EXERCISE- 1

A. Very Short Answer Type Questions

Q.1 Name of the building block of all matter.

Q.2 What are the symbols of copper and cobalt?

Q.3 Name two elements whose symbols are derived from Latin names. Give their symbols.

Q.4 What is the mass of 1 mole of water ?

Q.5 Give symbols of lead and aluminium.

Q.6 What is meant by 1 mole of carbon atoms ?

Q.7 What is the molecular mass of H_2SO_4?

Q.8 Sodium carbonate ($Na_2CO_3.10H_2O$) is an important industrial compound. Calculate its formula mass.

Q.9 Which of the following is tetraatomic molecule
CH_3OH, CH_4, H_2O_2?

Q.10 Helium gas consists of single atoms. What mass of helium contains 6.022×10^{23} atoms ?

Q.11 What is the atomic mass unit?

Q.12 What is the ratio by mass of nitrogen and hydrogen in ammonia?

Q.13 Give two examples of trivalent metal ions.

Q.14 What is the chemical formula of calcium oxide?

Q.15 Which of the following has larger mass
(i) A mole of ammonia (NH_3)
(ii) A mole of methane (CH_4)

Q.16 How many moles of helium are present in 104 g of He

Q.17 What is the molar mass of sulphur molecule (S_8)?

Q.18 "If 100 grams of pure water taken from different sources is decomposed by passing electricity, 11 grams of hydrogen and 89 grams of oxygen are always obtained". Which chemical law is illustrated by this statement?

Q.19 "If 100 grams of calcium carbonate are decomposed completely, then 56 grams of calcium oxide and 44 grams of carbon dioxide are obtained" Which law of chemical combination is illustrated by this statement?

Q.20 Name the scientist who gave law of conservation of mass

B. Short Answer Type Questions

(MORE 31-46 words)

Q.21 Define mole.

Q.22 Calculate the number of moles in 12.044×10^{25} atoms of phosphorus.

Q.23 Write down the formulae for the following compounds :
(a) Calcium oxide (b) Magnesium hydroxide

Q.24 An element Y has a valency of 4. Write the formula its :
(a) Chloride (b) Oxide
(c) Sulphate (d) Carbonate
(e) Nitrate

Q.25 An element B shows valencies of 4 and 6. Write the formulae of its two oxides.

Q.26 An element X of valency 3 combines with another element Y of valency 2. What will be the formula of the compound formed ?

Q.27 What is an ion ? How is an ion formed?

Q.28 What is the difference between a cation and an anion? Explain with examples.

Q.29 Define 'formula unit' of an ionic compound. What is the formula unit of (a) sodium chloride and (b) magnesium chloride?

Q.30 Define 'formula mass' of a compound.

Q.31 Explain the difference between 2N and N_2.

Q.32 What do the symbols, H_2, S and O_4 mean in the formula H_2SO_4?

EXERCISE- 2

A. Long Answer Type Questions

(More than 47–60 words)

Q.1 Explain the following terms

(i) Atomic mass (ii) Molecular mass

(iii) Mole (iv) Avogadro constant

(v) Polyatomic ions

Q.2 What is Dalton's atomic theory? Give its main postulates. Which postulate of Dalton's atomic theory explain the law of conservation of mass.

Q.3 Calculate the following :

(i) Number of S atoms in 3.2 g of S_8.

(ii) Number of molecules of CH_4 in 80.0 g of it

(iii) The mass of 1 molecule of NH_3.

(iv) The mass of 0.25 moles of calcium

(v) Number of bromide ion in 0.2 mole of $MgBr_2$.

Q.4 What is the significance of the symbol of an element? Explain with the help of an example.

Q.5 What is meant by saying that 'the atomic mass of oxygen is 16" ?

Q.6 Calculate the molecular masses of the following compounds :

(i) Methanol, CH_3OH (ii) Ethanol, C_2H_5OH

Q.7 What is the significance of the formula of a substance?

Q.8 The mass of one atom of an element X is 2.0×10^{-23} g.

(i) Calculate the atomic mass of element X.

(ii) What could element X be?

Q.9 The mass of one molecule of a substance is 4.65×10^{-23} g. What is its molecular mass? What could this substance be?

Q.10 If 1 gram of sulphur dioxide contains x molecules, how many molecules will be present in 1 gram of oxygen? (S = 32 u ; O = 16 u)

Q.11 What weight of oxygen gas will contain the same number of molecules as 56 g of nitrogen gas? (O = 16 u ; N = 14 u)

B. Fill in the Blanks

Q.12 In water, the proportion of hydrogen and oxygen is .....by mass.

Q.13 ..... is a pure substance which is made up of only one kind of atoms.

Q.14 The atomicity of ozone is .....

Q.15 1 mole of oxygen atoms = ... oxygen atoms.

Q.16 The ratio by mass of S and O in SO_2 is.....

C. True /False Type Questions

Q.17 Two elements sometimes form more than one compounds.

Q.18 The smallest particle of a compound is element.

Q.19 Mass of 6.022 atoms of an element is called atomic mass.

Q.20 One mole of every substance has same mass.

Q.21 One mole of CO_2 and SO_2 contains same number of oxygen atoms.

Q.22 Mass of 1 mole of CO_2 is 44 g.

Q.23 The mass of a hydrogen atom is th the mass of a carbon atom.

ANSWER KEY

EXERCISE-1

A. Very Short Type Answer

1. Atoms **2.** Cu and Co **3.** (i) Fe for iron from ferrum (ii) Na for sodium from natrium

4. 18 g **5.** Pb, Al **6.** 12 g **7.** 98 u **8.** 286 u

9. H_2O_2 **10.** 4 g **11.** 1/12th the mass of atom of carbon – 12 isotope **12.** 14 : 3

13. Al^{+3}, Fe^{+3} **14.** CaO **15.** NH_3 **16.** 26

17. 256 g **18.** Law of constant proportions **19.** Law of conservation of mass

20. Lavoisier

EXERCISE-2

12. 1 : 8 **13.** Element **14.** 3 **15.** 6.022×10^{23} **16.** 1 : 1

17. True **18.** False **19.** False **20.** False **21.** True

22. True **23.** False