ACIDS, BASES AND SALTS

CHAPTER-5

INDICATORS- TURMERIC

Turmeric is also used as natural indicator.

Turmeric is of yellow colour.

Turmeric paper turns into red when it is dipped into basic solution.

Turmeric paper does not change its colour with acid.

China Rose

China rose is another natural indicator.

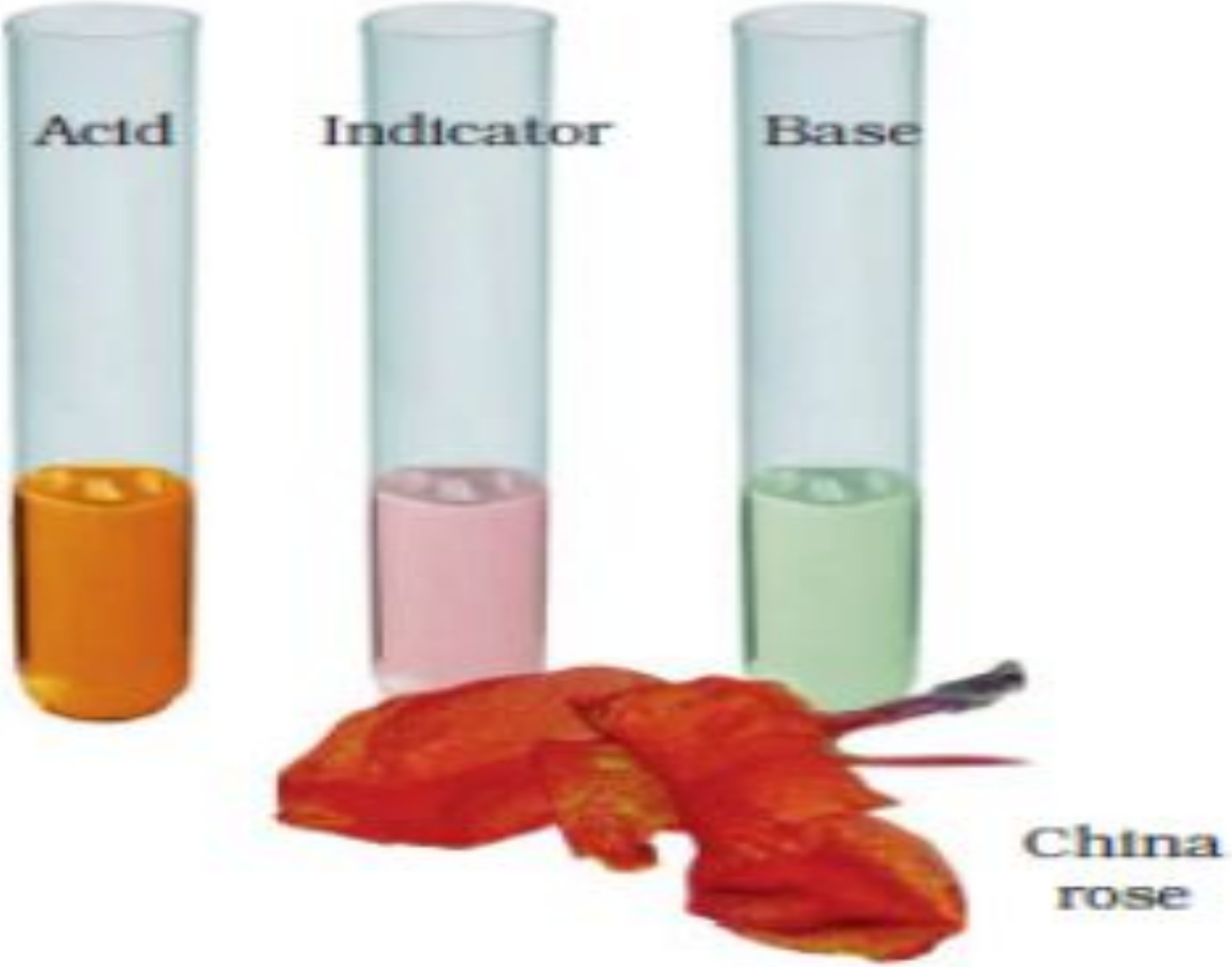
China rose solution gives dark pink (magenta) colour with acid and green colour with base.

Phenolphthalein

Phenolphthalein is an indicator solution which turns colourless in the presence of acids. Therefore, in the presence of sulphuric acid, phenolphthalein turns colourless.

It is colourless and turns pink in presence of base.

Originally, phenolphthalein is colourless. It turns pink in basic solutions and remains colourless in acidic solution.


Acid
Indicator
Base
China
rose

Acid Rain

Carbon dioxide, sulphur dioxide and nitrogen dioxide which are released from vehicles and chimneys mix with droplets of rain and turn the rain water acidic. When this acidic rain water falls over earth, it is known as acid rain. Acid rain damages the buildings and is harmful for plants and animals.

Effects of acid rain

Acid rain washes away nutrients needed for the growth of plants. Thus, acid rain causes great damage to plants.

It also causes respiratory disorders in humans.

Acid rain falling onto the earth finally flows into rivers and lakes. After reaching rivers and other bodies, they cause severe damage to the plant and animal life in aquatic system.

It affects buildings and structures, especially those made of metal or stone. The Taj Mahal in India has been seriously affected by acid rain.

Effects of acid rain on Taj Mahal

Taj Mahal is situated in Agra. The air in this place contains serious levels of sulphur and nitrogen oxides. This is due to the large number of power plants and industries set up around this area. All these led to acid rain.

Acid rain reacted with the marble (calcium carbonate) of Taj Mahal. This caused damage to this wonderful structure, which had attracted many people from different parts of the world.

What is Neutralization?

It is an acid-base reaction in which an acid reacts with a base to form salt and water.

The neutralization reaction is best represented as:

Acid + Base $\rightarrow$ Salt + Water

Example Of Neutralization Reaction-

When HCl (Hydrochloric acid), a strong acid, reacts with NaOH, a strong base, then the resulting salt is sodium chloride and water.

$HCl + NaOH \rightarrow NaCl + H_2O$

Neutralization in Everyday Life
Indigestion

Our stomach produces hydrochloric acid which helps in digesting our food without harming the stomach.

The excess of acid in the stomach causes indigestion which produces pain and irritation.(The person who has excess acid in the stomach is also said to suffer from acidity).

In order to cure indigestion and get rid of pain, we can take bases called antacids.

ANTACIDS

Antacids are a group of mild bases which have no toxic effects on the body.

Being basic in nature, antacids react with excess acid in stomach and neutralize it. This gives relief to the person concerned.

A common antacid used for curing indigestion due to acidity is milk of magnesia.

Milk of magnesia contains a base called magnesium hydroxide.

Magnesium hydroxide neutralizes the excess acid present in the stomach and cures indigestion.

PLENARY

Q. What is acid rain? How does it affect our historic monuments?

ASSESSMENT

Q. Explain the effect on turmeric on acids and bases.

Q. What is neutralization ? Give a chemical equation showing neutralization reaction.

Q. What are antacids?