Alternative No: **Index No:**

Supervising Examiner's/Invigilator's initial:

Paper 2 (Chemistry) **Writing Time: $1\frac{1}{2}$ Hours**

Total Marks : 80

READ THE FOLLOWING DIRECTIONS CAREFULLY:

1. Do **not** write for the first **fifteen minutes**. This time is to be spent reading the questions. After having read the questions, you will be given **one and a half hours** to answer all questions.
2. Write your **index number** in the space provided on the **top right hand corner of this cover page only**.
3. In this paper, there are **two** sections: A and B. Section **A** is compulsory. You are expected to attempt **any four** questions from Section **B.**
4. The intended marks for questions or parts of questions, are given in brackets [ ].
5. Read the directions to each question carefully and write **all** your answers in the space provided in the **question booklet** itself.
6. Remember to write **quickly** but **neatly**.
7. **Do not** remove or tear off any pages from the question booklet.
8. **Do not** leave the examination hall before you have made sure that you have answered all the questions.

For Chief Marker's and Markers' Use Only

Question Number															**Total**	**Chief Marker's Signature ↓**
Award																
Markers' initial →																

SECTION A (40 Marks)

Compulsory: To be attempted by all candidates.

Question 1

(a) Name the following: **[6]**

(i) Hydrocarbon with a double or triple bond.

……

(ii) Number of atoms in a molecule of an element.

……

(iii) A non-metal that exists in the liquid state at room temperature.

……

(iv) The element used in the vulcanisation of rubber.

……

(v) The drying agent used for drying ammonia gas.

……

(vi) The form of iron used to make drain pipes.

……

(b) What do you observe when: **[6]**

(i) ethane is burnt in air.

……

……

(ii) ammonia gas comes in contact with hydrogen chloride gas.

……

……

(iii) a few drops of phenolphthalein is added to sodium hydroxide solution.

……

(iv) chlorine water is exposed to direct sunlight for a short time.

……

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(v) acetylene is passed through bromine in carbon tetra chloride.

……

……

(vi) sodium hydroxide solution is added in excess to zinc sulphate solution.

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……

(c) Write balanced equations for each of the following reactions. **[4]**

(i) Chlorine is passed over heated iron.

……

(ii) Copper oxide reacts with dilute sulphuric acid.

……

(iii) Conversion of ethene to ethane.

……

(iv) Action of heat on calcium carbonate.

……

(d) Give ***ONE*** reason for each of the following. **[6]**

(i) Metals above zinc in the metal activity series are extracted from their ores by electrolysis.

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(ii) Acetic acid is a monobasic acid.

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(iii) Nitric acid is a strong oxidising agent.

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(iv) Group I elements are known as alkali metals.

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(v) Sulphuric acid is a strong dehydrating agent.

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(vi) Commercial ethyl alcohol is unfit for consumption.

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(e) (i) A sample of bleaching powder ($CaOCl_2$) contains 35% of pure bleaching powder. Calculate the volume of chlorine at STP which can be obtained from 127 gm of the sample. (Ca=40, O = 16, Cl = 35.5) **[4]**

(ii) Describe a test to identify ethylene from acetylene. **[2]**

……

……

……

(f) Fill in the blanks by choosing words from the following list:

(flux, proteins, blue precipitate, greater, acid, anode, smog, cathode, hydroxides, smaller)

(i) The oxide of active metals like sodium, potassium or calcium react with water vigorously forming……

(ii) Atomic radius of sodium atom is ……. than that of sodium ion.

(iii) Slag is the name given to a compound formed by the combination of gangue and ……

(iv) Copper sulphate solution forms a ……with sodium hydroxide solution.

(v) The electrode connected to the negative terminal of the battery is called ……..

(vi) Dilute nitric acid reacts with ……. of skin to give yellow colour.

(g) (i) Find out the total percentage of oxygen in $Mg(NO_3)_2.6H_2O$.
(Mg = 24, N = 14, O = 16, H = 1) **[2]**

(ii) Classify the following substances as electrolyte and non-electrolyte in the table given below. **[2]**

sugar solution, alcohol, sodium hydroxide, ammonia solution

Electrolyte	**Non-electrolyte**

(iii) Give the chemical formulae of the following compounds:

Sl. No.	Name of compounds	Chemical formula
1.	Aqua fortis	
2.	Oil of vitriol	
3.	Haematite	
4.	Chloroform	

SECTION B (40 Marks)

Attempt any four questions

Question 2

(a) Define mole. **[1]**

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……

……

(b) Read the statement given below and answer the questions that follow.

'A gas cylinder can hold 1 kg of hydrogen at room temperature and pressure'.

(i) What weight of carbon dioxide can the gas cylinder hold under similar conditions of temperature and pressure? **[3]**

(ii) If the number of molecules of hydrogen in the gas cylinder is 'x', what is the number of molecules of carbon dioxide in the cylinder? Give a reason for your answer. **[1]**

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(c) The table given below shows a part of the periodic table. Study the table and answer the questions that follow. **[4]**

Li	**Be**	**B**	**C**	**N**	**O**	**F**
Na	**Mg**	**Al**	**Si**	**P**	**S**	**Cl**

(i) How does the metallic nature of elements change as one moves from left to right in a period?

……

(ii) Which is the most metallic element?

……

(iii) Which element has the smallest size?

……

(iv) Arrange sodium, potassium and lithium in ascending order of their nuclear charge.

……

(v) Give the common name of elements of group IIA in the periodic table.

……

(vi) Name a non-metallic element which is a good conductor of electricity.

……

(d) Define acidic anhydride. **[1]**

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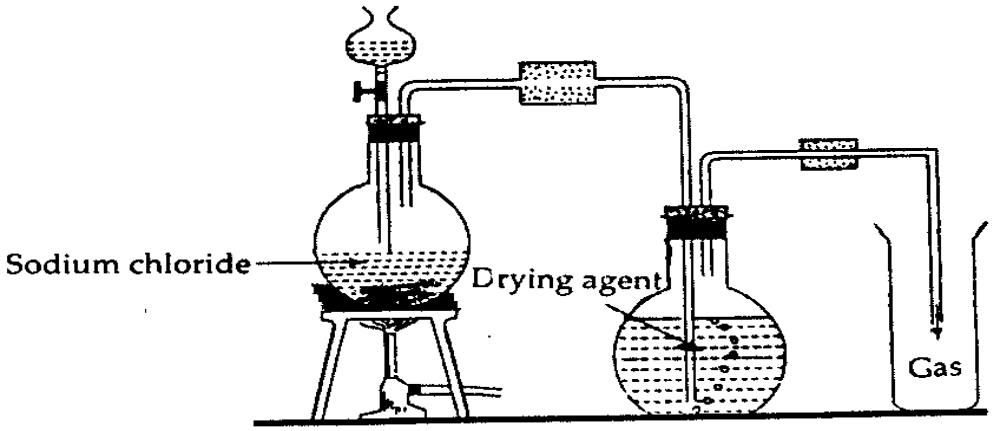
Question 3

(a) The diagram given below shows the preparation of a certain gas. Study the diagram and answer the questions that follow. **[3]**



(i) Write the balanced chemical equation for the reaction taking place in the round bottomed flask.

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(ii) Name the drying agent used to dry the gas formed.

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(iii) Why is this gas not collected over water?

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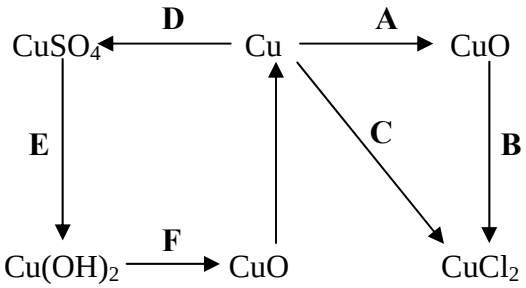
(b) When excess of lead nitrate solution is added to a solution of sodium sulphate, 15.15 gm of lead sulphate was precipitated. Calculate the mass of sodium sulphate present in the original solution? **[2]**

$Na_2SO_4 + Pb(NO_3)_2 \rightarrow PbSO_4 + 2NaNO_3$

(Na=23, S = 32, O = 16, Pb = 207, N = 14)

(c) Study the figure given below and answer the questions that follow. **[5]**



(i) Write down in the table given below how you will bring about the following conversions A, B, C and D.

A	
B	
C	
D	

(ii) Write down in the table given below the balanced chemical equations for the reactions C, E and F.

C	
E	
F	

Question 4

(a) The atomic numbers of three elements A, B and C are given in the table below. **[5]**

Elements	**Atomic numbers**
A	5
B	10
C	17

(i) Which of the above elements belongs to group zero?

……

(ii) Which period does element B belong to?

……

(iii) Write down the formula of the compound formed by the elements A and C.

……

(iv) Which element is a metal?

……

(v) Which element is a non-metal?

……

(vi) Draw the atomic structure of the inert gas from A, B and C.

(b) Give reasons for the following:

(i) Electrolysis is an example of redox reaction.

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(ii) Distilled water is a non-electrolyte.

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(iii) During electroplating, a smaller current is used for a longer time.

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(iv) Sodium chloride in the molten state or in aqueous solution conducts electricity but does not conduct in the solid state.

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(v) When copper sulphate solution is electrolysed with copper electrodes, the blue colour of the solution does not fade.

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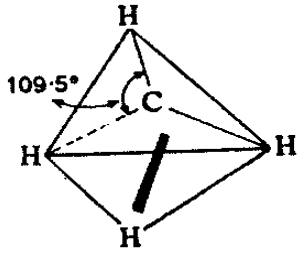
Question 5

(a) A compound consists of C = 40%, H = 6.7% and O = 53.3%. The molecular weight of the compound is 180. Find out the molecular formula of the compound. **[4]**

(b) The diagram given below shows the arrangement of hydrogen atoms around a carbon atom in a molecule of hydrocarbon. Study the diagram and answer the questions that follow. **[3]**



(i) Write the general formula of the hydrocarbon.

……

(ii) Write the molecular formula of the hydrocarbon.

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(iii) How can you convert a hydrocarbon to aldehyde?

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(c) During SUPW period, Deki was stung by a red ant and it was very painful. Her Chemistry teacher quickly rubbed soap on it which made her feel better.

(i) What could be the nature of the substance in the ant's sting and soap? **[2]**

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(ii) Name the type of chemical reaction that has taken place to make Deki feel better. **[1]**

……

Question 6

(a) Calcium hydroxide reacts with ammonium chloride to give ammonia according to the following equation: **[3]**

$Ca(OH)_2 + 2NH_4Cl \rightarrow CaCl_2 + 2NH_3 + 2H_2O$

If 5.35 gms of ammonium chloride is used, calculate the

(i) number of moles of calcium chloride formed.

(ii) volume of ammonia liberated at STP.

(H=1, N=14, O=16, Cl=35.5, Ca=40)

(b) (i) State any ***TWO*** differences between covalent and electrovalent compounds. **[2]**

Covalent compound	**Electrovalent compound**

(ii) Using the elements $_{12}X$ and $_{16}Y$ as examples, answer the following questions.

Which element gets **[1]**

1. oxidised? …….
2. reduced? ……

(c) The table given below is related to alloys. Complete the table. **[2]**

Alloy	**Metals present**
Duralumin	
Brass	

(d) Give ***TWO*** examples each of acidic salts and normal salts in the table given below. **[2]**

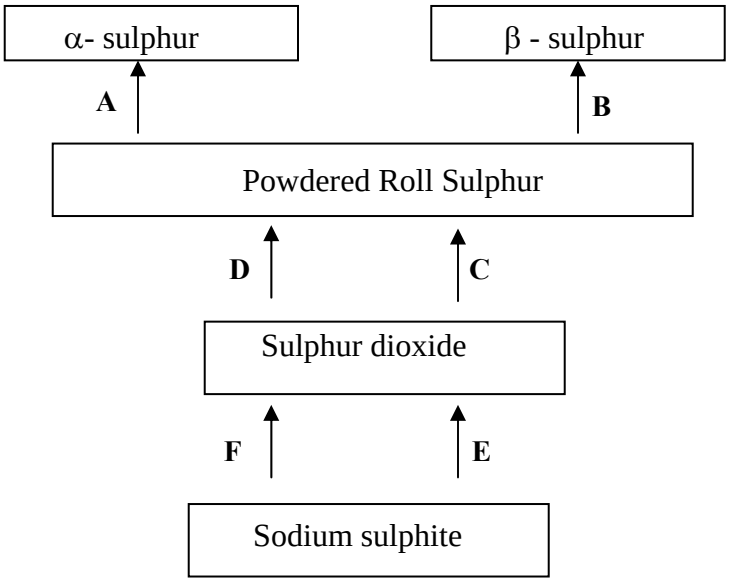
Acidic salts	**Normal salts**

Question 7

(a) Give ***ONE*** use of the following in the table given below:

Chlorine	
Zinc	
Ammonium chloride	

(b) Study the scheme given below and answer the question that follows.



Write down the conditions for the conversions of A, B, C and D in the table given below. **[2]**

A	
B	
C	
D	

(c) What is meant by roasting of ore? **[1]**

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(d) (i) *"When hydrogen and chlorine combine, the product formed (hydrogen chloride) is a polar covalent compound"*. Explain the statement.

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(ii) Which of the following compounds are ionic in nature? **[2]**

NaCl, CaO, NaH, CH_4, CCl_4, $MgCl_2$, H_2S

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for Rough Work

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for Rough Work

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for Rough Work
