CAMBRIAN PUBLIC SCHOOL,
Kanke Road, Ranchi

Summer Vacation Assignment – Class 11
Subject- Chemistry

Section A – Competency Based Questions

Q1. A student weighs 5.6 g of iron filings and reacts it completely with sulphur powder to form iron sulphide.

Write the balanced chemical equation.

Calculate the number of moles of iron used.

Find the mass of sulphur required for complete reaction.

Q2. A bottle contains 22 g of carbon dioxide gas.

. Calculate the number of moles of CO_2 present.

Find the number of molecules present in the sample.

Calculate the number of oxygen atoms present.

Q3.During an experiment, 10 mL of ethanol is mixed with 20 mL water. The final volume becomes 28 mL instead of 30 mL.

Which law of chemical combination is related to this observation?

Why does contraction in volume occur?

Is this a physical or chemical change? Explain.

Q4.A compound contains 40% calcium, 12% carbon and 48% oxygen by mass.

Determine the empirical formula of the compound.

Name the compound formed.

Q5.A student prepares a 0.5 M sodium chloride solution by dissolving NaCl in water.

Define molarity.

Calculate the mass of NaCl required to prepare 250 mL of 0.5 M solution.

Mention one precaution while preparing standard solutions.

Section B – NCERT Based Questions

Q6.Define the following terms:

a) Mole

b) Atomic mass

c) Molecular mass

d) Avogadro number

Q7.State the laws of chemical combination.

Q8.Differentiate between empirical formula and molecular formula with one example.

Q9.Calculate the molar mass of the following compounds:

a) H_2SO_4

b) $CaCO_3$

c) NH_4NO_3

Q10.What is percentage composition? Calculate the percentage of oxygen in water (H_2O).

Q11.Explain Dalton's Atomic Theory. Mention any four postulates.

Q12.What is stoichiometry? Why is a balanced chemical equation important in stoichiometric calculations?

Q13.Differentiate between:

a) Mixture and Compound

b) Atom and Molecule

Q14.Calculate the number of moles in:

a) 18 g of water

b) 44 g of carbon dioxide

c) 58.5 g of sodium chloride

Q15.Write the SI units of the following:

a) Mass

b) Length c) Temperature

d) Amount of substance e) Volume