ST. JOSEPH STUDY CENTRE

11th STD: Mid Term Test-1 **CHEMISTRY** **Time: 2 Hrs / Total Marks: 50**

I. Answer any 5 of the following questions: [5 x 2 = 10]

1. Define relative atomic mass.
2. What do you understand by the term mole?
3. Define equivalent mass.
4. The density of carbon dioxide is equal to 1.965 kgm^{-3} at 273 k and 1 atm pressure. Calculate the molar mass of CO_2.
5. How many orbitals are possible for n =4?
6. Define orbital? What are the n and l values for $3p_x$ and $4d_{x^2-y^2}$ electron?

II. Answer any 5 of the following questions: [5 x 3 = 15]

1. Calculate the molar mass of the following compounds.
   i) Urea $[CO(NH_2)_2]$
   ii) Acetone $[CH_3COCH_3]$
   iii) Boric acid $[H_3BO_3]$
   iv) Sulphuric acid $[H_2SO_4]$

2. Calculate the average atomic mass of naturally occurring magnesium using the following data

Isotope	Isotopic atomic mass	Abundance (%)
Mg^{24}	23.99	78.99
Mg^{25}	24.99	10.00
Mg^{26}	25.98	11.01

3. What is the empirical formula of the following?
   i) Fructose ($C_6H_{12}O_6$) found in honey
   ii) Caffeine ($C_8H_{10}N_4O_2$) a substance found in tea and coffee.
4. How many radial nodes for 2s, 4p, 5d and 4f orbitals exhibit? How many angular nodes?
5. Which quantum number reveal information about the shape, energy, orientation and size of orbitals?
6. Describe the Aufbau principle.

III. Answer any 5 of the following questions: **[5 x 5 = 25]**

1. What is the difference between molecular mass and molar mass? Calculate the molecular mass and molar mass for carbon monoxide.
2. How many moles of ethane is required to produce 44 g of CO_2 (g) after combustion.
3. Calculate the empirical and molecular formula of a compound containing 76.6% carbon, 6.38 % hydrogen and rest oxygen its vapour density is 47.
4. A Compound on analysis gave Na = 14.31% S = 9.97% H= 6.22% and O= 69.5% calculate the molecular formula of the compound, if all the hydrogen in the compound is present in combination with oxygen as water of crystallization. (Molecular mass of the compound is 322).
5. Explain briefly the time independent Schrodinger wave equation?
6. Explain four types of quantum numbers.

----------ALL THE BEST----------

Test should be written under the supervision of your parents and get the answer paper signed from them.

No corrections should be made after the test timings. We expect your honesty.

Test Papers have to be submitted after the completion of all the 4 tests.

Submission Date of Test Papers: 1st October, 2nd October, 3rd October Timings: 9 AM – 12.30 PM / 5 PM- 7 PM