

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

Module -13

Dt_ /04/2020

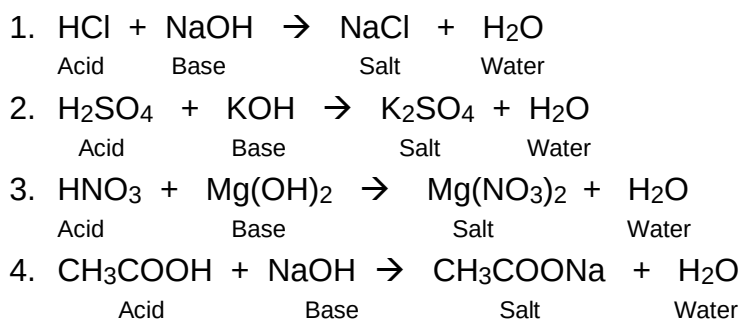
Suggested Videos-

1. <https://youtu.be/jNsdC3U3ss-> Given salt, find acid and base
2. <https://youtu.be/Rm3ueYJpVNk> - Nature of salts

To be done in CW Copy-

Salts-

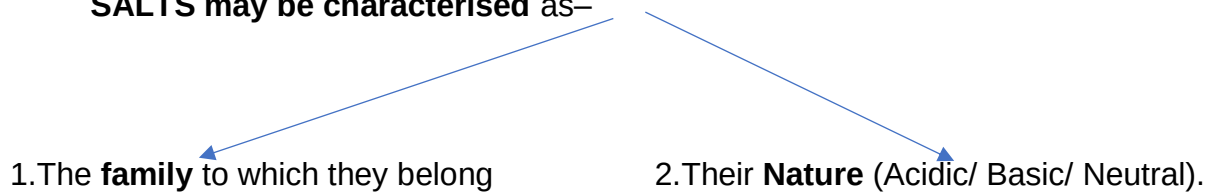
- **Salts** are those compounds which are formed by the **neutralization reaction of an acid with a base.**
- **Salts** are **electrically neutral.**
- **Examples-**



As evident above,

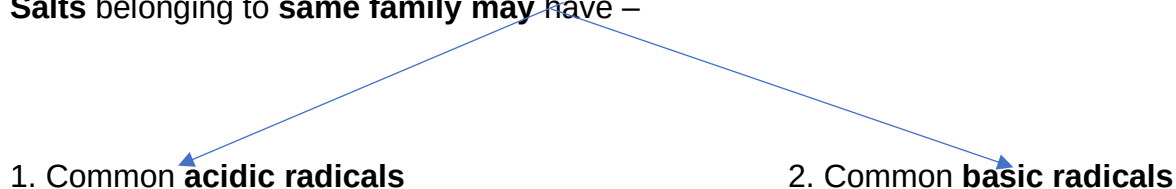
The **type of SALT** depends on the **parent Acid & parent base.**

SALTS may be characterised as–



- **Family of Salt:**

Salts belonging to **same family** may have –



Example:

Salts having common Acidic Radicals-

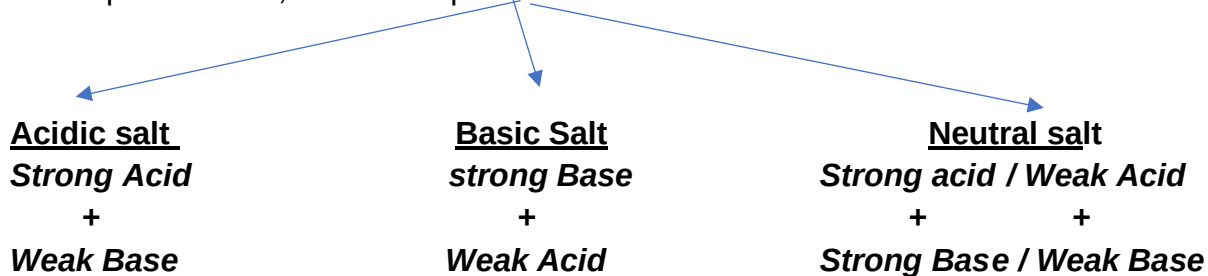
1. **Sodium chloride** (NaCl) and **Calcium chloride** (CaCl_2) → **Chloride family**.
2. **Potassium sulphate** (K_2SO_4) and **Magnesium Sulphate** (MgSO_4) → **Sulphate Family**
3. **Silver Nitrate** (AgNO_3) and **Copper Nitrate** ($\text{Cu}(\text{NO}_3)_2$) → **Nitrate Family**

Salts having common Basic Radicals-

1. **Calcium chloride** (CaCl_2) and **calcium sulphate** (CaSO_4) → **Calcium family**.
2. **Zinc Nitride** (Zn_3N_2) and **Zinc Phosphide** (Zn_3P_2) → **Zinc Family**
3. **Ferrous Sulphate** (FeSO_4) and **Ferrous Sulphide** (FeS) → **Ferrous Family**

- **Nature of Salts –**

Salts may be of three types, depending on the strength of the parent Acid & parent Base, it's made up of.



Acid	Base	Salt	Example
Strong	Strong	Neutral	$\text{NaOH} + \text{HCl} \rightarrow \text{NaCl} + \text{H}_2\text{O}$
Strong	Weak	Acidic	$\text{HCl} + \text{NH}_4\text{OH} \rightarrow \text{NH}_4\text{Cl} + \text{H}_2\text{O}$
Weak	Strong	Basic	$\text{CH}_3\text{COOH} + \text{NaOH} \rightarrow \text{CH}_3\text{COONa} + \text{H}_2\text{O}$
Weak	Weak	Neutral	$\text{CH}_3\text{COOH} + \text{NH}_4\text{OH} \rightarrow \text{CH}_3\text{COONH}_4 + \text{H}_2\text{O}$

Salt

How to determine if salt is acidic/ basic/ neutral?

1. Split the salt into its ions.
2. Determine the parent acid/ base of the ions:

Acid	Base	Salt
Strong	Strong	Neutral
Strong	Weak	Acidic <i>conj acid of weak base hydrolyses H_2O to form H^+</i>
Weak	Strong	Basic <i>conj base of weak acid hydrolyses H_2O to form OH^-</i>
Weak	Weak	Depends

Assessment

MCQs

Q.1	When $Ca(OH)_2$ reacts with $CO_2(g)$, it will give $CaCO_3(s)$ and $H_2O(l)$. The nature of $CaCO_3$ is (a) acidic (b) basic (c) neutral (d) All are possible
Q.2	Reaction of an acid with a base is known as- (a) decomposition (b) combination (c) redox reaction (d) neutralization
Q.3	Aqueous solution of copper sulphate reacts with aqueous ammonium hydroxide solution to give. (a) brown precipitate (b) pale blue precipitate (c) white precipitate (d) green precipitate
➤ 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 : H_3PO_4 and H_2SO_4 are known as polybasic acids. Reason : They have two or more than two protons per molecule of the acid.
Q.5	Assertion : pH of ammonium chloride solution is in acidic range. Reason : Solution of a salt of weak base and strong acid is acidic.

Home assignment

S.L No.	Questions	Mark	Skill
Q.1	Name the acid and base that have constituted the salt ammonium nitrate. [CBSE 2010]	1	R
Q.2	Write a balanced chemical equation for the reaction between sodium carbonate and hydrochloric acid indicating the physical state of reactants and the products. [CBSE 2010]	1	u
Q.3	Mention the pH of aqueous solution of the following salts as 7, more than 7, less than 7. KCl , Na_2CO_3 , NH_4Cl , NaNO_3 (Sodium nitrate) [CBSE 2016]	3	R+A
Q.4	Classify the following salts into acidic, basic and neutral salts: Potassium sulphate, ammonium chloride, sodium carbonate, sodium chloride [CBSE 2011]	3	U+A
Q.5	(a) A salt is produced by reaction between an acid and a base. Identify the acid and base from which the following salts have been formed: (i) Na_2SO_4 , (ii) NH_4Cl , (iii) KNO_3 , (iv) NaCl (b) Which one of these will have pH less than 7 and why? [CBSE 2012]	5	HOT