

Assignment - XI

Some Basic Concepts of CHEMISTRY

- Q1) A sample of pure calcium carbonate was found to contain 40% calcium, 12% carbon and 48% oxygen. Assuming the truth of law of constant composition, find out weight of calcium, carbon and oxygen in 5.00g of another sample of calcium carbonate.
- Q2:- Illustrate the law of definite proportions from the following data
- (i) 0.16g of sulphur produces 112 ml of SO_2 at NTP
 - (ii) sulphur dioxide obtained by the decomposition of a sulphate contain 50% sulphur.
- Q3) Elements A and B combine to form three different compounds
- (i) 0.3g of A + 0.4g of B - 0.7g of compound X
 - (ii) 18g of A + 48g of B - 66g of compound Y
 - (iii) 40g of A + 159.99g of B - 199.99g of compound Z
- Q4) If a certain oxide of nitrogen weighing 11g yields 5.6 lit of nitrogen at NTP and another oxide of nitrogen weighing 15gm yields the same volume of oxygen at NTP. Show that the data supports the law of multiple proportions.
- Q5) Copper sulphide contains 66.5% Cu, copper oxide contains 79.9% Cu and SO_3 contains 40% S. Show that the data illustrate the law of reciprocal proportions.
- Q6) Ammonia contains 82.35% of nitrogen and 17.65% hydrogen. Water contains 88.9% of oxygen and 11.1% of hydrogen. Nitrogen trioxide contains 63.15% of oxygen and 36.85% of nitrogen. Show by calculations from these data which law of chemical combination is verified.

Q7) The average atomic mass of Copper is 63.546 amu. Natural Copper consists of two isotopes Cu^{63} and Cu^{65} . Their natural abundances are 69.09% and 30.91%, respectively. If the mass of Cu^{63} isotope is 62.9298 amu, what is the mass of Cu^{65} isotope.

Q8) Atomic weight of ordinary hydrogen is 1.008. Ordinary hydrogen contains two isotopes H_1^1 and D_1^2 . Calculate the percentage of D_1^2 isotope in the element.