SAI International School
Lesson Notes
Subject - Chemistry
Ch-Acids, Bases & Salts
Topic- Indicators of Acids & Bases

Module -7 **Dt_ /04/2020**

Suggested Videos-

1. https://youtu.be/dXCwJUNaqSo
-Introduction to acids and bases
2. https://youtu.be/0ZJzEVwJtmI
-Synthetic & Olfactory indicators
3. https://youtu.be/-s1Ylcz3ZlY
-Turmeric as indicator (cartoon)
4. https://youtu.be/xYQlvTblgCY
-Different indicators (Litmus, Methyl, Phenol, pH)
5. https://youtu.be/OMXMlWybv8A
-Red cabbage juice indicator

To be done in CW Copy-

A. Compounds in general are categorized into three categories-

ACIDS
=SOUR TO TASTE
=CORROSIVE

BASES
=BITTER TO TASTE
=SLIPPERY TO TOUCH

SALTS
=MADE FROM ACID & BASE ON RECTION

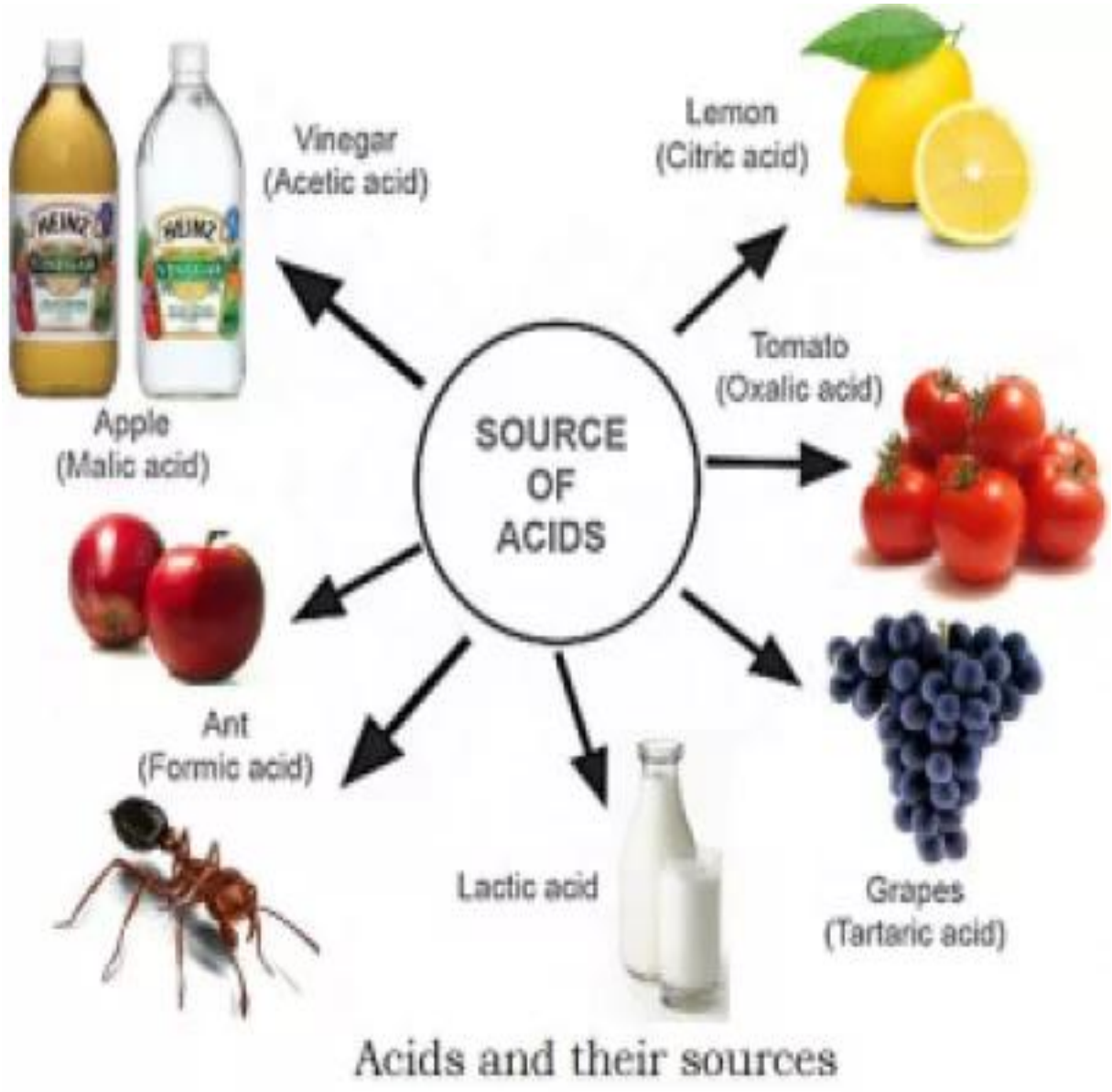
ACIDS-

Natural Acids OR Organic Acids
=Acids obtained from fruits, vegetables & plants are Organic acids.

Mineral Acids OR Inorganic Acids
=Acids made by man from Minerals are Mineral acids.

Examples of Organic & Inorganic Acids-

Sl.No.	ORGANIC ACID	SOURCE	INORGANIC ACID
1’	Citric acid	Lemon, Orange	Hydrochloric acid-HCl
2.	Acetic acid	Vinegar	Sulphuric acid- H_2SO_4
3.	Tartaric acid	Tamarind, Grapes	Nitric acid – HNO_3
4.	Oxalic acid	Tomato	Phosphoric acid H_3PO_4
5.	Formic acid	Ant/Bee/Nettle sting	Carbonic acid -H_2CO_3
6.	Malic acid	Apples	Hypochlorous acid- HClO (Week acid)
7.	Lactic acid	Milk/Curd	Perchloric acid -$HClO_4$ (strong acid)



Acids and their sources

B. Indicators- Acids & Bases can be identified using appropriate indicators.

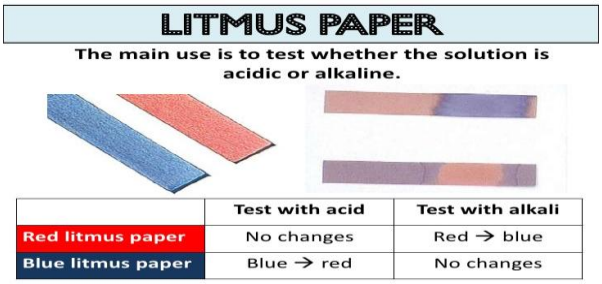
Natural Indicators

Colour indicators	**Olfactory Indicator**	**Synthetic Indicator**
1.Litmus (Lichen)	1. Onion extract	1. Phenolphthalein
2. Red Cabbage	2. Vanilla extract	2. Methyl Orange.
3. Turmeric	3. Clove Oil	3. Universal indicator

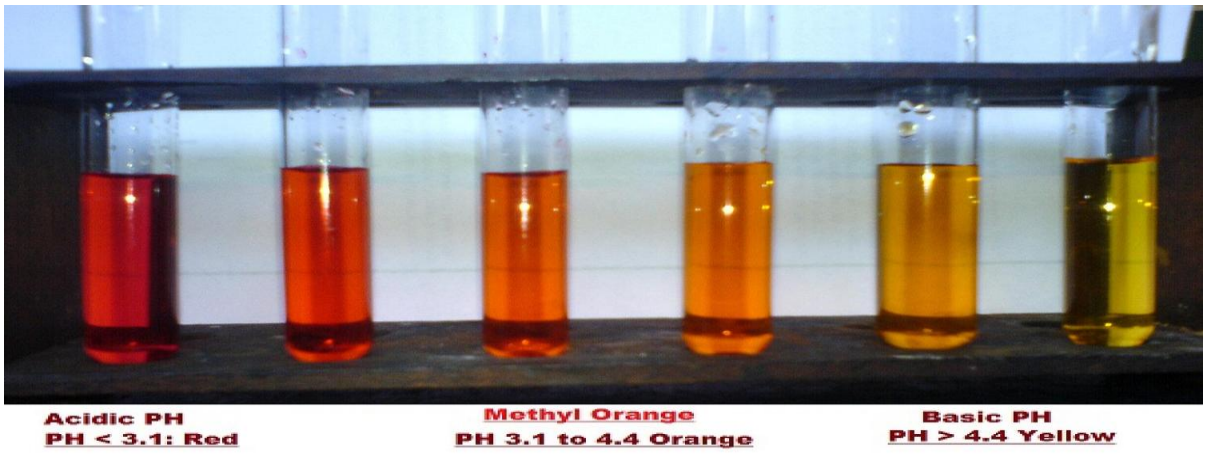
Indicator Colour Chart-

Indicator	**Colour in Acid**	**Colour in Base**
1. Litmus	Red	Blue
2. Phenolphthalein	Colourless	Pink
3. Methyl Orange	Red	Yellow
4. Turmeric	No change	Red
5. Red Cabbage	Red	Green
6. Onion Extract	No effect on smell of onion	Onion smell is lost
7. Clove oil	No effect on smell of Clove oil	Clove oil smell is lost.

pH-7- Acid (colourless with phenolphthalein)
pH-10- Base (pink with phenolphthalein)



Litmus Paper Test



pH < 3.1 Acid (Red in Methyl Orange), pH > 4.4 Basic (Yellow in Methyl Orange)

S. No.	Test solution	Effect on red litmus paper	Effect on blue litmus paper	Inference
1	Tap Water	No change	No change	Neutral
2	Detergent Solution	Changes to blue	No change	Basic
3	Aerated Drink	No change	Changes to red	Acidic
4	Soap Solution	Changes to blue	No change	Basic
5	Shampoo	No change	Changes to red	Acidic
6	Common Salt Solution	No change	No change	Neutral
7	Sugar Solution	No change	No change	Neutral
8	Vinegar	No change	Changes to red	Acidic
9	Baking Soda Solution	Changes to blue	No change	Basic
10	Milk of Magnesia	Changes to blue	No change	Basic
11	Washing Soda Solution	Changes to blue	No change	Basic
12	Lime Water	Changes to blue	No change	Basic

Assessment

MCQs

Q.1	Which of the following acid is present in sour milk? (a) glycolic acid (b) lactic acid (c) citrus acid (d) tartaric acid
Q.2	Incorrect statement about acids is/are (a) they have sour taste (b) they may change the colour of indicator (c) they changes the colour or blue litmus to red (d) they change the colour of red litmus to blue
Q.3	The acid used in making of vinegar is- (a) formic acid (b) acetic acid (c) sulphuric acid (d) nitric acid

- For Assertion& Reason question follow the following directions.

DIRECTION: Each of these questions contains an Assertion followed by Reason. Read them carefully and answer the question on the basis of following options. You have to select the one that best describes the two statements.

(a) If both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.

(c) If Assertion is correct but Reason is incorrect.

(d) If Assertion is incorrect but Reason is correct. (e) If Assertion & Reason both are incorrect.	
Q.4	Assertion: Phenolphthalein gives pink colour in basic solution. Reason: Phenolphthalein is a natural indicator.
Q.5	Assertion: Baking soda creates acidity in the stomach. Reason: Baking soda is alkaline.

Home assignment

S.LNo.	Questions	Mark	Skill
Q.1	Acids are ..... in taste and change the colour of blue litmus to---------.....	1	R
Q.2	..... is a natural indicator whereas .....is a synthetic indicator. A .....indicator is a mixture of several indicators.	1	u
Q.3	What will be the action of the following substances on litmus paper? Dry HCl gas, Moistened NH_3 gas, Lemon juice, Carbonated soft drink, Curd, Soap solution.	3	R+A
Q.4	Name the acid present in ant sting and give its chemical formula. Also give the common method to get relief from the discomfort caused by the ant sting.	3	U+A
Q.5	A student prepared solutions of (i) an acid and (ii) a base in two separate beakers. She forgot to label the solutions and litmus paper is not available in the laboratory. Since both the solutions are colourless, how will she distinguish between the two?	5	HOT