



HANSRAJ MODEL SCHOOL

PUNJABI BAGH, NEW DELHI

CLASS - X

SUBJECT - Chemistry

Topic- Chemical Reactions and Equations
Module 2

#OnlineClassesinCoronalidays

CHEMICAL REACTIONS AND EQUATIONS

After we are done with balancing of chemical equations, we shall now go on to:

TYPES OF CHEMICAL REACTIONS

- 1.COMBINATION Reactions;
- 2.DECOMPOSITION Reactions;
- 3.SINGLE DISPLACEMENT Reactions;
- 4.DOUBLE DISPLACEMENT Reactions;
- 5.EXOTHERMIC Reactions;
- 6.ENDOTHERMIC Reactions; and
- 7.REDOX Reactions;

COMBINATION REACTIONS

When two or more than two reactants combine to form a single product then the reaction is classified as a Combination Reaction:

A and B combine to give C;

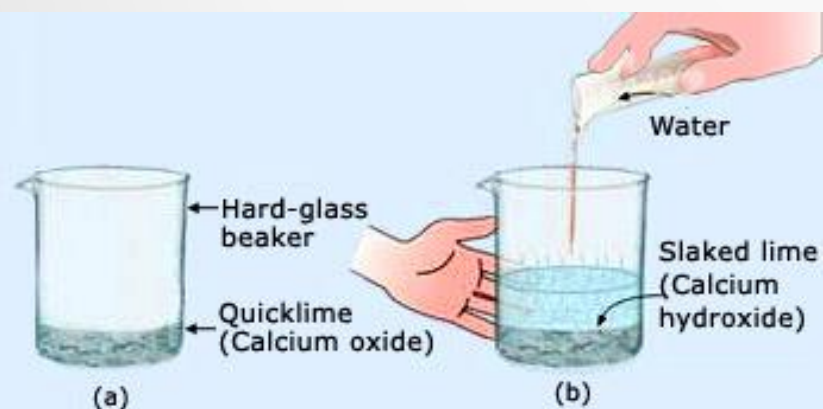
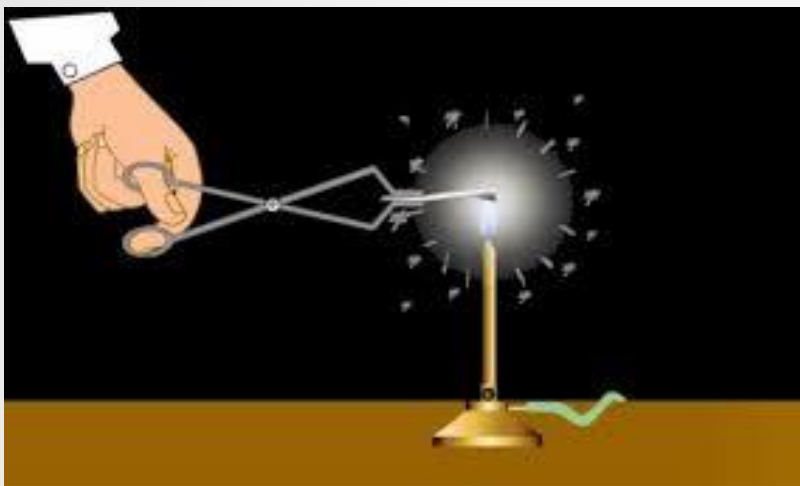
A,B and C combine to give D; and

A,B,C and D combine to give E.

In all of the above the product is only a single entity.

TWO REACTANTS A AND B COMBINE TO GIVE C

What are A,B and C and how do these reactions qualify as combination reactions?



Quicklime reacts with water to form slaked lime releasing a lot of heat. The beaker becomes hot. Its temperature rises.



alamy stock photo

KYXFEN
www.alamy.com

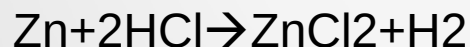
EXOTHERMIC REACTIONS

1. Reactions which involve the evolution of heat are termed as exothermic reaction. All the reactions in the previous slide are exothermic in nature because they involve the evolution of heat and light.

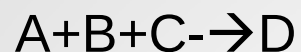
2. Respiration is also an exothermic reaction



3. Reaction between Zn granules and HCl is also exothermic



COMBINATION REACTIONS (contd.)

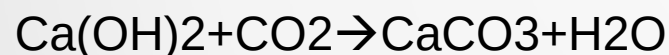


Eg

When Carbon di oxide gas is passed through lime water, the lime water turns milky

But the above is not a combination reaction.

See for yourself



But in the above reaction when excess CO_2 is passed the milky appearance disappears due to the formation of $\text{Ca(HCO}_3)_2$.

This is a combination reaction:



DECOMPOSITION REACTIONS

Reactions in which a single reactant decomposes to give two or more than two products are called as decomposition reactions



Eg.

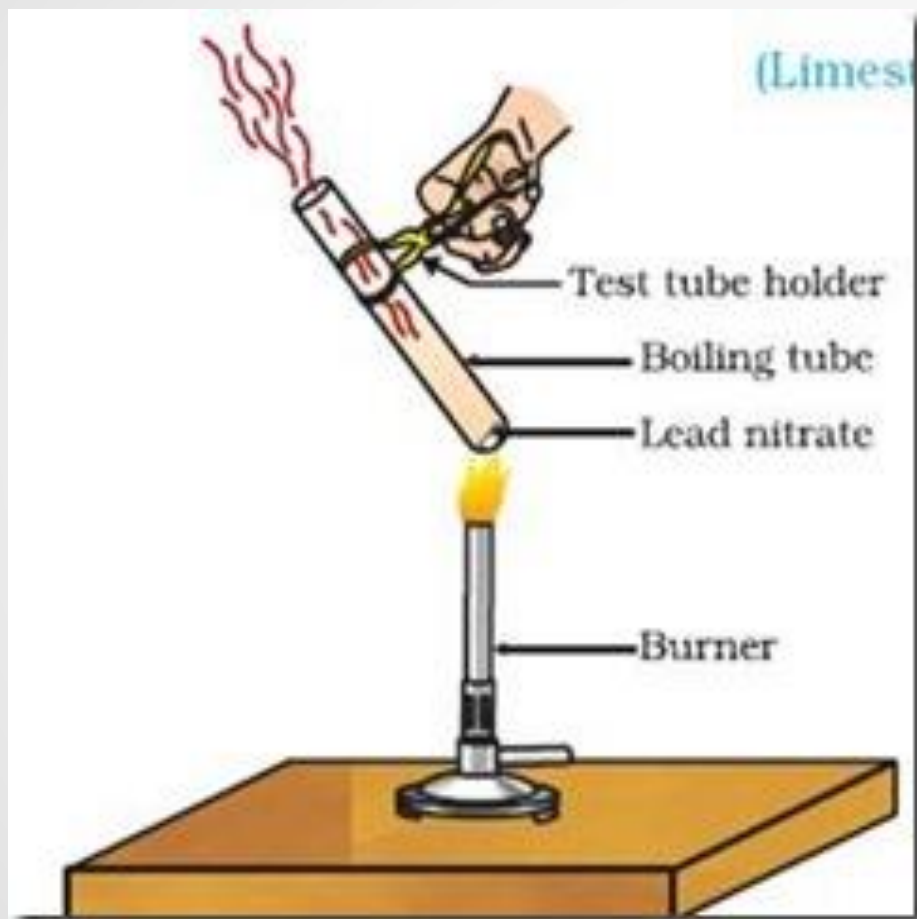


TYPES OF DECOMPOSITION REACTIONS

WE SHALL STUDY THREE TYPES OF DECOMPOSITION REACTIONS:

1. THERMAL DECOMPOSITION REACTIONS;
2. ELECTROLYTIC DECOMPOSITION or ELECTROLYSIS; and
3. PHOTOLYTIC DECOMPOSITION OR PHOTOLYSIS

THERMAL DECOMPOSITION



In this type decomposition occurs under the influence of heat

Eg

1. Heating of Lime stone in lime kilns



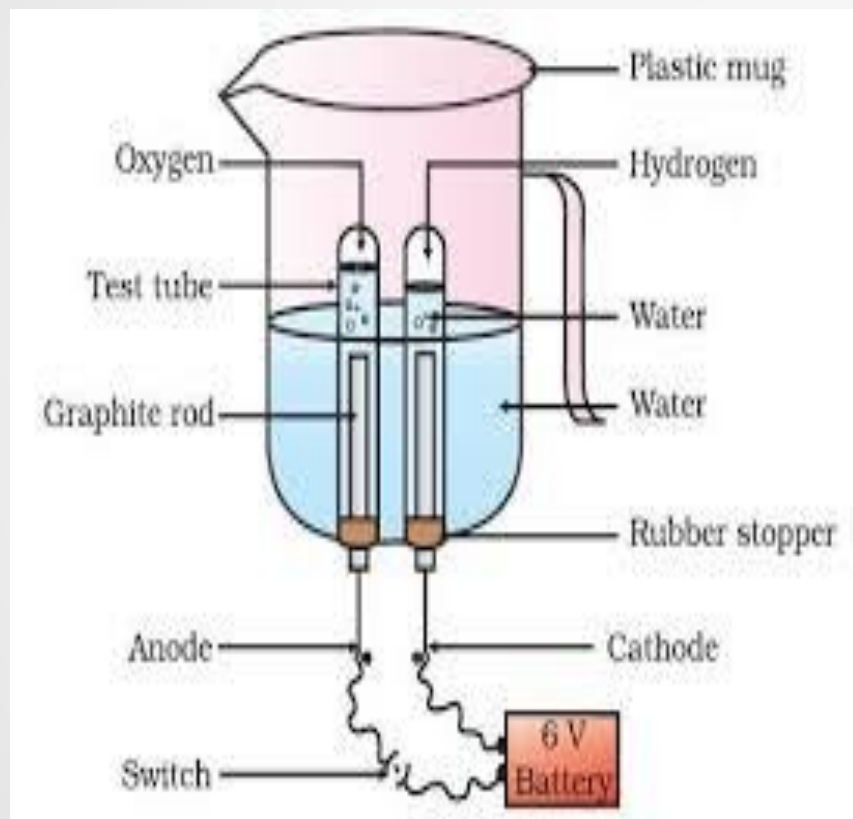
2. Heating of Lead Nitrate crystals



Lead nitrate crystals are heated strongly to get a yellow residue of Lead oxide and the test tube gets filled with a reddish brown gas ie Nitrogen di oxide.



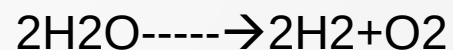
ELECTROLYTIC DECOMPOSITION OR ELECTROLYSIS



In this type decomposition occurs under the influence of electricity

Eg

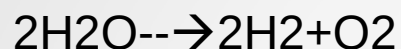
When electricity is passed through water it breaks down to give Hydrogen gas and Oxygen gas



In the next slide we shall study this reaction in detail

ELECTROLYSIS OF WATER

REACTION

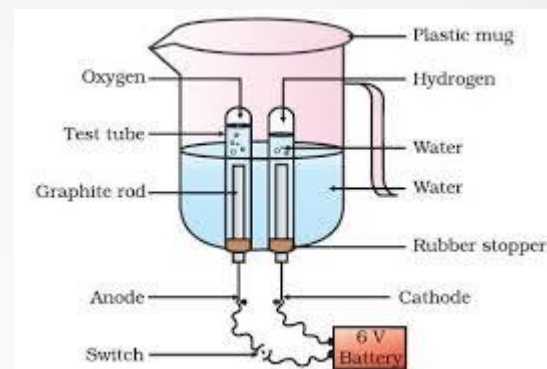


Conditions for the reaction:

A small amount of acid is added to the water so that electrolysis takes place fast.

Remember distilled water does not conduct electricity.

DIAGRAM FOR ELECTROLYSIS



RATIO OF THE TWO GASES FORMED

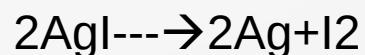
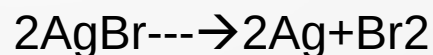
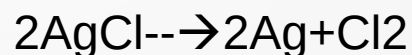
The reaction and diagram clearly show that Hydrogen and Oxygen are formed in the ratio of 2:1

PHOTOLYTIC DECOMPOSITION OR PHOTOLYSIS

This type of decomposition takes place under the influence of sunlight

Eg

When Silver halides are exposed to sunlight they decompose to silver and the respective halogen



The above reactions are an integral part of Photography

