

Student's Name:

Signature:



ABDUL-RAHMAN BUN AUF ISLAMIC INSTITUTE NAMAGOMA

CHEMISTRY DEPARTMENT EXAMINATIONS BOARD

Uganda Lower Secondary Certificate of Education

S.2 END OF YEAR EXAM

Tuesday 21st November, 2023

Morning (Time: 1 hour and 50 minutes)

Paper reference: 545/1

Chemistry (Theory)

Paper: 1

Total marks

INSTRUCTIONS:

- Section A consists of 4 scenario questions. Answer **all** the questions in this section.
Answers to these questions **must** be written in the spaces provided in the question paper.
- Poor handwriting may lead to loss of marks. Marks for each question are shown in ()
- Any work done in pencil will **not** be marked **except** drawings and graphs.
- Mathematical tables and silent non-programmable calculators may be used.

For Examiner's Use Only				
1	2	3	4	Total

SECTION A: (Attempt all questions)

1. Acids and alkalis are found in our day to day life. They are found in our environment and some are man-made. Some acids occur naturally in plants and animals.

(a) Mention **two** examples of;

(i) Acids that occur naturally.

(01 mark)

.....

.....

(ii) Alkalis that occur naturally.

(01 mark)

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.....

(b) Acids and bases serve important functions both inside and outside the scientific laboratory. Mention any **four** uses of acids and bases you know.

(02 marks)

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(c) An S.2 student sustained an injury shown in the image below, while he was dealing with concentrated nitric acid.



- (i) State the property of the acid exhibited in the image above. (01 mark)

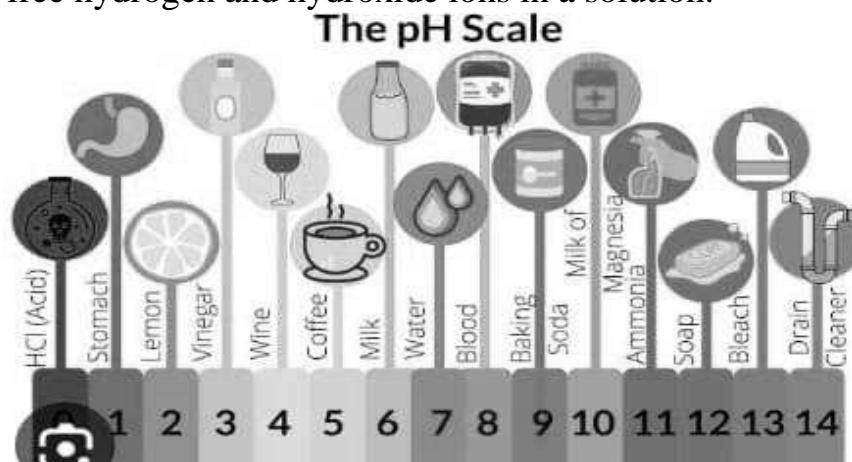
- (ii) To avoid such injuries the students were advised to make use of chemical substances called indicators. Indicators are used because most of the chemical substances are poisonous and harmful. Mention any **two** examples of the common indicators that you. (01 mark)

- (iii) Define the term **indicator** as used in chemistry (01 mark)

- (d) Phenolphthalein indicator was added to solutions **A** and **B** and the resultant colour change was as below in the table. In the space with in the table, state the nature of the substance (solution **A** and **B**) basing on the colour change after adding the phenolphthalein indicator. (02 marks)

Solution	Colour of solution before adding phenolphthalein indicator	Colour of solution after adding the phenolphthalein indicator	Nature of solution (Acidic/Alkaline)
A	Colourless	Pink
B	Colourless	Remains colourless

- (e) The figure below shows a pH scale that reflects the relative amount of free hydrogen and hydroxide ions in a solution.



(i) What is the range of pH values of acids? (½ mark)

.....
(ii) What is the range of pH values of bases? (½ mark)

.....
(iii) What is the pH value of a neutral solution? (½ mark)

.....
(iv) Briefly describe how you can determine the pH of a solution using the pH scale above. (2½ marks)

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2. Different types of chemical reactions exist in chemistry. These include precipitation reactions, neutralization reactions and very many others.

(a) Define the term **neutralization reaction**. (01 mark)

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.....

(b) The equations below are some of the examples of neutralization reaction word equations. Complete the missing gaps in the word equations. (Each 01 mark)

(i) Hydrochloric acid + sodium hydroxide → + water

(ii) Magnesium oxide + hydrochloric acid → + water

(iii) Iron + hydrochloric acid → + hydrogen

(iv) Calcium carbonate + nitric acid → + water +

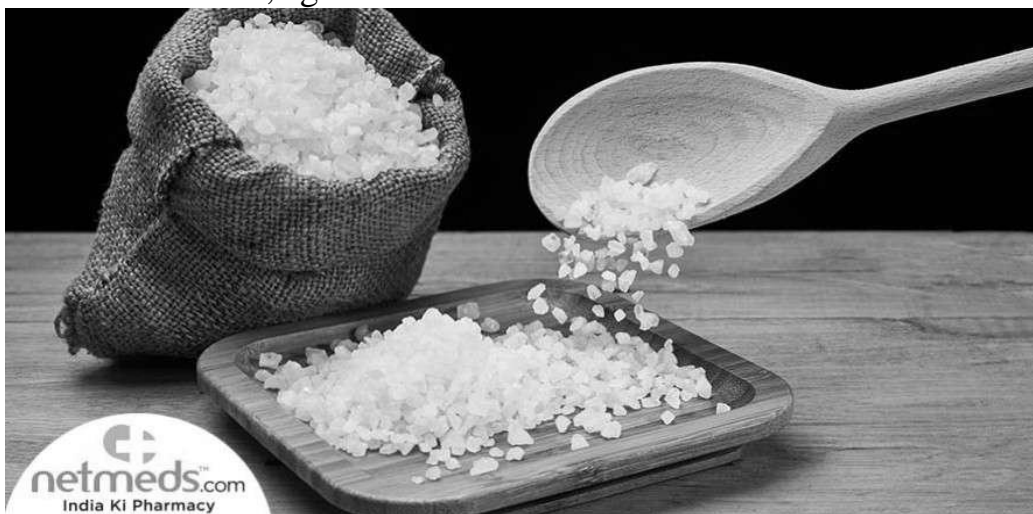
(v) Lead (II) carbonate + Phosphoric acid → + carbon dioxide + water.

(c) In all above reactions there is formation of a salt as one of the products. Briefly define the term **salt**. (01 mark)

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- (i) Explain why it is recommended to use lemon grass/neem leaves, wood ash to clean your teeth after a meal. (01 mark)

- (d) Salts play an important role in our lives. They have health, economical, agricultural and traditional uses.



- (i) Citing out specific examples of specific salts, mention **two** uses of any two common salts that you know. (02 marks)

- (ii) Briefly explain why a reaction between sodium hydroxide and dilute hydrochloric acid is considered as a neutralization reaction in chemistry. (02 marks)

- (e) Mention any **two** applications of neutralization reactions. (02 marks)

3. Chemistry deals with study of chemical substances, how they behave and react and the properties of different chemical substances. For simplicity in the study of chemistry, scientists came up with chemical symbols which are obtained from first two or first letter of either the English name or Latin name of an element.

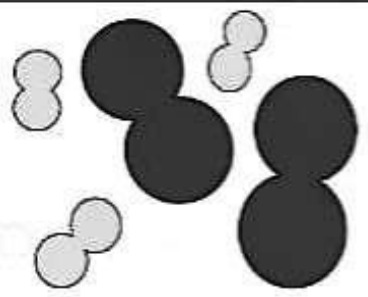
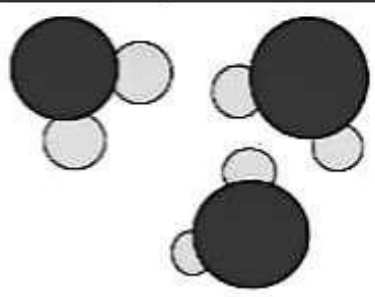
- (a) Mention any **five** examples of elements that you know and write the correct symbol of each element mentioned. (05 marks)

Element

Symbol

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.....
.....
.....
.....

- (b) When elements combine, compounds are formed. Compounds and mixtures are important to us as they are used in our day to day life.

Mixture	Compound
	
O ₂ and H ₂ molecules	H ₂ O molecules

- (i) Mention any **two** differences between a compound and a mixture (02 marks)

.....
.....
.....

- (ii) Mention any **two** examples of;
Compounds. (01 mark)

.....
Mixtures. (01 mark)
.....

(c) The figures below show **three** different kinds of mixtures.

Figure a



Figure b

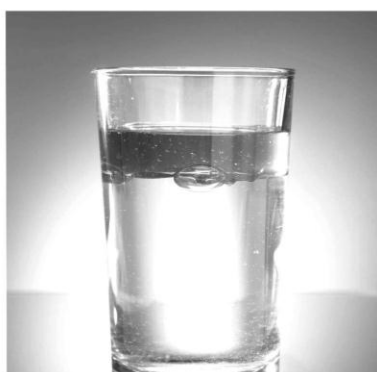


Figure c

State the **method** of separating mixtures in each of the above figures and state the **reason** behind/for the method of separation stated.

(Each 02 marks)

(i) Figure **a**; method of separation:

Reason;

.....

(ii) Figure **b**; method of separation:

Reason;

.....

(iii) Figure **c**; method of separation:

Reason;

.....

4. Human beings use a number of resources in order to sustain life. Some resources are renewable while others are non-renewable. Air is one of the resources that we should not risk to stay without even for a second.

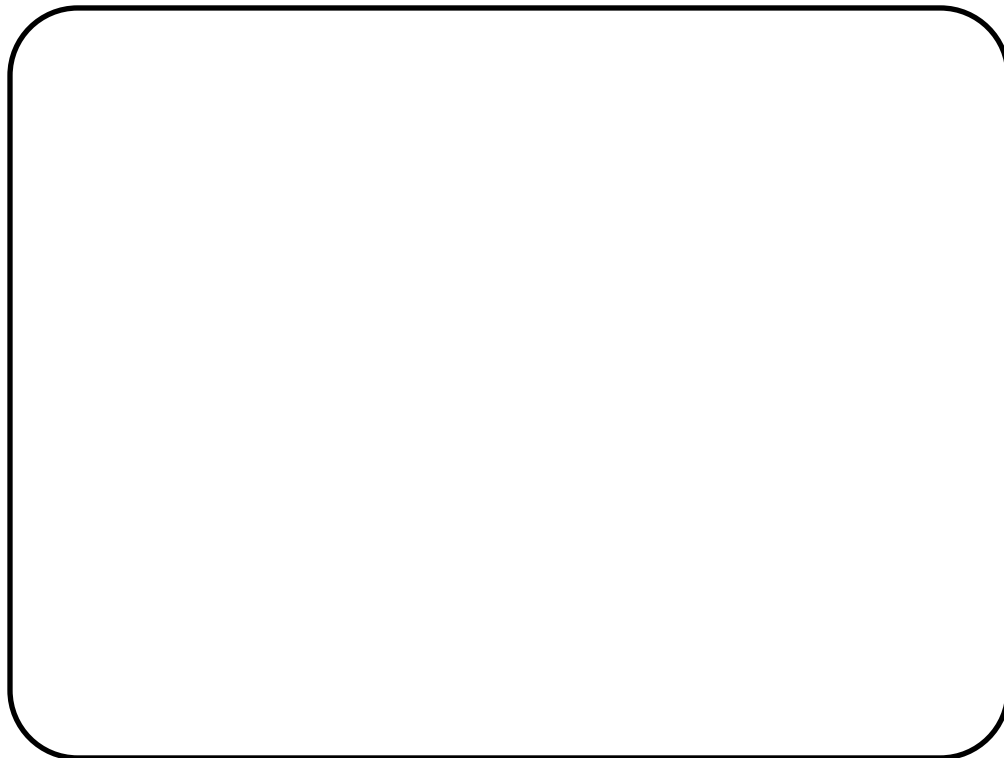
- (a) Mention the components of air and the percentage composition of the components you have mentioned. (04 marks)

Component

Percentage composition

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.....
.....
.....
.....

- (b) Draw a pie chart to represent the percentage composition of the components of air you have mentioned in (a) above. (06 marks)



- (c) The quality of air is deteriorating from day to day due to variety of activities. In a survey that was conducted in urban centres in Uganda and the rural areas in Uganda. The data revealed that out of the 10 children in urban centres, 8 children were diagnosed with respiratory disorders and in rural areas only one (1) out of ten was diagnosed.

- (i) Mention **three** ways/ reasons that cause the deterioration in the quality of air in urban centres. (03 marks)

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- (ii) With examples in each case, mention **two** measures that can be undertaken to avoid the respiratory tract disorders. (02 marks)
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- (d) The figure below shows the emission of greenhouse gases into the atmosphere by automobiles. This has the effect of contributing to global warming.



- (i) Define the term **global warming**? (01 mark)
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- (ii) Mention **two** ways how global warming can be minimized. (02 marks)
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