Acids and Bases

- As we know that curd, lemon juice, orange juice and vinegar taste sour. These substances taste sour because they contain acids.
- These substances are acidic in nature. The word acid comes from the Latin word acere which means sour.
- Substances which are bitter in taste and soapy to touch are called bases.
- These substances are basic in nature. For example, baking soda, soaps, lime water etc.

Indicators

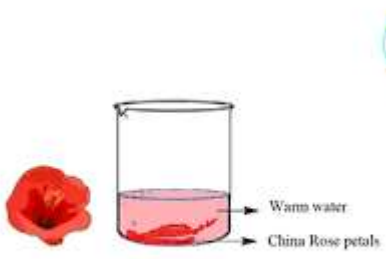
- The substances used to test whether a substance is acidic or basic in nature are called Indicators.
- The indicators change their colour when added to an acidic or a basic solution.
- Turmeric, China rose petals, litmus are natural indicators.

Litmus

- Litmus is the most commonly used natural indicator which is extracted from lichens.
- It is available in the form of solution or as strips of paper.
- It is available as blue or red litmus paper.
- It turns to red when added to an acidic solution and turns blue when added to a basic solution.

China rose

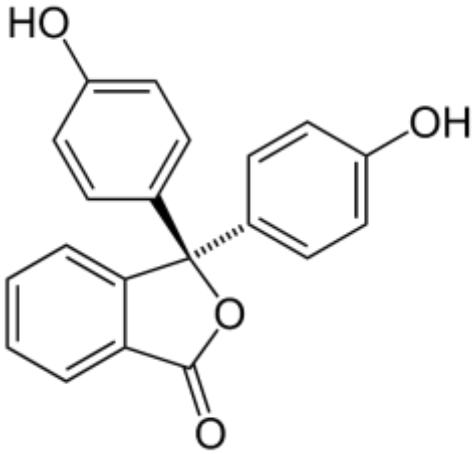
- China rose petals are also used as a natural indicator.
- China rose turns acidic solution to dark pink and basic solutions to green.



Phenolphthalein

- Phenolphthalein is also an indicator commonly used in laboratories.

- It gives a pink colour in case of basic solution and remains colourless in case of an acidic solution.



Chemical structure of Phenolphthalein

Neutralisation Reaction

- The reaction between an acid and a base to produce a Salt and water with the evolution of heat is known as Neutralisation.

ACID + BASE → SALT + WATER

- Example: reaction between sodium hydroxide and hydrochloric acid.

$NaOH + HCl \rightarrow NaCl + H_2O$

Neutralisation in everyday life

- **Ant Bite -** When ant bites it injects the acidic liquid (formic acid) into the skin. This can be neutralised by rubbing moist baking soda (sodium hydrogencarbonate) or calamine solution, that contains zinc carbonate.
- **Indigestion –** our stomach contains hydrochloric acid which helps in digestion. But excess of this acid causes indigestion**.**
- To get relief from indigestion which is painful sometimes, antacid is taken.
- The antacid containing magnesium hydroxide nullifies the effect of acid.
- **Soil treatment** - Excessive use of chemical fertilisers makes the soil acidic. This soil is not suitable for the growth of plants. Therefore, it is neutralised with bases like quick lime (calcium oxide) or slaked lime (calcium hydroxide). If the soil is basic, organic matter (compost) is added to it. Organic matter releases acids which neutralise the basic nature of the soil.