

# ***City International School***

## **FIRST TERMINAL EXAMINATION – 2013 - 2014**

**Date : 08/08/2013**

**Marks : 80**

**Std : X**

**Subject : Chemistry (Paper II)**

**Time : 2hrs**

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. 1. Write balanced equations for the following. (5)
- Ethane from sodium propionate
  - Ethane from ethanol
  - Ethane from calcium carbide
  - Ethanoic acid from ethane
  - Ethyne from methane
2. Find the empirical and molecular formula of an acid of phosphorous which has 38.27% of phosphorous and 59.26% of oxygen. The relative molecular mass is 162. [O = 16, P = 31] (5)
- b. 1. Name the gas evolved in each case (formula is not accepted) (5)
- The gas produced by the action of concentrated sulphuric acid on sodium chloride.
  - The gas that burns in oxygen with a green flame.
  - The gas produced when magnesium nitride is treated with warm water.
2. Choose the correct option. (2)
- The organic compound mixed with ethanol to make it spurious is.
    - Methanol
    - Methanal
    - Methanoic acid
    - Ethanoic acid
  - The number of electrons present in the valence shell of a halogen is.
    - 1
    - 3
    - 5
    - 7
- c. 1. Calculate the percentage of nitrogen and oxygen in ammonium nitrate. (5)
- [H = 1, N = 14, O = 16]

2. 4.5 moles of calcium carbonate are reacted with dilute hydrochloric acid write (5)
- The equation for the reaction
  - What is the mass of 4.5 moles of calcium carbonate  
(Relative molecular mass of calcium carbonate is 100)
  - What is the volume of carbon di oxide liberated at STP?
  - What mass of calcium chloride is formed?  
(Relative molecular mass of calcium chloride is 111)
  - How many moles of HCl are used in this reaction?

- d. 1. Consider the section of the periodic table given below. (3)

Group Numbers	I A	II B	III A	IV A	V A	VI A	VII A	O
	Li		D			O	J	Ne
	A	Mg	E	Si		H	K	
	B	C		F		G		L

Note:

- B does not represent Boron
- C does not represent Carbon
- F does not represent Fluorine
- H does not represent Hydrogen
- K does not represent Potassium

- Which is the most electro negative element?
- How many valence electrons are present in G?
- Write the formula of the compound between B and H.

2. Give reason for the following. (2)
- Ionic compounds conduct electricity.
  - Anhydrous HCl is a poor conductor while aqueous HCl is an excellent conductor of electricity.

- e. 1. Write the equations for the following reactions. (3)
- A mixture of ammonium chloride and slaked lime is heated.
  - Aluminium nitride and water.

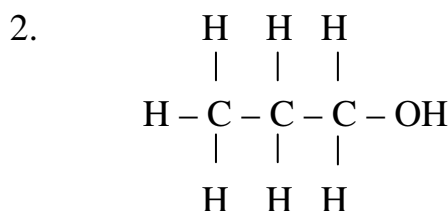
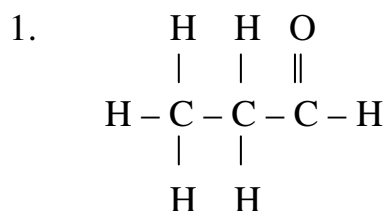
2. State your observations when (3)
- Silver nitrate solution is added to a solution of the salt containing chloride.
  - Hydrochloric acid is heated with manganese dioxide.
  - Ammonium salt is treated with Nessler's reagent.

- f. 1. Fill in the blanks with appropriate words. (5)
- CHO is the functional group of an \_\_\_\_\_.
  - The IUPAC name of acetylene is \_\_\_\_\_.
  - The next higher homologue of ethanoic acid is \_\_\_\_\_.
  - The general formula of alkanes is \_\_\_\_\_.
- The alkanes undergo \_\_\_\_\_ reactions.

**SECTION II [40 MARKS]**  
**Attempt any four questions form this section.**

**Question 2**

a. Give the correct IUPAC name and the functional group for each of the compounds. (3)



- b.
1. Write a balanced chemical equation for the lab preparation of ammonia. (3)
  2. How is ammonia dried and collected in the laboratory?
  3. Ammonia cannot be collected over water. Give reason.

- c.
1. Calculate the volume of HCl gas formed and chlorine gas required when 40ml of methane reacts completely with chlorine at Stp. (3)  
 $\text{CH}_4 + 2\text{Cl}_2 \longrightarrow \text{CH}_2\text{Cl}_2 + 2\text{HCl}$  (C = 12, H = 1, Cl = 35.5)

2. Write balanced equations for the reaction of dilute hydrochloric acid with each of the following. (2)
  - i. Sodium thiosulphate
  - ii. Iron (II) sulphide

**Question 3**

- a.
1. A gas 'P' gives dense white fumes with chlorine. Its aqueous solution gives a blue colour with copper (II) hydroxide. (2)
    - i. Name the gas P
    - ii. Give its formula
    - iii. Give three uses of P
  2. A hydride of nitrogen contains 87.5% by mass of nitrogen. Determine the empirical formula of this compound. (3)  
 [H = 1, N = 14]
  3. Name. (2)
    - i. The noble gas with 3 shells.
    - ii. The element in period 3 which does not form oxide.

**Question 4**

- a. Give the. (6)
1. Electron dot and
  2. Molecular structure of
    - i. Magnesium chloride
    - ii. Nitrogen
    - iii. Methane

- b. Calculate the mass of. (4)
1. An atom of oxygen
  2. An atom of hydrogen

### Question 5

- a. Explain why are the following statements not correct. (2)
1. Non- metallic character decreases across a period with increase in atomic number.
  2. All groups contain metals and non-metals.
- b. 1.56g of sodium peroxide reacts with water according to the following equation. (3)
- $$2\text{Na}_2\text{O}_2 + 2\text{H}_2\text{O} \rightarrow 4\text{NaOH} + \text{O}_2$$
- Calculate:
1. Mass of sodium hydroxide formed,
  2. Volume of oxygen liberated at STP
  3. Mass of oxygen liberated.
- c. [Dilute sulphuric acid, copper, iron, sodium, zinc, copper carbonate and sodium carbonate] (4)
- Choosing only from the list of substances mentioned above, write an equation for the reaction which you could use in the lab to obtain.
1. Zinc carbonate
  2. Copper sulphate
  3. Sodium sulphate
  4. Iron sulphate
- d. Name the metalloid of period 3. (1)

### Question 6

- a. Draw the structural formula for each of the following. (3)
- i. Ethanoic acid
  - ii. But-2-ene.
  - iii. 1, 2-dibromoethane
- b. Write the balanced equations for the preparation of the following salts in the laboratory. (4)
1. A soluble sulphate by the action of an acid on an insoluble base.
  2. An insoluble salt by the action of an acid on another salt.
  3. An insoluble base by the action of a soluble base on a soluble salt.
  4. A soluble sulphate by the action of an acid on a metal.
- c. (2)
1. Which compound should be heated with soda lime to obtain ethane gas in the laboratory?
  2. Write balanced equation for the complete combustion of ethane.
  3. Name a reagent which can be used to distinguish between ethane and ethene.