

SELF ASSESSMENT TEST SOLUTIONS

- Water of crystallization is the fixed number of water molecules present in one formula unit of salt.
 - Five molecules of water
 - Formula $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
 - When heated, its colour changes from blue to white.
- X : NaHCO_3 , Y : Na_2CO_3 , Z : $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
 - $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O} \xrightarrow{\text{Heat}} \text{Na}_2\text{CO}_3 + 10\text{H}_2\text{O}$
 - (1) It is used as a cleaning agent for domestic purposes.
(2) For removing permanent hardness of water.
- The compound is sodium hydrogen carbonate - NaHCO_3
Preparation : $\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 + \text{NH}_3 \rightarrow \text{NaHCO}_3 + \text{NH}_4\text{Cl}$
 - $2 \text{NaHCO}_3 \xrightarrow{\text{heat}} \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$
- Washing soda - $\text{Na}_2\text{CO}_3 \cdot 10 \text{H}_2\text{O}$
Baking soda : NaHCO_3
Baking soda is an ingredient of antacids. It neutralises HCl released in stomach and eases stomachache.
 $\text{NaHCO}_3 + \text{HCl} \rightarrow \text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$
- Baking soda is sodium bicarbonate (NaHCO_3)
 - $\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 + \text{NH}_3 \rightarrow \text{NH}_4\text{Cl} + \text{NaHCO}_3$
 - It is used in soda-acid fire extinguishers.
- The three products are :
Sodium hydroxide (NaOH), Chlorine (Cl_2), and hydrogen (H_2).
 NaOH is used for the preparation of soaps and detergents.
 Cl_2 is used in the manufacturing of PVC, pesticides, CFCs etc.
 H_2 is used as fuels and also in the production of margarine.
- Chemical formula – CaOCl_2
Preparation : $\text{Ca(OH)}_2 + \text{Cl}_2 \rightarrow \text{CaOCl}_2 + \text{H}_2\text{O}$
Uses - for bleaching cotton and linen in textile industry.
 - for bleaching wood pulp in paper factories.
 - for bleaching washed clothes in laundry.

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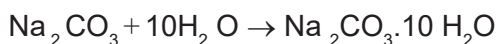
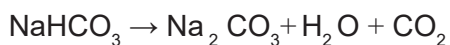
- As an oxidising agent in chemical industry.
- for disinfecting water.

8. (a) The substance is copper sulphate crystals ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$).

5 molecules of water are present in one formula unit of Copper sulphate. When we heat, this water is removed and the salt turns white. When we moisten the crystals again, the blue colour of the crystals reappears.

(b) It is washing soda (sodium carbonate)

Preparation: $\text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 + \text{NH}_3 \rightarrow \text{NH}_4\text{Cl} + \text{NaHCO}_3$



Uses : - use in glass, soap and paper industry.

- use as a cleansing agent for domestic purpose.
- use for removing permanent hardness of water.