City International School

FIRST PRELIMINARY EXAMINATION 2014 – 2015

Date : 26/11/2014 **Marks : 80**

Std : X **Subject : Chemistry (Paper 2)** **Time :** 2 hrs

Answer to this paper must be written on the paper provided separately.
You will not be allowed to write during the first 15 minutes.
This time is to be spent in reading the question paper, the time given at the head of this paper is the time allowed for writing the answer.
Section I is compulsory. Attempt any four questions from section II. The intended marks for questions or parts of questions are given in brackets ( )

SECTION – I [40 MARKS]
Attempt all questions from this section.

Question 1

a. Choose the correct option and write in your answer booklet. **(10)**

i. An element in period 3 whose electron affinity is zero.
1. Neon 2. Sulphur 3. Sodium 4. Argon

ii. The atomic size of elements on moving left to right across a period of the periodic table.
1. Decreases 2. Increase
3. Remains the same 4. Sometimes

iii. Metals lose electrons during ionization this change is called.
1. Oxidation 2. Reduction 3. Redox 4. Displacement

iv. Which of the following hydroxides is not an alkali.
1. Ammonium hydroxide 2. Calcium hydroxide
3. Copper hydroxide 4. Sodium hydroxide

v. The lustrous non-metal which conducts electricity.
1. Sulphur 2. Graphite 3. Iodine 4. Silicon

vi. A covalent compound which behaves like an ionic compound in aqueous solution.
1. Silver chloride 2. Hydrogen chloride
3. Graphite 4. Copper

vii. Nitrogen gas can be obtained by heating.
1. Ammonium nitrate 2. Ammonium nitrite
3. Magnesium nitride 4. Ammonium chloride

viii. The functional group present in acetic acid is.
1. - C = O 2. - OH 3. - CHO 4. - COOH

ix. Unsaturated hydrocarbon undergo.

1. Substitution reaction
2. Oxidation reaction
3. Addition reaction
4. None of the above

x. The metallic oxide which cannot be normal reducing agents.

1. Magnesium oxide
2. Copper (II) oxide
3. Zinc oxide
4. Iron (II) oxide

b. State the observation for each of the following. **(5)**

i. Dilute hydrochloric acid is added to manganese oxide.

ii. The gas formed on reacting a metallic nitride of a trivalent metal with warm water is bubbled into copper (II) sulphate solution.

iii. Iron (II) sulphide is heated with dil sulphuric acid and the gas evolved is passed through lead acetate solution.

iv. The product of reaction of calcium carbide and cold water, is bubbled through ammonical copper (II) chloride solution.

v. An aqueous solution of sodium sulphate is added to barium chloride solution.

c. Calculate the following. **(2)**

i. The volume and number of moles of oxygen liberated at stp when 5.2g of sodium peroxide (Na_2O_2) reacts with water.

$2Na_2O_2 + 2H_2O \longrightarrow 4NaOH + O_2$ (Na = 23, O = 16)

ii. The percentage of water of crystallisation in $MgSO_4.7H_2O$
(Mg = 24, S = 32, O = 16, H = 1)

d. Give IUPAC name and the structural formula for the final product formed. **(6)**

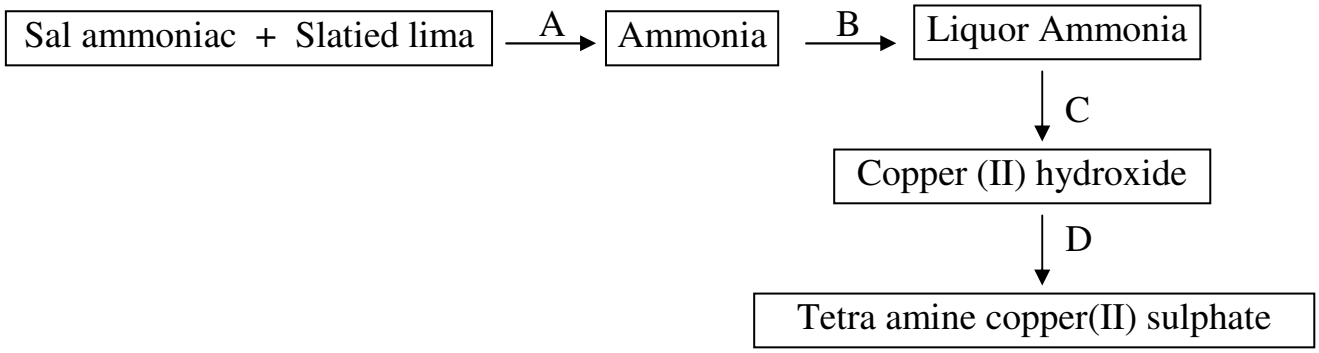
i. 1, 2 dibromo ethane on boiling with KOH.

ii. Sodium proponoate and soda lime.

iii. Ethanol with acidified $K_2Cr_2O_7$ on complete oxidation.

e. Refer to the flow chart below and give balanced equation with conditions if any for the following conversations. **(4)**

A to D



f. Give reasons for the following. **(3)**

i. Pure water is termed as a non – electrolyte while acidified water an electrolyte.

ii. The electron affinity of Argon in period 3 of the Periodic Table is zero.

iii. Ammonia gas forms ammonium ion.

g. Rewrite each incorrect statement using appropriate word / words. **(7)**

i. The acidity of a dibasic acid H_2SO_4 is 2.
ii. Hydronium ion formed from a water molecule and a hydrogen atom contains two lone pairs of electrons.
iii. In brass, copper imparts hardness to base metal zinc.
iv. Cations lose electrons to anode.
v. Group 18 is also called as group halogens.
vi. Ethanol on oxidation forms ethanoic acid.
vii. The pH has 7 means highly acidic.

SECTION – II [40 MARKS]
Attempt any four questions from this section.

Question 2

a. Give balanced equations for the following. **(5)**

i. Lead (II) oxide and conc hydro chloric acid.
ii. Lead (II) oxide and caustic potash.
iii. Copper (II) oxide and dil sulphuric acid.
iv. Iron (III) oxide and carbon monoxide.
v. Potassium dichromate and conc hydrochloric acid.

b. Determine the empirical formula of the compound whose composition by mass is 42% nitrogen, 48% oxygen and 9% hydrogen. (H = 1, N = 14, O = 16) **(5)**

Question 3

a. Name the following. **(4)**

i. A metal present in duralumin but not in solder.
ii. A metal present in type metal but not in solder.
iii. A non – metal 'Y' which on ionization forms Y^{3-}
iv. A non – metallic element other than carbon which forms a neutral and an acidic oxide.

b. Complete the statement one gram of calcium carbonate represents _____ moles of the compound. (Ca = 40, O = 16, C = 12) **(1)**

c. Calculate what mass of sodium chloride contains the same number of molecules as 6.0g of water. (Na = 23, Cl = 35.5, H = 1, O = 16) **(2)**

d. Draw the structural formula of:- **(3)**

i. 2, 2 dimethgl propane.
ii. Ethane 1, 2 diol.
iii. 1, 2 dilodo ethane.

Question 4

a. Give chemical test to distinguish between. **(4)**
   i. Ethane and Ethanol
   ii. Zinc nitrate and Lead nitrate
   iii. Sodium sulphite and Sodium sulphide
   iv. Methano and Ethyne

b. The questions below are related to the manufacture of ammonia. **(6)**
   i. Name the process.
   ii. In what ratio must the reactants be taken.
   iii. Name the catalyst used.
   iv. Give the equation for the manufacture of ammonia.
   v. Ammonia can act as a reducing agent write a relevant equation for such a reaction.
   vi. Name the promoter used.

Question 5

a. i. What is the property of concentrated sulphuric acid which allows it to be used in the preparation of hydrogen chloride and nitric acid? **(1)**
   ii. What property of concentrated sulphuric acid is in action when sugar turn back in its presence. **(1)**

b. Define. i. Arogadros law ii. Gay Lussacs law **(2)**

c. Define a coordinate bond and give the conditions for its formation. Explain with example. **(5)**

d. Give the electron dot structure for methane. **(1)**

Question 6

a. i. Differentiate between roasting and calcinations. **(2)**
   ii. Name the main constituent metal in the following alloys. **(3)**
   1. Duralumin 2. Brass 3. Stainless steel

b. 4.5 moles of calcium carbonate are reacted with dilute hydrochloric acid. **(5)**
   i. Write the equation for the reaction.
   ii. What is the mass of 4.5 moles of calcium carbonate?
   iii. What is the volume of CO_2 liberated at STP.
   iv. How many moles of HCl are used in this reaction?
   v. What mass calcium chloride is formed (molecular mass of $CaCO_3$ = 100)