivity sodium ions

Rise in conductance due to increase in hydroxyl ions

Strong Acid-Strong Base



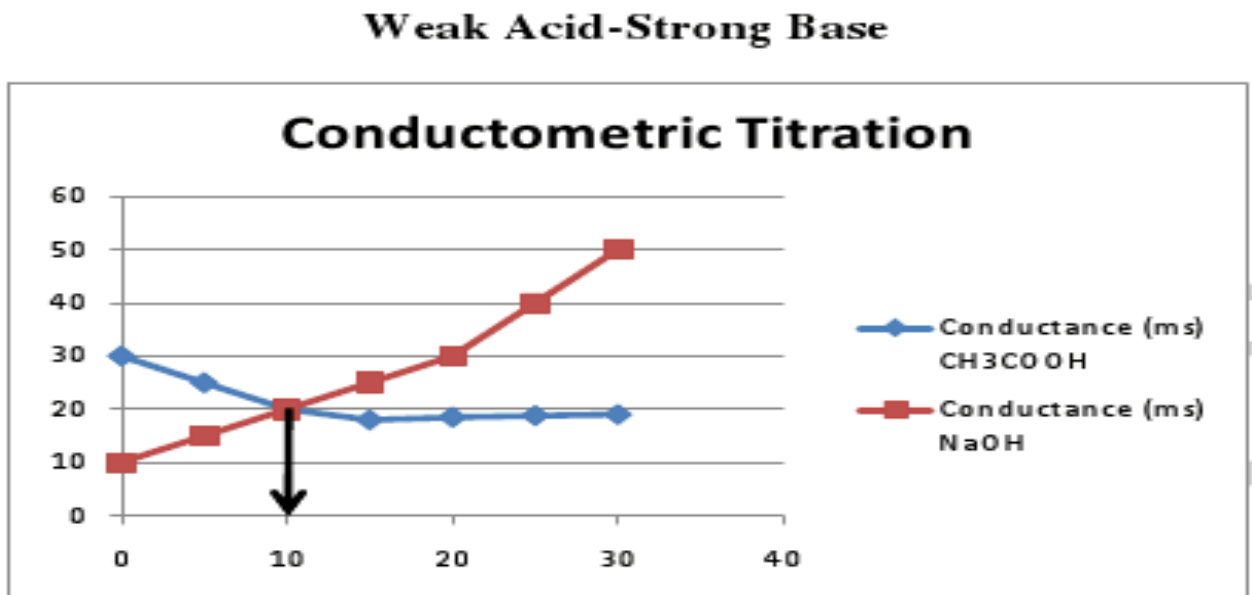
Strong acid- weakbase:



Fall in conductance due to replacement of hydrogen by ammonium ions
Conductance remain constant due to suppression of NH_4OH by NH_4Cl

Weak acid –Strong base:

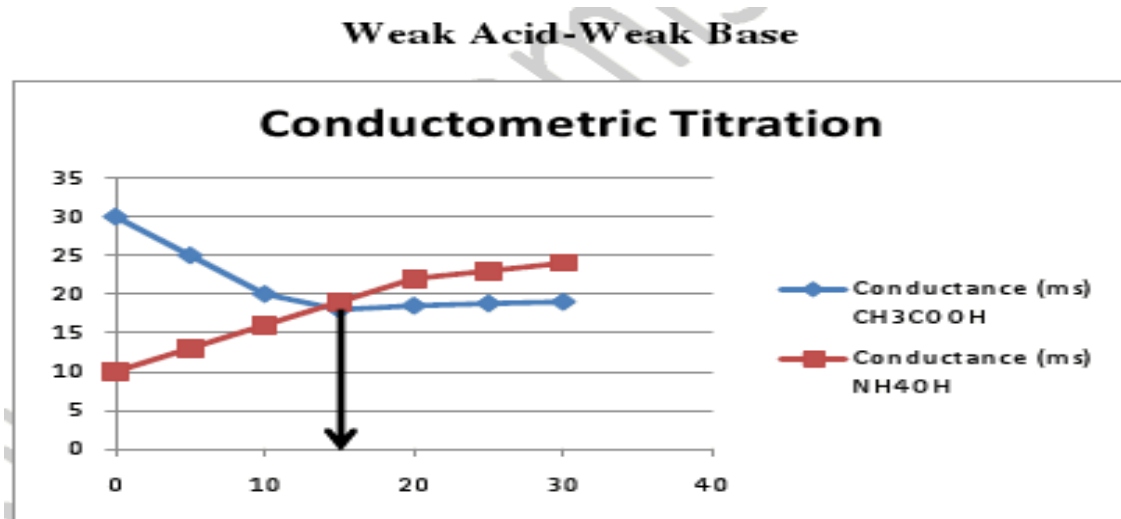
Initial decrease in conductance followed by increase due to NaOH
Steep rise due to excess of NaOH



Weak acid- weakbase:

Increase in conductance due to excess of CH_3COOH

Constant conductance due to suppression of NH_4OH by CH_3COOH



ADVANTAGE OF CONDUCTOMETRIC TITRATIONS:

- ✓ Does not require indicators since change in conductance is measured by conductometer
- ✓ Suitable for coloured solutions
- ✓ Since end point is determined by graphical means accurate results are obtained with minimum error
- ✓ Used for analysis of turbid suspensions, weak acids, weak bases, mix of weak & strong acids

DIS ADVANTAGES OF CONDUCTOMETRIC TITRATION:

- ✓ Increased level of salts in solution masks the conductivity changes, in such cases it does not give accurate results
- ✓ Application of conductometric titrations to redox systems is limited because, high concentrations of hydronium ions in the solution tends to mask the changes in conductance