Class 11 Time : 1 hr.
21-7-2014 First Unit Test in CHEMISTRY M. Marks : 20

1. a) State law of multiple proportion.
   b) What is the shape of s- orbital. (1)

2. a) What is the significance of principal quantum number?
   b) If the value of azimuthal quantum number is 1 what are the values of magnetic quantum number ? (1)

3. In a reaction $A + B_2 \rightarrow AB_2$ identify the limiting reagent when 300 atoms of A reacts with 200 molecules of B. Calculate the excess amount of the other reactant. (1)

4. The empirical formula of a compound is CH_2O and its molecular mass is 180 g. Find the molecular formula of the compound.
   (Given that atomic mass of C=12, H=1, O=16) (1)

5. Calculate the molarity of a solution containing 20.7 g K_2CO_3 (mol. mass 138) dissolved in 500 ml solution. (2)

6. Chlorine is prepared in the laboratory by treating manganese dioxide with aqueous hydrochloric acid as per the following reaction : -
   $4HCl + MnO_2 \rightarrow 2\ H_2O + MnCl_2 + Cl_2$ (2)
   How many grams of HCl is required to react with 5g of manganese dioxide?
   (Atomic mass of H=1, O=16, Cl=35.5, Mn =55)

7. a) Suggest a drawback of Rutherford's model of structure of atom.
   b) Bohr named the orbits as energy levels. Why?
   c) State Pauli's exclusion principle.
   d) Hydrogen atom has only one electron but its spectrum is very complex. Why? (2)

8. Write the configuration of $_{17}Cl$, and $_{26}Fe$ (2)

9. Calculate the frequency of yellow radiations having wavelength of 5800×10^{-10} m. Given that velocity of light is 3×10^{-8} m/sec. Also calculate the wave number of the radiation. (2)

10. a) Define uncertainty principle and give its mathematical expression.
    b) Define a photon. What is the energy of each photon? (3)
    c) Give two differences between orbit and orbital.

11. a) Calculate the volume of 64 g of oxygen gas at STP.
    b) Calculate the mass of 1 atom of C^{14}.
    c) Balance the following reaction :-
       $Cu + HNO_3\,(conc.) \rightarrow Cu(NO_3)_2 + NO_2 + H_2O$ (3)

-x-x-x-x-x-