Chemistry - 11th Class Chemistry Short Questions Chapter 1 Preparation

Q1.

Calculate the mass in grams of 10^{-2} moles of water.

Ans 1:

Q2. **How can the efficiency of a chemical reaction be expressed?**

Ans 1:

Q3. **2 grams of H_2 , 16g of CH_4 and 44g of CO_2 , occupy separately the volumes of 22.414 dm^2 at STP although the sizes and masses of molecules of three gases are very different from each other.**

Ans 1: One mole of an ideal gas at S.T.P. occupies a volume of 22.414 dm^3. Sizes and masses of molecules of different gases do not affect the volume. Normally it is known that in the gaseous state, the distance between the molecules is 300 times greater than their diameter. Therefore two grams of H_2 , 16g of CH_4 and 44g of CO_2 (1 mole of each gas) separately occupy a volume of 22.4 dm^3. This is called molar volume (V_m).

Q4.

Ans 1:

Q5.

The atomic mass may be in fractions. Why?

Ans 1: Most of the elements have isotopes. Isotopes have fractional atomic masses. The average of atomic masses of isotopes will be definitely in fractions. Moreover, the monoisotopic elements have also fractional atomic, masses.

Q6. **Why positively charged ions of isotopes are passed through magnetic field in the mass spectrometer?**

Ans 1:

The positively charged ions bend perpendicular to the joining lines of the two poles, when passed through the magnetic field. In this way, magnetic field gives these ions semicircular path, scatters them on the basis of m/e values and compels them to fall on the electrometer. Electrometer develops the electric current. The strength of the torrent gives the relative of ions of definite m/v value.

Q7.

Ans 1:

Q8. **What is atomic mass unit? Give its values in grams.**

Ans 1: It is a unit of mass used for atoms and molecules and is equal to the 1/12 of the mass of an atom of carbon —12. It is obtained by dividing the unity by Avogadro's number (6.02×10^{23}).

Q9. **Prove that one mole of each 14_2, CO_2 and H_2 contain equal number of molecules.**

Ans 1: This is according to Avogadro's law that one mole of a substance has 6.02 10^{23} molecules in it. So, 28 g of N_2 , 44g of CO_2 and 2 g of H_2 have 6.02 10^{23} molecules in each.

Q10. **What is limiting reactant? How it helps to control the reaction?**

Ans 1: A limiting reactants is that one which is in lesser quantity and it is consumed earlier. Whenever, it is consumed then the further formation of the product stops, although the excess reagent is lying in the vessel. If the limiting reagent is not available to the excess quantity then product cannot be formed further.