16.07.20

CHAPTER-03

ATOMS AND MOLECULES

CLASS-IX   SUB-SCIENCE

❖ Kanad was one of the first person to propose that matter is made up of very small particles called "parmanu"

- ❖ John Daltons called these particles by the name of atom.

- ❖ The word atoms means indivisible.

- ❖ The combined form of atom is now called molecules.

❖ **All the matter is made up of small particles called atoms and molecules.**
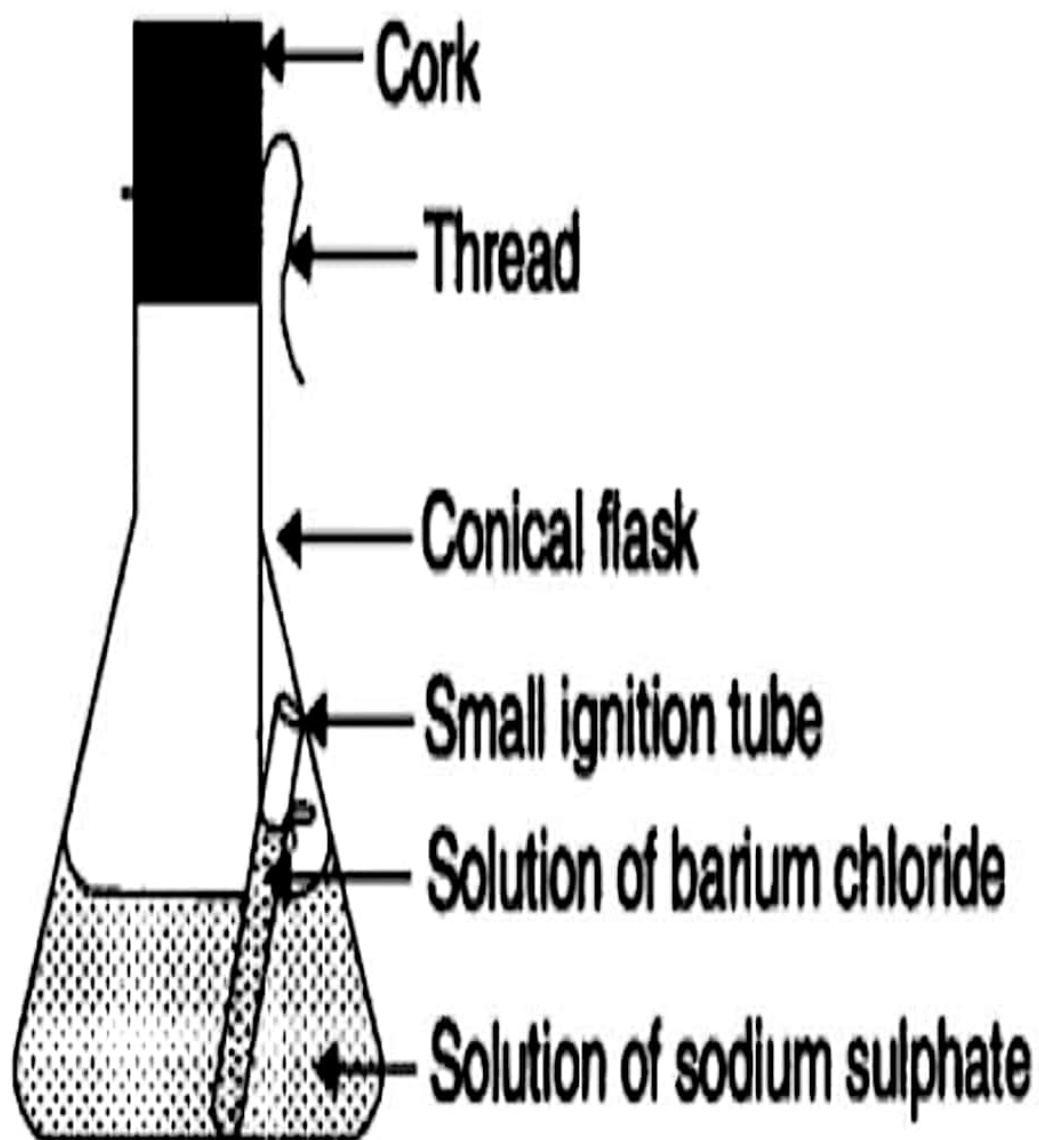
Laws of chemical combinations

1. Law of conservation of mass

2. Law of constant proportion
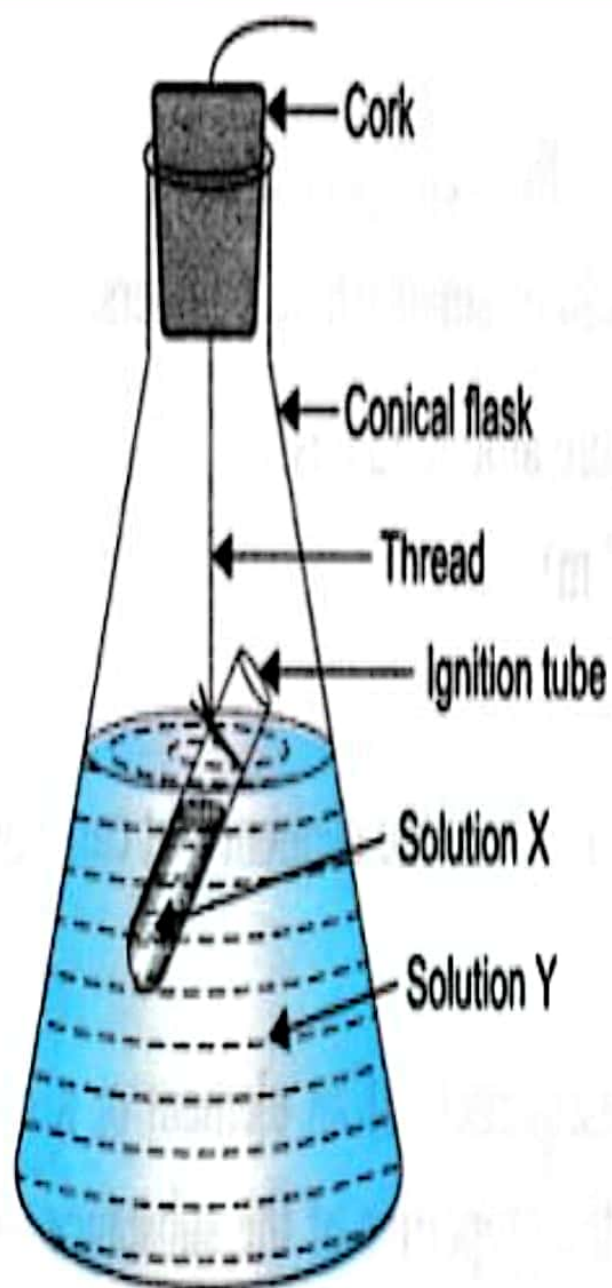
3. Law of multiple proportion

Law of conservation of mass :
- The law of conservation of mass means that in a chemical reaction, the total mass of the product is equal to the total mass of the reactant.
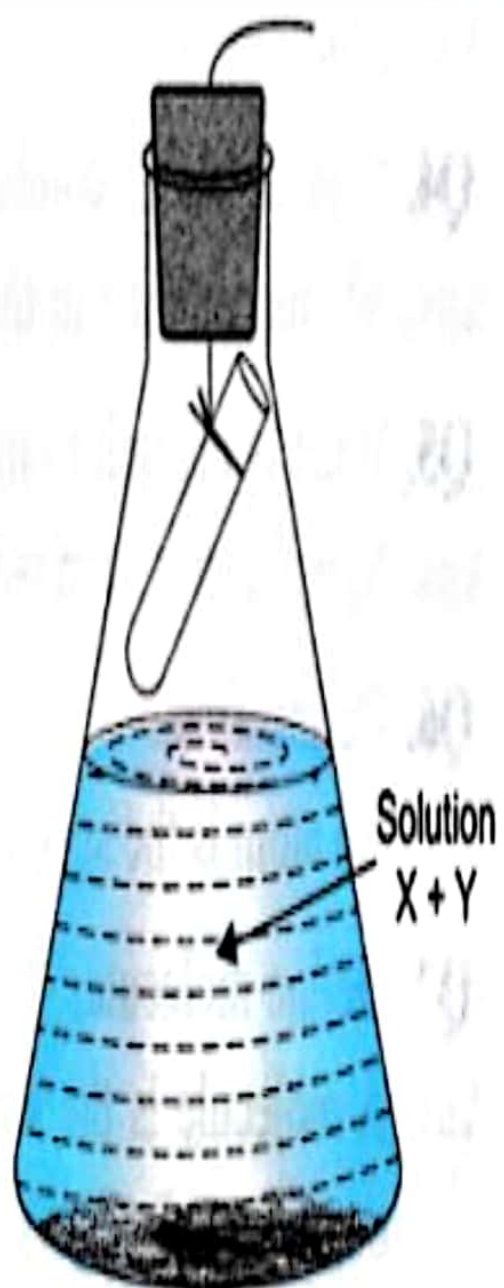
"Matter is neither created nor destroyed in a chemical reaction"

(a) Diagram :

Labels in diagram:
- Cork
- Thread
- Conical flask
- Small ignition tube
- Solution of barium chloride
- Solution of sodium sulphate

Cork
Conical flask
Thread
Ignition tube
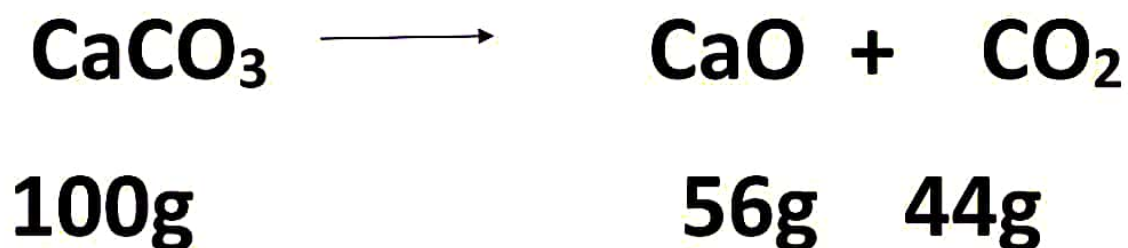Solution X
Solution Y
Solution X + Y

Record the weight of reactants

Record the weight of product

It has been found by experiment that if 100 g of calcium carbonate are decomposed completely then 56 g of calcium oxide and 44 g of carbon dioxide are formed.Example:-

$$CaCO_3 \longrightarrow CaO + CO_2$$

100g   56g   44g

Sodium carbonate + ethanoic acid ——→ Sodium ethanoate + carbon dioxide + water

(5.3 g)   (6 g)   (8.2 g)   (2.2 g)   (0.9 g)

$$5.3\ g + 6\ g \rightarrow 8.2\ g + 2.2\ g + 0.9\ g$$

L.H.S = R.H.S

11.3 g = 11.3 g

➤ **Law of constant proportion: This law was given by "Proust" in 1779. According to this law a chemical compound always consists of the same elements combined together in the same proportion by mass. Example : water consists of the same two elements hydrogen and oxygen,**

combined together in the same constant proportion of 11:89 or 1:8 by mass .

Law of Definite Proportions: % by Weight of Hydrogen and Oxygen in Water