SAI International School
Lesson Notes
Subject - Chemistry
Ch-Acids, Bases & Salts
Topic- Study Of Salts – 1. Common salt

Module -14 **Dt_ /04/2020**

Suggested Videos-

1. https://youtu.be/N_HQGiC9OJE - **Chlor Alkali Process**

To be done in CW Copy-

- **STUDY OF SALTS-**
  1. **COMMON SALT –**

     OR

     I. **SODIUM CHLORIDE- Chemical Name**

* Of all salts, the most common salt is **Sodium Chloride (NaCl).**
* It is commonly known as **table/common salt.**
* It **enhances the taste of our food & is essential** for our body.
* It is a **Neutral salt (pH =7)**

Common Salt plays a crucial role in maintaining human health.
It is the main source of sodium and chloride ions in the human diet.
Sodium is essential for nerve and muscle function and is involved in the regulation of fluids in the body.
It regulates the electrical charges moving in and out of the cells in the body.
Sodium also plays a role in the body's control of blood pressure and volume

* **Source**

Obtained from **Sea Water**
By the process of **Evaporation**.

Found on the **Earth's crust** as **Rock Salt**
Obtained by the process of **Mining.**

Deposits of solid salt are also found in several parts of the world.
These large crystals are often brown due to impurities.
This is called rock salt.
Beds of rock salt were formed when seas of bygone ages dried up.
Rock salt is mined like coal.

* **Uses of Common Salt –**

Common salt is used to prepare various chemicals by the Electrolysis of BRINE – **(CHLOR ALKALI PROCESS) :**

I. Caustic soda (NaOH)
II. Chlorine gas

III. Hydrogen gas.

* **CHLOR ALKALI PROCESS-**

When **electricity** is passed through an **aqueous solution of sodium chloride (brine)**, it decomposes to form **sodium hydroxide**.

This process is called the **chlor-alkali process (Electrolysis of Brine)**.

On passing electricity through Brine, the following reactions takes place-
In the electrolyte-

$$NaCl + H2O \rightarrow Na^+ + Cl^- + H^+ + OH^-$$

At the Cathode-

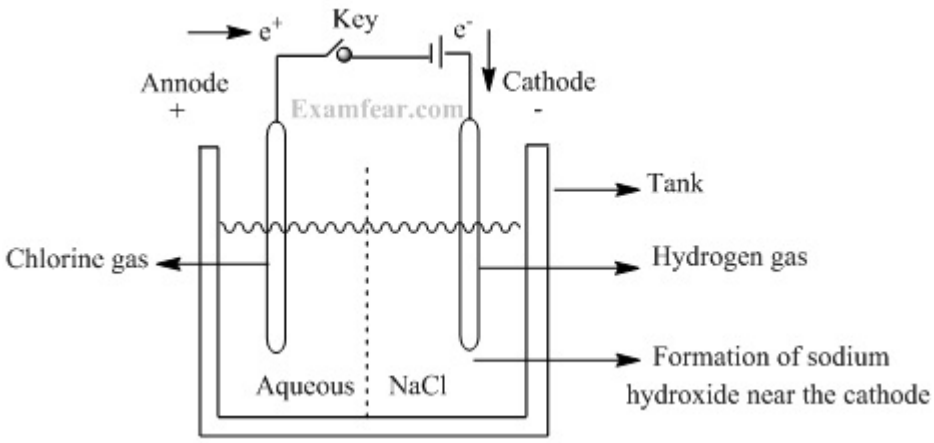
$$H^+ + e^- \rightarrow H$$

$$2H \rightarrow H_2$$

At the Anode-

$$Cl^- \rightarrow Cl + e^-$$

$$2Cl \rightarrow Cl_2$$

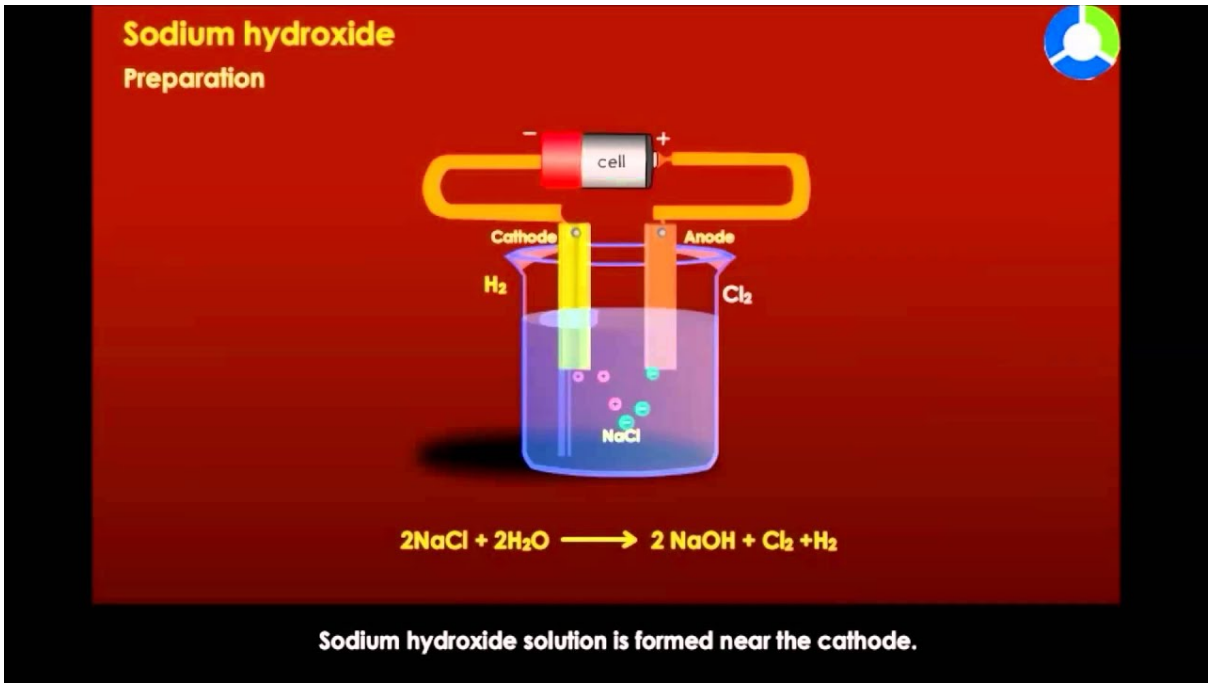


The overall reaction is as follows-

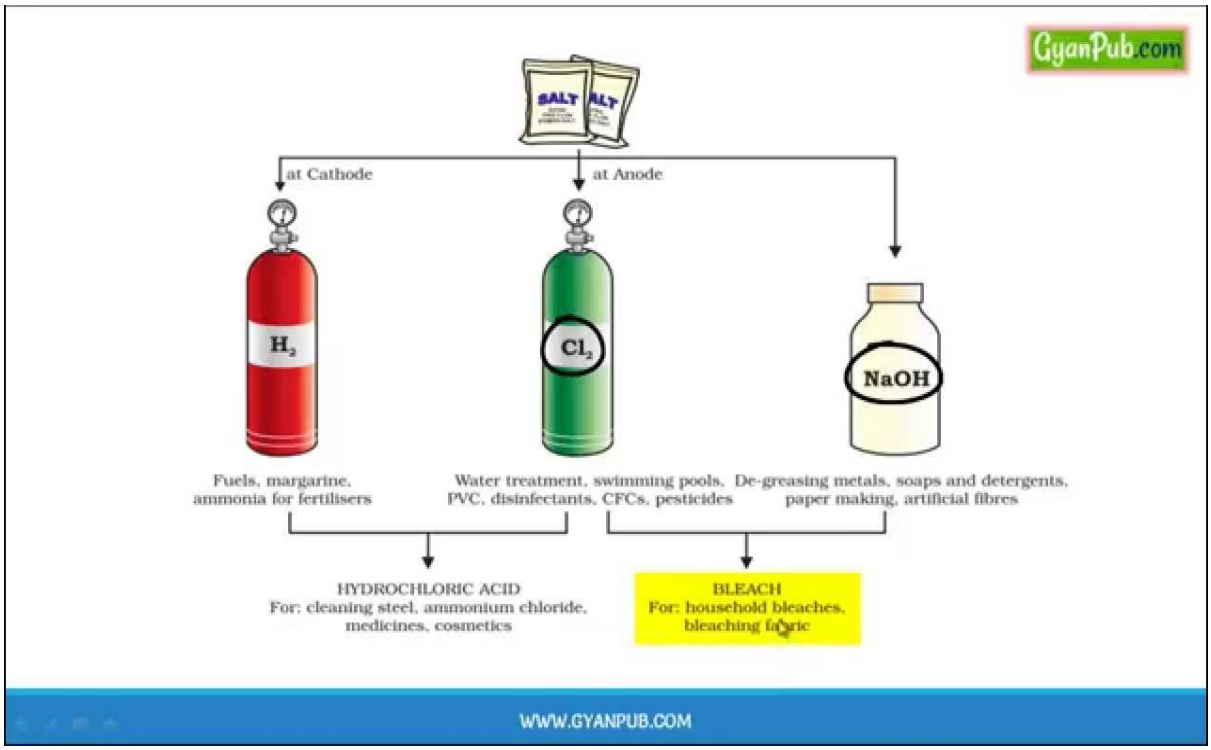
$$2NaCl(aq) + 2H_2O(l) \longrightarrow 2NaOH(aq) + Cl_2(g) + H_2(g)$$

Sodium Chloride — Sodium Hydroxide

- The process is termed as the **chlor-alkali process**.
- The term **chlor for chlorine** and **alkali for sodium hydroxide**.
- Chlorine gas is given off at the **anode**,
- **Hydrogen gas** is given off at the **cathode**.
- **Sodium hydroxide** solution is formed near the **cathode** in the electrolyte.



- **Uses of the Products got during Chlor-Alkali process -**



Assessment

MCQs

Q.1	**1. Sodium carbonate is a basic salt because it is a salt of** (a) strong acid and strong base (b) weak acid and weak base (c) strong acid and weak base (d) weak acid and strong base
Q.2	**2. Common salt besides being used in kitchen can also be used as the raw material for making** **(i) washing soda** **(ii) bleaching powder** **(iii) baking soda** **(iv) slaked lime** (a) (i) and (ii) (b) (i), (ii) and (iv), (c) (i) and (iii) (d) (i), (iii) and (iv)
Q.3	**In one of the industrial processes used for manufacture of sodium hydroxide, a gas X is formed as by product. X is:** [a] Na [b] H_2 [c] Cl_2 [d] [NaOH]

- 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 : Salts are the products of an acid-base reaction. Reason : Salt may be acidic or basic.
Q.5	Assertion : During electrolysis of concentrated aqueous solution of sodium chloride, hydrogen is produced at anode and chlorine gas is produced at cathode. Reason : Ions get attracted to oppositely charged electrodes.

Home assignment

S.L No.	Questions	Mark	Skill
Q.1	TRUE/FALSE There are a variety of strengths when you study acids and bases.	1	R
Q.2	Classify the following salts into acidic, basic and neutral salts: Potassium sulphate, ammonium chloride, sodium carbonate, sodium chloride [CBSE 2011]	1	u
Q.3	Give suitable reasons to justify the following statement: An aqueous solution of sodium chloride is neutral butan aqueous solution of sodium metal is basic.[CBSE 2016]	3	R+A
Q.4	**Fill in the missing data in the following table.**	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) Na2SO4, (ii) NH4Cl, (Hi) KNO3, (iv) NaCl (b) Which one of these will have pH less than 7 and why? [CBSE 2012]	5	HOT

Name of the salt		Salt obtained from		
		Formula	Base	Acid
(i)	Ammonium chloride	NH_4Cl	NH_4OH	-
(ii)	Copper sulphate	-	-	H_2SO_4
(iii)	Sodium chloride	$NaCl$	$NaOH$	-
(iv)	Magnesium nitrate	$Mg(NO_3)_2$	-	HNO_3
(v)	Potassium sulphate	K_2SO_4	-	-
(vi)	Calcium nitrate	$Ca(NO_3)_2$	$Ca(OH)_2$	-
