

**D A V PUBLIC SCHOOL ,THERMAL COLONY PNP.**

**ASSIGNMENT -1**

**Some basic concepts of chemistry**

1 Define the following terms a) molarity b) molality c) mole fraction d) limiting reagent

2 a) why molality is preferred over molarity in expressing the concentration of a solution ?

b) will the molality of a solution at 60 ° C same , less or more than molarity at 35 ° C

c) why is 1 molar aqueous solution more concentrated than 1 molal solution

4 a) define empirical formula of a compound.

b) give an example of a molecule whose empirical & molecular formula are same.

c) calculate the actual mass (in gms.) of one molecule of CO<sub>2</sub>

5 state-

a) Law of definite proportions.

b) Law of multiple proportions.

c) Gay Lussac' s law of combining volumes.

6 what is the ratio of number of moles present in 1g of O<sub>2</sub> to that present in 1g of O<sub>3</sub>

7 which one of the following has more number of atoms?

a) 460u Na b) 0.1 mole Na

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**ASSIGNMENT -2**

**STRUCTURE OF ATOM**

1 what happens to the photoelectrons when-

- a) Intensity of incident radiation is increased?
- b) Frequency of incident radiation is increased?

2 differentiate between emission & absorption spectrum.

3 state-

- a) Aufbau principle
- b) Pauli ' s exclusion principle
- c) Hund's rule of maximum multiplicity

4 out of  $\text{Cu}^{+2}$  ,  $\text{Fe}^{+2}$  ,  $\text{Cr}^{+3}$  , which ion is more paramagnetic & why?

5 a) what is Zeeman effect & stark effect ?

b) Define bohr radius.

6 i) using s, p , d, f notations describe the orbital having following quantum numbers  $n=2$  ,  $l=1$

ii) what is the total number of orbitals associated with  $n=3$ ?

iii) how many electrons in an atom may have the following quantum numbers  $n=4$  ,  $m_s=-1/2$

iv) why is emission spectrum also called line spectrum?

v) do isobars have same chemical properties ? give any one reason.

7 draw shapes of s, p, d orbitals

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**ASSIGNMENT -3 CLASSIFICATION OF ELEMENTS & PERIODICITY IN PROPERTIES**

- 1 list 2 main achievements of Mandeleev 's periodic table.
- 2 list any 2 defects of Mandeleev 's periodic table which have been corrected in the modern periodic table
- 3 a) what is meant by statement –properties of the elements are periodic functions of their atomic numbers.  
b)what is the cause of periodicity in properties in modern periodic table?  
c) what are periods & groups in periodic table?  
d) define ionisation enthalpy & electron gain enthalpy.
- 4 a) List the following ions in order of increasing size Cu , Cu<sup>+2</sup> , Cu<sup>+1</sup>  
b)which atom or ion has the largest size-Mg Na Na + Mg<sup>+2</sup> Al<sup>+3</sup> Al  
c)Mg<sup>+2</sup> ion is smaller than O<sup>-2</sup> ion although both have same electronic configuration. Explain why?
- 5 What does atomic radius mean to you? How does it vary in a period & in a group? How do you explain the variation?
- 6 a) Normally atomic mass of an atom is expressed as average atomic mass. Why?  
b)Formula mass is used for which type of compounds?
- 7 a)The electronic configuration of oxygen is written as 1s<sup>2</sup>, 2s<sup>2</sup>, 2px<sup>2</sup>, 2py<sup>1</sup>, 2pz<sup>1</sup>and not as 1s<sup>2</sup> 2s<sup>2</sup> 2px<sup>2</sup> 2py<sup>2</sup>? State the rule governing this type of distribution.  
b)why electronic energy is negative?
- 8 a)Where would you locate (in terms of period & group) an element with atomic number 42?  
b)Why does successive ionisation enthalpy of an element keep on increasing?Explain giving an example.

