Acidic substances: - substances containing an acid are called acidic substances. Acids are of two types: mineral and organic acid.

Mineral acid:- these are obtained from minerals. For example: hydrochloric acid, sulphuric acid, and nitric acid are example of mineral acid that are use in the laboratory.

Organic acid: - organic acid occur naturally in animals and plant materials. E.g.:

Sources of organic acid	Grapes	Vinegar, tomato	Sting of ants, bases	Apple	Lemon, orange	Milk	Spinach
Organic acid	Tartaric acid	Acetic acid	Formic acid	Malic acid	Citric acid	Lactic acid	Oxalic acid

Properties of acids:

1. Acids are sour of taste and are corrosive in nature. Acids also corrode metals eg. Iron, Aluminium that whys acids are stored in glass ware.
2. Acids are soluble in water.
3. Acids can be either dilute or concentrated. If amount of water is more in an acid, it is called dilute acid and if amount of water is less, it is called concentrate acid.
4. Acids can be strong (which cause severe burns) e.g.: nitric acid and sulphuric acid and weak. (are not destructive) organic acids are weak acid.

Uses of acid :

A. Hydrochloric acid (HCl)

1) Used in industries that use heating application to remove deposits from the inside of the boilers.
2) For cleaning sinks and sanitary ware.

B. Sulphuric acid (H_2SO_4): known as the king of acids

1) Used in car and inverter batteries.
2) In the manufacture of paints, drugs, dyes and to produce fertilizers.

C. Nitric acid (HNO_3)

1) To clean gold and silver ornaments by gold smiths.
2) For the production of fertilizers such as ammonium nitrate.

D. Acetic acid (CH_3COOH)

1) Present in vinegar used to enhance the flavor of food.
2) Used as cleansing agent.
3) Used as preservative in pickles etc.

Basic Substances: - substances containing a base are called basic substances.

e.g.: sodium hydroxide ⟶ NaOH

Calcium hydroxide ⟶ $Ca(OH)_2$

Properties of base:

1. Bases are bitter in taste
2. Solutions of bases are slippery to touch.
3. Bases may or may not be soluble in water. Bases that can dissolve in water are
4. called alkalis. For example, Sodium hydroxide, potassium hydroxide
5. Bases are strong and corrosive.

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Strong Base	Week Base
Sodium Hydroxide (NaOH)	Copper Hydroxide[$Cu(OH)_2$]
Potassium Hydroxide (KOH)	Zinc Hydroxide [$Zn(OH)_2$]
	Ammonium Hydroxide (NH_4OH)

Uses of bases:

A. Calcium hydroxide [$Ca(OH)_2$]

1. Used to neutralize the acidity in soils.
2. Ingredient in whitewash and mortar.
3. It is component of Bordeaux mixture used for protecting agricultural crops from pests.
4. Used in the preparation of dry mixes for painting and decorating.

B. Magnesium Hydroxide [$Mg(OH)_2$]

1. Used as antacid help to correct excess acidity in the stomach.

C. Sodium Hydroxide (NaOH)

1) In the manufacture of paper, textile, detergents.
2) In homes used to unblock drains.
3) Used in the manufacture of soaps and detergents.

Indicators: indicators are substances which show a chance in colour when brought in contact with acids and bases.

Indicator	Acid	Base
Blue litmus paper	Red	Blue
Red litmus paper	Red	Blue
Phenolphthalein	Colour less	Pink
Methyl orange	Red	yellow

The solutions that do not show change in colour in any indicator are neither acidic nor basic and are called neural substances. Eg: water, sodium chloride, sugar etc. the indicator so chosen that it gives a different colour for different pH values. This paper is called pH paper.

Universal indicator: A universal indicator is a mixture of indicators so chosen that it gives a different color for different pH value.

When a pH paper is dipped in and acid or a base color obtained can be matched with the chart.

Natural indicator	Acid	Base
Red cabbage juice	Deep red	Green or yellow
Onion juice	Deep red	Green or yellow

Natural indicators:

Indicators can be prepared from brightly colored parts of plants such as flowers (china rose,),roots (beet root) ,stem (turmeric) and leaves (red changes)

Litmus: is the most common natural indicator. It is extracted from lichens (combination of alga and fungus).When this litmus solution is added to an acidic solution, it turns red and when added to basic solution it turns blue. It possess a purple color in distilled water. Nowadays, litmus strip or litmus paper is also used.

Turmeric: If a vegetable falls on the cloth or fabric. It leaves a yellow stain on the cloth. If we put soapy solution on it, at first instance it runs reddish brown and then gradually it gets removed.

Vegetables possess turmeric powder in it which is a natural indicator and when it comes in contact with acid or base, it changes its colour soapy solution is basic.

China Rose: the dye present in the flower can be extracted with the help of warm water and finally the coloured water extracted can be used as an indicator. When the solution is added to acidic solution, dark pink colour is obtained and when added to basic solution green colour is obtained.

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