Class 9 CBSE Test paper Solved Chapter 3: Atoms and Molecules-8

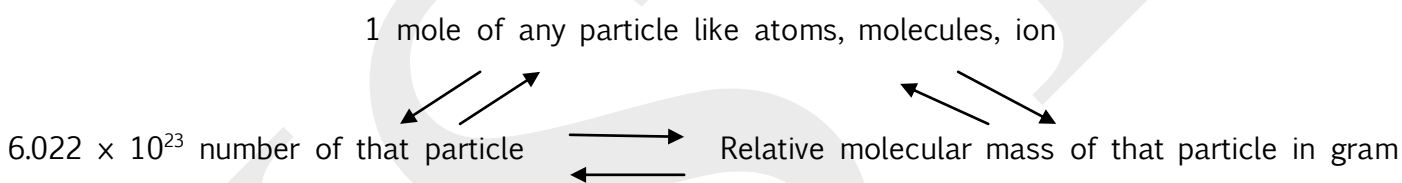**1. Q. Why the symbol of iron is is Fe and sodium is Na?**

Ans: symbol of some have been taken from the names of elements in Latin, German or Greek. For example, the symbol of iron is Fe from its Latin name ferrum, sodium is Na from natrium.

2. Q. Mention the difference between N_2 and 2N?

Ans: N_2 represent one molecules of nitrogen consist of two atoms and 2N represent two seprate atoms of nitrogen

3. Q. Draw flow diagram to show relationship between mole, Avogadro number and molecular mass?

Ans: One mole of any species (atoms, molecules, ions or particles) is that quantity in number having a mass equal to its atomic or molecular mass in grams.

1 mole of any particle like atoms, molecules, ion

6.022×10^{23} number of that particle   Relative molecular mass of that particle in gram

4. Q. To identify the Law of Conservation of Mass, a student added 10 ml of 5% barium chloride solution into 10 ml of 5% sodium sulphate solution. Which one of the following is the correct observation?

(a) A clear solution is formed   (b) The solution turns to red colour

(c) Yellow precipitate is formed   (d) White precipitate is formed

Hint: Aqueous solution of barium chloride reacts with that of sodium sulphate to form a white precipitate of barium sulphate. Ans: (d)

5. Q. Write the chemical formula of (i) vinegar (ii) baking soda

(i)CH_3COOH – acetic acid or methanoic acid   (ii) $NaHCO_3$

6. Q. Which of the following is a correct setup for absorbing the law of conservation of mass in a chemical reaction before the solution are mixed
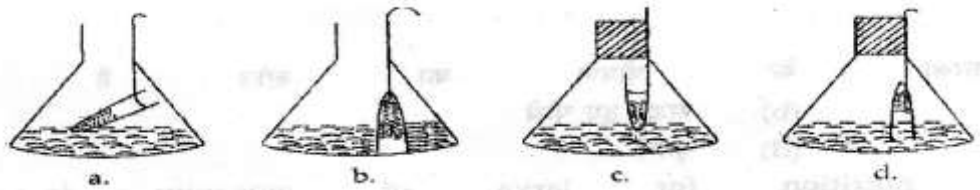
Ans: C

7. Answer these question:

(a) An element "X" has valency 3 . Write the chemical formula with sulphate ions.

(b) An element "E" shows two valency 2 and 4. Write the chemical formula of the two oxides of "E".

(c) An element "Y" has valency one . Write the chemical formula with carbonate ions.

Ans: (a)XSO_4 (b) EO, E_2O_4 (c) y_2CO_3

8. A compound XH is formed by combination of an element X with hydrogen. Find the valency of the element X. State the formula of the compounds formed by combination of X with hydrogen and X with oxygen.

Ans: the valency of the element X is 1.

The formula of the compounds formed by combination of X with hydrogen is XH and X with oxygen is X_2O

9. Q. Atomic number of an element is 3. What would be the valency of the element? Also name the element.

Ans: valency = 1 , Lithium

10.Q. Mention two advantages of Dalton's atomic theory.

Ans: two advantages of Dalton's atomic theory

1) Dalton's atomic theory provided an explanation for the law of conservation of mass and the law of definite proportions.

2) According to Dalton's atomic theory, all matter (whether an element, a compound or a mixture), is composed of small particles, called atoms.

11.Q. Which of the following pair of solution is suitable to verify law of the conservation of mass in a chemical reaction

(a) Barium chloride and sodium chloride (b) copper sulphate and sodium carbonate

(c) Barium sulphate sodium sulphate   (d) sodium sulphate and sodium sodium   Ans: C

Hint: Reaction between copper sulphate and sodium carbonate produces a precipitate of copper carbonate. So the reactants and products can be weighed to draw the inference.

12. Q. Name the element present in quick lime?

Ans: CaO

13. Q. Write the symbol and latin name for the following elements : (a) Sodium (b) Potassium

Ans: (a) Na, Natrium (b) Potassium- K , kalium

14. Q. Nitrogen and Hydrogen atoms combine in the ratio 14 : 3 by mass to form ammonia molecule. Find the formulae of ammonia molecule by calculating the molar ratio.

Ans: Atomic mass of 1-Nitrogen atom = 14 grams

Atomic mass of 1- Hydrogen atom = 1

Nitrogen and hydrogen combine in the ratio 14: 3 by mass.

Therefore one Nitrogen atom combines with three Hydrogen atoms and molecular weight of the compound formed is 17.

The formulae of ammonia molecule = NH_3 (ammonia).

Following equation shows the formation of ammonia molecule from Nitrogen and Hydrogen.

$N_2 + 3H_2 \rightarrow 2NH_3$
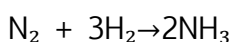
15.Q. Define atomic number and mass number. Which one of them is a more fundamental attribute of element? State the reason.

Ans: Atomic number is the total number of protons present in the nucleus of an atom. Mass number is the sum of protons and neutrons present in the nucleus of an atom.

Atomic number is the fundamental attribute of elements because all elements are characterised by their atomic numbers. When elements react, their atoms either lose or gain electrons but their atomic number remains the same.

16. Q. A student noted down the following precautions for the experiment "To verify the law of conservation of mass in a chemical reaction"

(i) Weighing should be done carefully.

(ii) Flask should be corked tightly.

(iii) Solutions should not get mixed before the reaction.

(iv) Mixing of two solutions must be done quickly

The precaution which needs to be corrected is:

(a) (i)   (b) (ii)   (c) (iii)   (d) (iv)   Ans: (d)