



## CHEMISTRY

### CH-3: ATOMS AND MOLECULES

Name: -----

Date: 3.11.2025

Class: IX Sec: ----

1. Give examples of triatomic, tetra-atomic and polyatomic molecule of elements.
2. Define the 'Law of constant proportions'.
3. Give the difference between a cation and anion.
4. 2.8 g of nitrogen gas was allowed to react with 0.6 g of hydrogen gas to produce 3.4 g of ammonia. Show that these observations are in agreement with the Law of conservation of mass. State Law of conservation of mass.
5. Metal 'Y' forms a carbonate with formula ' $Y_2(CO_3)_2$ ', what will be formula of the chloride and oxide of metal 'Y'.
6. Calculate the percentage of carbon in  $C_3H_8$ .
7. Write the formula unit mass of (i)  $Na_2O$  (ii)  $NaHCO_3$  (iii)  $MgCl_2$
8.  $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$   
28 g of  $N_2$  will combine with how many grams of  $H_2$  to form 34 g of  $NH_3$ ?
9. What do you mean by chemical formula? Write the chemical formula of the following:
  - (a) Potassium Oxide
  - (b) Magnesium Nitride
  - (c) Aluminium Oxide
  - (d) Ammonium Carbonate
  - (e) Zinc Hydroxide
  - (f) Magnesium Bicarbonate
  - (g) Barium Nitrate
  - (h) Sodium Sulphide
  - (i) Copper (II) Bromide
  - (j) Iron (III) Sulphide
  - (k) Mercury (II) Chloride
  - (l) Aluminium Fluoride
10. Write cations and anions present in (i) Copper Oxide (ii) Sulphuric acid or Hydrogen Sulphate.
11. Calculate the molecular mass of  $S_8$ ,  $HNO_3$ ,  $C_6H_{12}O_6$  and  $CH_3OH$ .
12. State the number of atoms present in each of the following:
  - (a)  $CO_3^{2-}$
  - (b)  $PO_4^{3-}$
  - (c)  $P_2O_5$
  - (d)  $CO$
  - (e)  $OH^-$
  - (f)  $SO_4^{2-}$
  - (g)  $Fe^{3+}$

13. Find the ratio by mass of the combining elements in the following compounds:

- (a)  $\text{CaCO}_3$
- (b)  $\text{MgCl}_2$
- (c)  $\text{C}_2\text{H}_5\text{OH}$
- (d)  $\text{NH}_3$
- (e)  $\text{H}_2\text{O}$

14. Write the formulae for the following:

- (a) Caustic potash (b) baking powder (c) Lime stone (d) Ammonia (e) Nitric acid

15. Calculate the percentage by mass of nitrogen in  $\text{NH}_4\text{NO}_3$ .

16. An element 'X' forms an oxide with formula  $\text{X}_2\text{O}_3$

- (a) State the valency of 'X' (b) Write the formula of chloride of 'X' and Sulphate of 'X'

17. What is the atomicity of Argon, Oxygen, Ozone and Sulphur?

18. An element 'Y' has valency equal to 3. What will be its formula with carbonate ion?

19. Name the international organization which approves the name given to elements.

20. Reasoning Assertion Questions

- (A) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion.
- (B) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion.
- (C) Assertion is correct, but reason is wrong statement.
- (D) Assertion is wrong, but reason is correct statement

(i) Assertion : Ions are always positively charged.

Reason : Ions are formed by losing or gaining of electrons.

(ii) Assertion: Atomicity of ozone is three while that of oxygen is two.

Reason: Atomicity is the number of atoms constituting a molecule.

(iii) Assertion: On burning magnesium in oxygen, the mass of magnesium oxide formed is equal to the total mass of magnesium and oxygen

Reason: In a chemical substance, the elements are always present in a definite proportion.

(iv) Assertion: Atomic mass of oxygen is 16.

Reason: Molecular mass of oxygen is 16.

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