

Chemistry Study Materials for Class 11 (NCERT Based Questions with Answers) Ganesh Kumar Date:- 02/09/2020

(Chapter -01)Some Basic Concept of Chemistry

Two Marks questions with answers

9. How are 0.50 mol Na_2CO_3 and 0.50 M Na_2CO_3 different?

Ans. Molar mass of $\text{Na}_2\text{CO}_3 = 2 \times 23 + 12 + 3 \times 16 = 106 \text{ g/mol}$

0.50 mol Na_2CO_3 means $0.50 \times 106 = 53 \text{ g}$

0.50 M Na_2CO_3 means 0.50 mol

i.e. 53 g of Na_2CO_3 are present in 1 L of the solution.

Three Marks questions with answers-

1. What is unit factor method? Express the following in SI units - 93 million miles (distance between earth and sun)

Ans. Method to convert units from one system to other is called unit factor method. 93 million miles = 93×10^6 miles

$$1 = \frac{1.60934 \times 10^3 \text{ m}}{1 \text{ mile}}$$

$$93 \text{ million mile} = 93 \times 10^6 \text{ mile} \times \frac{1.60934 \times 10^3 \text{ m}}{1 \text{ mile}}$$

$$1 \text{ mile} = 1.60934 \text{ km} = 1.60934 \times 10^3 \text{ m}$$

2. What do mean by gram - atomic mass. One million silver atoms weigh $1.79 \times 10^{16} \text{ g}$. Calculate the gram atomic mass of silver.

Ans. atomic mass of an element expressed in grams is the gram - atomic mass

$$\text{Number of silver atoms} = 1 \text{ million} = 1 \times 10^6$$

$$\text{Mass of one million Ag atoms} = 1.79 \times 10^{16} \text{ g}$$

$$\begin{aligned} \text{Mass of } 6.023 \times 10^{23} \text{ atoms of silver} &= \frac{1.79 \times 10^{16} \text{ g} \times 6.023 \times 10^{23}}{1 \times 10^6} \\ &= 107.8 \text{ g} \end{aligned}$$

3. Write the three points of difference between compound and mixture.

Ans.

Compound	Mixture
Constituents are always present in a fixed ratio by mass	Constituents may be present in any ratio
May or may not be homogeneous in nature	Always homogeneous in nature
Constituents can be easily separated	Constituents cannot be easily separated
by simple mechanical means	separated by simple mechanical means
Properties are midway between those of its constituents.	Properties are entirely different from those of its constituents.

4. What is the percentage of carbon, hydrogen and oxygen in ethanol?

Ans. Molecular formula of ethanol is : C_2H_5OH

Molar mass of ethanol is : $(2 \times 12.01 + 6 \times 1.008 + 16.00) \text{ g} = 46.068 \text{ g}$

Mass per cent of carbon = $(24.02 \text{ g} / 46.068 \text{ g}) \times 100 = 52.14\%$

Mass per cent of hydrogen = $(6.048 \text{ g} / 46.068 \text{ g}) \times 100 = 13.13\%$

Mass per cent of oxygen = $(16.00 \text{ g} / 46.068 \text{ g}) \times 100 = 34.73\%$

5. What do mean by molarity .Calculate the molarity of NaOH in the solution prepared by dissolving its 4 g in enough water to form 250 ml of the solution.

Ans. The number of moles of solute dissolved per litre (dm^3) of the solution is called molarity

Since molarity (M) = No. of moles of solute /Volume of solution in litres

$$= (\text{Mass of NaOH} / \text{Molar mass of NaOH}) / 0.250 \text{ L}$$

$$= (4 \text{ g} / 40 \text{ g} \cdot 0.1 \text{ mol}) / 0.250 \text{ L}$$

$$= 0.1 \text{ mol} / 0.250 \text{ L}$$

$$= 0.4 \text{ mol L}^{-1}$$

$$= 0.4 \text{ M}$$

6. Classify the following as pure substances or mixture-

(a) ethyl alcohol (b) oxygen (c) blood (d) carbon (e) steel (f) distilled water

Ans. Pure substance- ethyl alcohol, oxygen, carbon, distilled water
Mixture- blood, steel

7. What are the rules for rounding off?

Ans.(i) If the digit coming after the desired number of significant figures happens to be more than 5, the preceding significant figure is increased by one,

(ii) If the digit involved is less than 5, it is neglected and the preceding significant figure remains unchanged,

(iii) If the digit happens to be 5, the last mentioned or preceding significant figure is increased by one only in case it happens to be odd. In case of even figure, the preceding digit remains unchanged.

8. Define –(a) Average atomic mass (b) Molecular mass (c) Formula mass

Ans. (a) Average atomic mass- Atomic mass of an element is defined as the average relative mass of an atom of an element as compared to the mass of an atom of carbon -12 taken as 12.

(b) Molecular mass- it is sum of atomic masses of the elements present in a molecule.

(c) Formula mass- it is sum of atomic masses of the elements present in a formula unit of a compound.

9. Express the following in the scientific notation with 2 significant figures-

(a) 0.0048 (b) 234,000 (c) 200.0

Ans. (a) 4.8×10^{-3} (b) 2.3×10^5 (c) 2.0×10^2

10. Calculate the number of atoms in each of the following

(i) 52 moles of Ar (ii) 52 u of He (iii) 52 g of He

Ans. (i) 1 mole of Ar = 6.022×10^{23} atoms of Ar

52 mol of Ar = $52 \times 6.022 \times 10^{23}$ atoms of Ar

= 3.131×10^{25} atoms of Ar

(ii) 1 atom of He = 4 u of He

Or, 4 u of He = 1 atom of He

1 u of He = $1/4$ atom of He

52u of He = $52/4$ atom of He

= 13 atoms of He

(ii) Molar mass of He = 4 g/mol

4 g of He contains = 6.022×10^{23} atoms of He

52 g of He contains = $6.022 \times 10^{23} \times 52$

$\frac{\quad}{4}$

= 78.286×10^{23} atoms of He
