

INDICATORS :

These are the substances which change their colour/smell in different types of substances.

TYPES OF INDICATORS

in plants.
Natural indicators

- Found in nature
- Litmus, red cabbage leaves extract, flowers of hydrangea plant, turmeric

substances.
Synthetic indicators

- These are chemical
- Methyl orange, phenolphthalein

have different odour
Olfactory indicators

- These substances in acid and bases.

	S. No.	Indicator	Smell/Colour in acidic solution	Smell/Colour in basic solution
Indicator Natural	1.	Litmus	Red	Blue
	2.	Red cabbage leaf extract	Red	Green
	3.	Flower of hydrangea plant	Blue	Pink
	4.	Turmeric	No change	Red
Indicator Synthetic	1.	Phenolphthalein	Colourless	Pink
	2.	Methyl orange	Red	Yellow
Indicator Olfactory	1.	Onion	Characteristic smell	No smell
	2.	Vanilla essence	Retains smell	No smell
	3.	Clove oil	Retains smell	Loses smell

INDICATORS :

These are the substances which change their colour/smell in different types of substances.

TYPES OF INDICATORS

in plants.
Natural indicators

- Found in nature
- Litmus, red cabbage leaves extract, flowers of hydrangea plant, turmeric

substances.
Synthetic indicators

- These are chemical
- Methyl orange, phenolphthalein

have different odour
Olfactory indicators

- These substances in acid and bases.

	S. No.	Indicator	Smell/Colour in acidic solution	Smell/Colour in basic solution
Natural Indicator	1.	Litmus	Red	Blue
	2.	Red cabbage leaf extract	Red	Green
	3.	Flower of hydrangea plant	Blue	Pink
	4.	Turmeric	No change	Red
Synthetic Indicator	1.	Phenolphthalein	Colourless	Pink
	2.	Methyl orange	Red	Yellow
Olfactory Indicator	1.	Onion	Characteristic smell	No smell
	2.	Vanilla essence	Retains smell	No smell
	3.	Clove oil	Retains smell	Loses smell

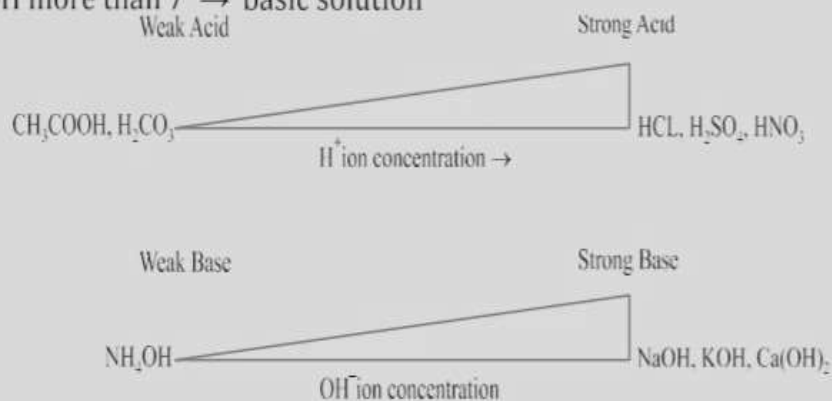
Universal indicator : is a mixture of several indicators. It shows different colours at different concentrations of H^+ ions in the solution.

pH Scale : A scale for measuring H^+ ion concentration in a solution. p in pH stands for 'potenz' a German word which means power.

pH = 7 \rightarrow neutral solution

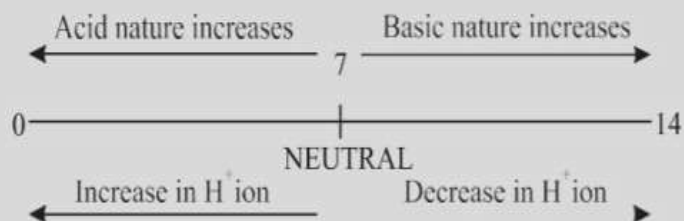
pH less than 7 \rightarrow acidic solution

pH more than 7 \rightarrow basic solution



On diluting an acid : pH increases \uparrow

On diluting a base : pH decreases \downarrow



[Grab your reader's attention with a great quote from the document or use this space to emphasize a key point. To place this text box anywhere on the page, just drag it.]

Importance of pH in everyday life

- | | |
|--|--|
| 1. Plants and animals are pH sensitive | <ul style="list-style-type: none">• Our body works within the pH range of 7-7.8.• When pH of rain water is less than 5.6, it is called acid rain. |
| 2. pH of the soil | <ul style="list-style-type: none">• Plants require a specific pH range for their healthy growth. |

3. pH in our digestive system

- Our stomach produces HCl acid which helps in digestion.
- During indigestion, stomach produces more acid and cause pain and irritation.
- To get rid of this pain, people uses antacid (mild base) like milk of magnesia [$\text{Mg}(\text{OH})_2$] to neutralize excess acid.

4. pH change as cause of tooth decay

- Tooth decay starts when pH of mouth is lower than 5.5.
- Tooth enamel made up of calcium phosphate (hardest substance in body) does not dissolve in water but corrodes when pH is lower than 5.5 due to acids produced by degradation of food particles by bacteria.
- Using toothpaste (generally basic) tooth decay can be prevented.

5. Self defence by animals and plants through chemical warfare

- (a) Bee sting leaves an acid which cause pain and irritation. Use of a mild base like baking soda on stung area gives relief.
- (b) Stinging hair of nettle leaves inject methanoic acid causing burning Sensation or pain. Rubbing with leaf of dock plant give relief.

pH of Salts :

- (i) Strong Acid + Strong Base \rightarrow Neutral Salt : pH = 7
- (ii) Salt of strong acid + Weak base \rightarrow Acidic salt : pH < 7
- (iii) Salt of strong base + Weak acid \rightarrow Basic salt : pH > 7