Titration - The process of finding out the strength of a given unknown solution with the help of known or standard solution is called titration.

Titrant - In titrimetric analysis, the reagent of known concentration/strength is called titrant.

Titrate - the substance whose strength has to be find out or substance being titrated is called the titrate.

Classification of Titration

① Complexametric titration -

The titration based on complex formation between the analyte and titrant.

② Acid - Base titration.

An acid - base titration is a method of quantitative analysis for determining the conc^n of an acid or base by exactly neutralizing it with a standard solution of base or acid having known conc^n.

③ Redox titration

The titration based on redox reaction is k/a redox titration.

④ Precipitation titration

The titration which involves the formation of precipitate during the titration, known as precipitation titration.

Indicators - A substance which changes the color in response to a chemical reaction in a titration known as indicator.

Types of Indicators

(1) Internal Indicator - Those indicators which takes part in the reaction ~~and~~ (titration) and after completion of titration it changes the color of the solution indicating the sharp end point.

or

Those indicators that added in to reaction mixture or titration flask are known as internal indicators.

e.g. Phenolphthalein, methyl orange etc.

(2) External Indicators - Indicators which never takes part in the chemical reaction but after completion of reaction it also changes the color of solution to indicate the endpoint.

or

Those indicators that we do not added in to the reaction mixture or titration flask but used outside the titration flask.

e.g. $K_3Fe(CN)_6$

(3) Self Indicators - It is one of the reacting species of titration, which is after completion of reaction changes the color of the solution itself.

e.g. $KMnO_4$

Reagents -

① Primary standard - Reagents that can be prepared directly by dissolving known amount of substance/ solute in a definite volume of the solvent or are those that known to us.

e.g. Oxalic acid

② Secondary standard - Reagents that can not be prepared directly by weighing definite amount of substance or solute or are those reagents that not known to us.

e.g. NaOH

③ Standard Reagents - Those reagents whose normality or strength is known or in which definite amount of a substance/solute is present in a definite volume of solvent.

Types of Solutions.

① Normal solution - No. of gram equivalents of solute contained in one liter of solution.
(gram equivalents/ litre)

② Molar solution - No of gram moles of solute per litre of solution.

③ Molal solution - No of gram moles of solute per 1000 gm of solvent.

④ Formal Solution - formula weight of solute per litre of solution.

⑤ PPM (parts per million) : 1 mg of solute per litre of solvent.

⑥ PPB (parts per billion) solution: 1 microgram of solute per litre of solvent.

End Point - A point during the course of titration, where sudden color change takes that indicate completion of the reaction.

Buffer solution - The reagents that resist the pH change

e.g. $NH_4Cl - NH_4OH$