

Name..... Signature.....

School..... Index No.....

545/2
CHEMISTRY
Paper 2
2 hours

WAKISSHA

Uganda Certificate of Education

CHEMISTRY

Paper 2

2 hours

INSTRUCTIONS TO CANDIDATES;

- Section A consists of 10 structured questions. Answer all questions in this section.

Answers to these questions must be written in the spaces provided.

- Section B consists of 4 semi – structured questions. Answer any two questions from this section.

Answers to section B must be written in the answer booklet/sheets provided and stapled at the back of the question paper.

- Show all your working clearly in both sections.

Where necessary use;

[Ca = 40, K=39, C = 12, O = 16, H = 1, Molar gas volume at s.t.p = 22.4dm³]

For examiner's use only														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	Total

SECTION A

Answer all questions in this section.

1. (a) Name the physical method by which a mixture of Iron and Sulphur can be separated. (1 mark)
.....
- (b) A mixture of Iron and Sulphur was strongly heated,
(i) Write equation for the reaction that took place. (1½marks)
.....
.....
(ii) State the differences between the mixture of Iron and Sulphur and the compound formed in (b) (1mark)
.....
.....
2. (a) Hydrogen gas burns in air to form a colourless liquid Z
(i) State how colourless liquid can be identified in the laboratory. (1½marks)
.....
.....
- (b) The colourless liquid was added to anhydrous iron (II) chloride.
(i) State what was observed. (1mark)
.....
(ii) Write ionic equation for the reaction that took place. (1mark)
.....
3. (a) State two non – crystalline allotropes of carbon. (2marks)
.....
.....
- (b) Which property of carbon is put to use when making
(i) Leads of pencil (½mark)
.....
(ii) Gas masks (½mark)
.....
- (c) Name the oxides of carbon that is used in
(i) bread making (½mark)
.....
(ii) reduction phase in the extraction of iron. (½mark)
.....

Part of the periodic table is shown below.

I							
X	II	III	IV	V	VI	VII	VIII
Z			E		F		
U	P			R		T	

- (a) (i) Write down the electronic configuration of element F and R (2marks)

.....

- (b) Formula of the compound formed between
 (i) P and T (1mark)

.....

- (ii) E and F (1mark)

- (c) How does the process of bond formation in the compounds formed between P and T and E and F differ? (1mark)

.....

- (d) Which element in group 1 is most reactive? (½mark)

.....

5. A stream of carbon monoxide was passed over 40g of heated oxide of iron. The residue weighted 28g (O = 16 Fe = 56)

- (a) Calculate the number of moles of the
 (i) Iron (1½mark)

.....

- (ii) Oxygen in the oxide. (1½mark)

.....

- (iii) the empirical formula of the oxide of iron. (2marks)

.....

- (b) Write equation for the reaction that took place between the Iron and Carbon monoxide. (1½marks)

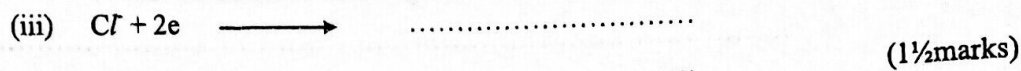
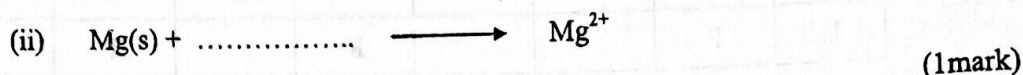
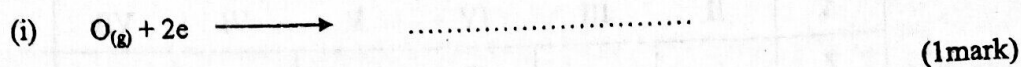
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6. (a) Define reduction in terms of electrons. (1mark)

.....

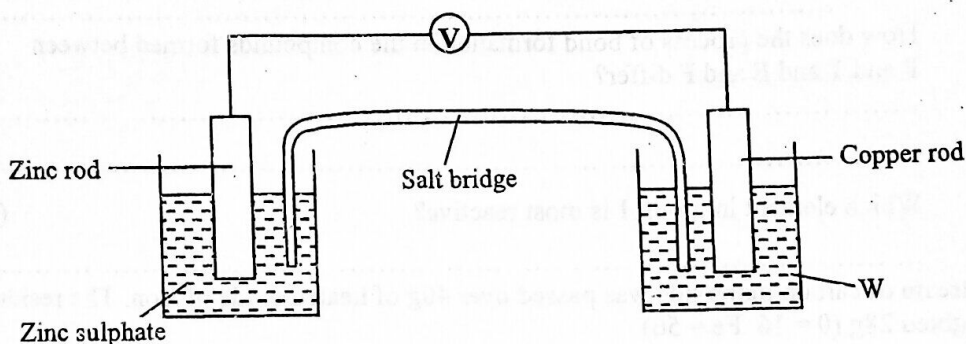
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- (b) Complete the following half reactions and in each case state whether the reaction is a reduction or an oxidation reaction.



7. (a) Differentiate between the terms Anode and Cathode. (2 marks)

- (b) Figure below shows a simple Daniel cell.



Which rod is acting as the

- (i) Cathode; (1 mark)

- (ii) Anode (1 mark)

- (c) (i) Name the electrolyte W (½ mark)

- (ii) State the role of the salt bridge in the cell. (1 mark)

- (d) Write the equation for the overall cell reaction. (1½ marks)

8. Burning magnesium was separately lowered into gas jars of Nitrogen and carbon dioxide.

- (a) Write equations for the reactions that took place between magnesium and (1½ marks)

- (i) Carbon dioxide

(ii) Nitrogen (1½ marks)

(b) State the property of magnesium demonstrated in a(i) above. (1mark)

(c) The solid product in a (ii) was dissolved in water and gas x was produced.

(i) Name the gas produced. (1 mark)

(ii) State how gas x can identified in the laboratory. (1½ marks)

9. (a) What is meant by the term permanent hardness in water? (1mark)

(b) Addition of washing soda is a simple chemical method of removing hardness from water.

(i) What is the chemical name for washing soda? (1mark)

(ii) Write ionic equation for the action of washing soda on permanent hardness of water. (1½ marks)

(iii) Name one physical method that can be used to remove permanent hardness. (1mark)

10. (a) (i) Name one substance that is reacted with sulphuric acid to produce sulphur dioxide gas in the laboratory. (1mark)

(ii) Write equation for the reaction leading to the formation of sulphur dioxide. (1½ marks)

(b) Sulphur dioxide was passed through a solution containing acidified potassium dichromate.

(i) State what was observed. (1mark)

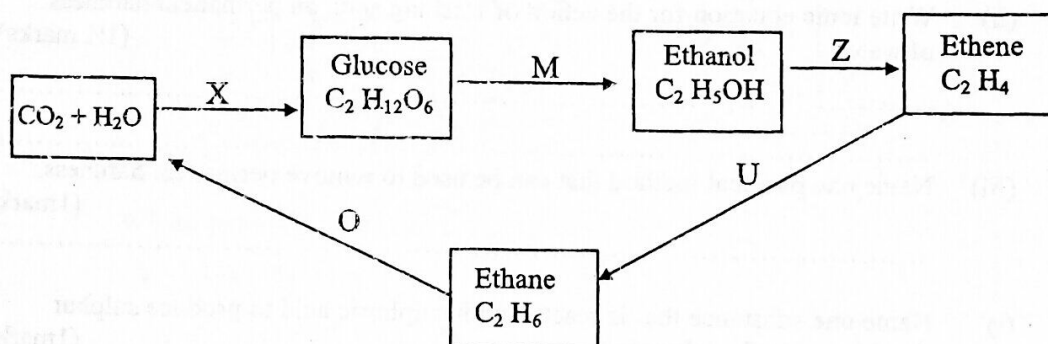
(ii) Name the property of sulphur dioxide demonstrated by the reaction in (b) above. (1mark)

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SECTION B

Answer any two questions from this section.

11. (a) Draw a labelled diagram of an atom and show the location of the fundamental particles. (4 marks)
- (b) $^{35}_{17}\text{X}$ and $^{37}_{17}\text{W}$ are atom of an element (X and W are not actual symbols)
- State the name given to atom X and W (1mark)
 - State the similarity and difference between atom X and W. (2 marks)
 - How does the difference between X and W mentioned in b(ii) above arise? (1mark)
 - Identify one element in the periodic table whose atoms can exist in the form of X and W. (1mark)
- (c) (i) Write down the electronic configuration of chlorine and sodium. (2 marks)
- (ii) Using the outer most electrons only, draw a diagram to show how sodium and chlorine form a compound. (2 marks)
- (iii) State the difference in properties between chlorine molecules and sodium chloride. (2 marks)
12. The flow diagram below show different organic processes X, M, Z, U and O



- (a) Name the process
- X (½ mark)
 - M (1mark)
 - Z (1mark)
 - U (1mark)
 - O (1marks)
- (b) Write equation for the reactions taking place at
- M (1½ marks)
 - Z (1½ marks)
 - O (1½ marks)

- (c) (i) State the industrial application of process U. (1 mark)
- (ii) Name the enzyme involved in the conversion of glucose to ethanol in process M (1 mark)
- (d) (i) State the meaning of the term Polymerisation. (1½ mark)
- (ii) Write equation to show the formation of polyethen from ethene. (1 mark)
- (iii) State two uses of polyethene. (2 marks)
13. (a) Define the term salt. (1 mark)
- (b) State one method in each case of preparing
- (i) Soluble salt (1 mark)
- (ii) Insoluble (give examples in each case) (1 mark)
- (c) Describe the laboratory preparation of copper (II) sulphate crystals starting with copper (II) oxide. (8 marks)
- (d) (i) Draw a diagram of the setup of apparatus that can be used to prepare iron (III) chloride by direct synthesis. (2½ marks)
- (ii) Write equation for the reacting leading to the formation of iron (III) chloride. (1½ marks)
14. (a) Describe the laboratory preparation of a dry sample of chlorine gas using manganese (iv) oxide (diagram not required) (6 marks)
- (b) Dry hydrogen chloride gas was passed over heated iron in combustion tube. Solid x was formed
- (i) Name solid X. (½ mark)
- (ii) Write equation for the reaction leading to the formation of solid X. (1½ marks)
- (c) Water was added to solid X and to the resultant solution was added ammonium hydroxide drop wise until in excess.
- (i) State what was observed. (1 mark)
- (ii) Write equation for the reaction that took place. (1½ marks)
- (d) When chlorine is bubbled through water, a solution with bleaching properties is formed.
- (i) Name the two components of the solution formed. (1 mark)
- (ii) With the aid of equations describe the bleaching action of the solution on dyes. (3½ marks)

END