CLASS XI
SOME BASIC CONCEPTS IN CHEMISTRY
WORKSHEET-01

ONEMARK QUESTIONS

1 State the law of multiple proportions.

2 100ml of 10M HCl is diluted with water to 2 L. Find the molarity of the solution.

3 What is the effect of temperature on molarity and molality?

4 Define the terms empirical formula and molecular formula.

5 Why do atomic masses of most of the elements in atomic mass unit involve fraction?

6 What do you understand by the term limiting reagent?

7 How many atoms are there in a) 72 u of Carbon b) 72 g of carbon.

8 400 mL each of H_2 and O_2 are mixed and ignited, find volume of water vapour formed?

TWOMARKS QUESTIONS

1 Calculate the mass of the following in Kg

(i) one calcium atom
(ii) one molecule of water

2 Sulphur forms two gaseous oxides. One of these oxides contains 50 % sulphur while the other contains 40 % of sulphur. Show that these data illustrate the law of multiple proportions

3 6.5g of Zn was reacted with excess of dil. HCl. Calculate the amount and volume of hydrogen produced at STP.

4 4.8g of O_2 was used to burn 0.15moles of Fe to Fe_2O_3. What mass of Fe_2O_3 was formed?

5 A compound contains 2.68% Mg. How many atoms of magnesium are present in 15g of the compound

6 Calculate the percentage of (i) copper (ii) sulphur (iii) oxygen and (iv) water of hydration in crystalline copper sulphate, $CuSO_4.5H_2O$.

7 A higher oxide contains 80% metal. 0.72g of lower oxide gave 0.8g of higher oxide when

oxidized. Show that this is in agreement with the law of multiple proportions.

8 1.8g of an organic compound on combustion gave 2.64g of CO_2 and 1.08g of water. Find the empirical formula of the compound.

9 Calculate the number of atoms and molecules in 224ml of Nitrogen gas at STP.

10 Find the number of atoms of each type in 3.42g of sucrose ($C_{12}H_{22}O_{11}$).

11 What mass C^{12} will contain the same number of atoms as in 3.6g of O^{16}?

12 Calculate mass of CO_2 containing same number of oxygen atoms as in 3g of NO.

13 From 0.2g of CO_2, 10^{21} molecules are removed. How many of moles of CO_2 remain?

14 Calculate the mole fraction of ethanol in 0.5 m aqueous solution of ethanol.

15 The mole fraction of glucose in water is 0.35. What is the molality of the solution?

THREEMARKS QUESTIONS

1 Commercially available H_2SO_4 contains 98% acid by mass. Find the molarity if density of the sample is 1.84g/cc. What volume of this acid is required to make 2 L of 0.1 M solution?

2 200ml of 0.05M magnesium chloride is mixed with 75ml of 0.1M silver nitrate solution. Find the number of moles and mass in grams of AgCl formed. What is the limiting reagent?

3 (i) 24g of NaOH is dissolved in 300ml water. Calculate the molarity of the solution.
(ii) The density of a 3M solution of NaCl is 1.25g/mL. Calculate the molality of the solution.

4 Aqueous magnesium chloride solution is marketed as 20% by mass. Its density is 1.18 g/ml. Calculate

(i) The mole fraction of each component

(ii) Molarity.

(iii) Molality

5 Define

(i)molarity, (ii) molality , (iii) mole fraction.

6 A hydrocarbon on burning gave 3.38g of CO_2 and 0.69g of H_2O. 10 L of the gas at STP weighs 11.6g. Find empirical and molecular formula.

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