



**INDIAN SCHOOL MUSCAT**  
**SENIOR SECTION**  
**DEPARTMENT OF CHEMISTRY**  
**CLASS IX**  
**ATOMS AND MOLECULES**  
**WORKSHEET-3**

**1 Mark Questions:**

- 1.State the law of constant proportion.
- 2.Which postulate of Dalton's atomic theory is the result of the law of conservation of mass?
- 3.Write the molecular formula of a diatomic gas and a triatomic gas.
- 4.Name the term used for the symbolic representation of a molecule of an element or a compound?  
Give an example of it.
- 5.In the reaction between copper sulphate solution and sodium sulphide solution, 15.9 g copper sulphate completely reacts with 7.8 g of sodium sulphide . It is observed that 9.5 g of copper sulphide is formed. What is the mass of sodium sulphate solution formed?
- 6.Why is the symbol of gold taken as Au?
- 7.Calculate the formula unit mass of  $\text{NaHCO}_3$ .  
(At.mass of Na=23u,H=1u,C=12u,O=16u)
- 8.Define Avogadro's constant. Give its value.
- 9.What is the ratio between masses of carbon and oxygen in  $\text{CO}_2$ ?
- 10.Define atomicity of an element.
- 11.Nitrogen and hydrogen are present in ammonia in the ratio 14:3 by mass ,  
what would be the mass of nitrogen if the actual mass of hydrogen is 9g.

**2 Mark Questions:**

- 1.Silver nitrate solution was mixed with 5g of sodium chloride solution to verify law of conservation of mass. 8.1 gram of silver chloride was formed and sodium nitrate formed was equal to half of the amount of silver nitrate solution used. What is the amount of  $\text{AgNO}_3$  used and  $\text{NaNO}_3$  formed?
2. (i)What is the significance of symbols?  
(ii)What do the abbreviations  $2\text{O}$  and  $\text{O}_2$  stand for?
3. (i)Taking the example of water, explain the law of constant proportion.  
(ii)Which postulate of Dalton's atomic theory explains this law?
4. What are polyatomic ions? Give any two examples.
5. Give the names of elements present in:-  
(i)Sodium nitrate (ii) Ammonium Hydrogen carbonate (iii) Iron(III)sulphate
6. Write the formulae and names of compounds formed by combination of:  
i)  $\text{Fe}^{3+}$  and  $\text{SO}_4^{2-}$  ii)  $\text{NH}_4^+$  and  $\text{CO}_3^{2-}$
- 7.Using the valencies, write down the chemical formulae of the following compounds:  
(i)Calcium nitrate (ii) Manganese(IV)Oxide  
(iii) Ammonium Phosphate (iv) Aluminium Chloride
- 8.Define following :- (i)Formula unit mass (ii)Atomic mass unit
- 9.Define mole and find the number of moles present in 12 g of oxygen gas.
10. (i)How many grams of chlorine are contained in one mole of chlorine?  
(ii)How many molecules are there in 1 g of chlorine?  
(Gram atomic mass of Chlorine = 35.5 g)

### 3 Mark Questions:

1. What are ionic and molecular compounds? Give examples.
2. Find the ratio by mass of the combining elements in the following compounds.  
i)  $\text{SO}_2$       ii)  $\text{CaH}_2$   
( At. Mass of , S=32u , O=16 , Ca=40u , H=1 )
3. Calculate the mass of 0.5 mole of sugar ( $\text{C}_{12}\text{H}_{22}\text{O}_{11}$ )  
( Atomic mass of, C=12u, H=1u, O=16u).
4. Name the ionic compound that is obtained from sea water and calculate the number of moles present in 5.85 g of this compound.
5. What is the atomicity of sulphur. Calculate the number of moles in 0.4g of Sulphur powder.  
( At.mass of S= 16 )
6. Calculate the number of moles in (i)  $3.011 \times 10^{23}$  atoms of C .  
(ii) 9g of water  
(  $N_A = 6.022 \times 10^{23} \text{ mol}^{-1}$  , At. mass of O = 16 u, H=1u and C = 12u )
7. Which has more number of particles 48g of Mg or 7g of N.  
(At mass of Mg = 24.0u, N = 14 u)
8. State the postulates of Dalton's atomic theory.
9. Calculate the number of atoms in 120g of calcium and 120g of iron.  
Which one has more number of atoms?  
( At. mass of Ca = 40 u , Fe= 56 u)
10. a) Calculate the number of molecules in 50g of  $\text{CaCO}_3$ .  
b) Calculate the mass of 0.5 moles of nitrogen gas.

### Value Based Questions:

1. We should take milk everyday because it contains proteins and calcium. Some children do not take milk. Their bones are weak and their growth is also slow. That will have joint problems in old age. If you don't like milk, you can take curd, paneer and other milk products.
  - a) Name the compound present in our bones which contains calcium.
  - b) How will you convince those children to take milk, who do not take milk?
  - c) Which vitamin is needed for absorption of calcium by our body?
2. Some people take lot of common salt in their food. They use junk food like pizza, burger, cheese and butter which contains lot of common salt. Pickle, sauce, papad also contain lot of common salt. You must be knowing lot of people are having high blood pressure these days and even young people are suffering from heart ailments.
  - a) What is the main compound present in common salt?
  - b) Why should we take less common salt?
  - c) How will you convince your parents to take less common salt?
  - d) Give one use of common salt.