

**SAINIK SCHOOL GOPALGANJ**

**SUB: CHEMISTRY**

**CLASS - XI**

**ASSIGNMENT**

**Lesson: 1: Some Basic Concepts**

**(Q1 to Q10.) Given below are four options against each question. Choose the option which you consider the most appropriate as your answer.**

Q1 Number of significant figures in the number 2.005 is:

- (a) 3 (b) 4  
(c) 2 (d) 1

Q2 What will be the molality of the solution containing 18.25 g of HCl gas in 500 g of water ?

- (a) 0.1 m (b) 1 M  
(c) 0.5 m (d) 1 m

Q3 The number of oxygen atoms in 100 g of  $\text{CaCO}_3$  is :

- (a)  $6.033 \times 10^{23}$  (b)  $9.033 \times 10^{23}$   
(c)  $8.033 \times 10^{23}$  (d) None of these

Q4 The number of molecules in 4.4 g of Carbon di oxide is :

- (a)  $3.0 \times 10^{23}$  (b)  $6.022 \times 10^{22}$   
(c)  $16/6.022 \times 10^{23}$  (d)  $16/3.0 \times 10^{23}$

Q5 One molar solution contains 1 mole of solute in:

- (a) 1000 g of the solvent,  
(b) One litre of the solvent,  
(c) One litre of the solution,  
(d) 22.4 litres of the solution.

Q6 The formula which represents the simple ratio of atoms in a compound is called

- (a) empirical formula (b) molecular formula  
(c) structural formula (d) rational formula

Q7 Number of atoms in 1.4 g nitrogen is:

- (a)  $1.20 \times 10^{23}$  (b)  $3.01 \times 10^{23}$   
(c)  $6.02 \times 10^3$  (d) none of these

Q8 The litres of  $\text{CO}_2$  represented by 4.4 g of  $\text{CO}_2$  at S.T.P. are:

- (a) 2.4 litres (b) 2.24 litres  
(c) 44 litres (d) 22.4 litres

Q9 Equal volumes of different gases under definite temperature and pressure have:

- (a) equal densities (b) equal masses  
(c) equal atoms (d) equal molecules

Q10 The empirical formula and molecular mass of a compound are  $\text{CH}_2\text{O}$  and 180 g respectively. What will be the molecular formula of the compound?

- (a)  $\text{C}_9\text{H}_{18}\text{O}_9$  (b)  $\text{CH}_2\text{O}$   
(c)  $\text{C}_6\text{H}_{12}\text{O}_6$  (d)  $\text{C}_2\text{H}_4\text{O}_2$

### **Short Answer type Questions:**

Q11 Are 0.5 mole of NaOH and 0.5 M of NaOH solution same ? Give reason.

Q11 State and explain the law of multiple proportion.

Q12 Aspirin contains 60.0% C , 4.68% H and the rest oxygen. Determine the empirical formula of aspirin.

Q13 Calculate the mass of carbon monoxide having the same number of oxygen atoms as are present in 88 g Carbon dioxide.

Q14 One million silver atoms weigh  $1.79 \times 10^{-16}$  g . Calculate the atomic mass of silver.

Q15 Express the following upto three significant figures:

- (i) 6.5089 (b) 32.3928 (c) Two thousand

### **Long Answer Type Questions:**

Q16 Explain molar mass. How will you calculate the molar mass of (a)  $\text{H}_2\text{SO}_4$ , (b)  $\text{Na}_2\text{CO}_3$

Q17 Explain how mixture differs from pure substance. Give four examples of each.

Q18 A welding fuel gas contains carbon and hydrogen only .Burning a small sample of it in Oxygen gives 3.38 g Carbon Dioxide , 0.690 g of water and no other products .A

volume of 10.0 L (measured at STP) of this welding gas is found to weigh 11.6 g.  
Calculate

(i) empirical formula, (ii) molar mass of the gas and (iii) molecular formula.

Q19 Calcium Carbonate reacts with aqueous HCl to give CaCl<sub>2</sub> and CO<sub>2</sub> according to the reaction ,  $\text{CaCO}_3(\text{s}) + 2\text{HCl}(\text{aq}) \rightarrow \text{CaCl}_2(\text{aq}) + \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$

What mass of CaCO<sub>3</sub> is required to react completely with 25 mL of 0.75 M HCl?

Q20 If the density of methanol is 0.793 kg L<sup>-1</sup>, what is its volume needed for making 2.5 L of its 0.25 M solution ?

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