

# Chemistry



9th Class

Sindh Board Notes

Chapter # 2

Chemical Combinations



Fill In Blanks

پنجاب، سندھ، بلوچستان، خیبر پختونخواہ، بورڈز کے تمام نوٹس سابقہ پیپرز، اس ویب سائٹ سے فری ڈاؤن لوڈ کریں۔

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## ➔ CHEMICAL COMBINATIONS

1. Lavoisier summarized his findings by formulation a law, which is known as law of **conservation of mass**.
2. Law of conservation of mass states that mass is neither **created** nor **destroyed** during a chemical reaction.
3. The relationship between mass that is lost and the energy that is released is given by the equation  $E = mc^2$  where  $c$  is the **velocity** of light.
4. Velocity of light is  **$3 \times 10^{10}$**  cm/sec.
5. Louise Proust in 1799 proposed a law of **definite proportion** which is also known as constant composition.
6. According to the law of constant composition different samples of the same compound always contain the same elements combined together in the **same proportion** by **mass**.
7. Same element can combine in more than one **ratio** to form different **compounds**.
8. **John Dalton** in 1803 proposed the law of multiple proportions.
9. Ratio of masses of oxygen in carbon monoxide (CO) and Carbon dioxide (CO<sub>2</sub>) is **1:2**.
10. Ratio of different masses of oxygen in H<sub>2</sub>O and H<sub>2</sub>O<sub>2</sub> is **1:2**.
11. In 1792 - 94 Richer enunciated a law called law of **Reciprocal Proportion**.
12. The mass of single hydrogen atom is  **$1.6 \times 10^{-24}$**  g.
13. By an International agreement, an atom of C-12 has 6 protons and 6 neutrons have a mass of exactly 12 atomic mass unit is taken as a **standard**.
14. One atomic mass unit (1 a.m.u.) is defined as a mass exactly equal to  $\frac{1}{12}$ th mass of C-12 atoms.

15. Naturally occurring carbon is composed of 98.889% C-12 and 1.11% C-13, the average atomic mass of C atom becomes 12.011 a.m.u.
16. The atomic mass of an element is now taken as, the average mass of natural mixture of isotope which is compared to the mass of one atom of C-12 a.m.u.
17. Atomic mass of Oxygen is 16 a.m.u.
18. Atomic mass of Sulphur is 32 a.m.u.
17. A formula is a combination of symbols; for atoms or ions, that are held together chemically in a compound.
18. Empirical formula is a formula which gives only the relative number of each type of atom present in a molecule.
19. Molecular formula indicates the actual number and type of atoms in a molecule.
20. Molecular formula of carbon dioxide is CO<sub>2</sub>.
21. The molecular formula of glucose is C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>.
22. Mathematically molecular formula M.F = [Empirical Formula (E.F)]<sub>n</sub>.
23. The molecular formula mass of a substance is the sum of the atomic masses of all the atoms present in the molecular formula of a substance or molecule.
24. The unit of molecular formula mass is a.m.u.
25. The term molecular mass cannot be used with ionic compounds.
26. Formula mass of the substance is the sum of the atomic masses of all atoms in a formula unit of substance.
27. The unit of formula mass is a.m.u.
28. Molar mass of a substance is relative mass expressed in grams.
29. The molar mass of a substance has a fixed unit.
30. A mole is the molecular mass, atomic mass and formula mass of a substance expressed in grams.

32. The (S.I) definition of mole is the amount of substance, containing as many elementary particles as there are atoms in exactly 12 grams of C-12 a.m.u.
33. One mole of any substance contains  $6.023 \times 10^{23}$  particles.
34. A mole of a substance always contains the same number of particles irrespective of its state, solid, liquid or gaseous i.e.  $6.023 \times 10^{23}$  particles.
35. This number is constant and is called Avogadro's number.
36. Mass of single atoms or molecule can be calculated by Avogadro's number.
37. Any change which alters the composition of a substance is a chemical change.
38. In a chemical change one or more new substances are formed from original substances.
39. A reaction in which a chemical substances break down to form two or more simpler substance is called a decomposition reaction.
40.  $CaCO_3 \xrightarrow{\text{Heat}} CaO + CO_2$  is a decomposition reaction.
41. A reaction in which two or more substances combine to form a single substance is called an addition or combination reaction.
42. The addition reactions are reverse of decomposition reaction.
43.  $2Na + Cl_2 \longrightarrow 2NaCl$  is an example of addition reactions.
44. A reaction in which one atom or groups of atoms of a compound is replaced by another atom or group of atoms is called single displacement or replacement reaction.
45.  $Zn + 2HCl \longrightarrow ZnCl_2 + H_2$  is an example of single replacement reaction.
46. Double displacement reaction is a reaction in which their partners, so that two new compounds are formed.
47.  $NaCl + AgNO_3 \longrightarrow NaNO_3 + AgCl$  is double displacement reaction.
48. Neutralization and hydrolysis reactions are also double displacement reactions.
49. A reaction is which substances react with either free oxygen or oxygen of air with the rapid release of heat and flame is called combustion reaction.

50.  $C + O_2 \longrightarrow CO_2 + \Delta H$  (Heat) is **combustion** reaction.
51. Chemical equation is a short hand method of describing the chemical reaction, in terms of **symbols** and formulae of the substances involved in a chemical reaction.
52. The starting substance which reacts with each other to form new substances is called **reactants**.
53. The new substances formed after the chemical reactions are called **products**.
54. We balance the equation by knowing the fact that in a chemical equation the **law of conservation of mass** is fulfilled.
55. **Inspection** method for balancing the chemical equation is by **trial** and **error**.

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