Name……...Stream……..

BUGISU HIGH SCHOOL

END OF TERM ONE EXAMINATIONS 2023

Uganda Lower Certificate of Education

545/1(Theory paper)

Paper 1

S.3 CHEMISTRY

2 hours and 30 minutes

Instructions

- This paper consists of section **A** and section **B**.
- Attempt all questions in section **A** and any three questions in section **B**.
- Write answers of section **A** in the space provided.
- Write answers of section **B** on the answer sheet provided.
- Use a blue or black pen to write your answers.
- Silent non programmable calculators may be used.

For Examiner's Use Only													
1	2	3	4	5	6	7	8	9	10	11	12	13	14

SECTION A.

1. (a) State two uses of the following minerals found in rocks. (3 marks)

Rock	Uses
Sand	
Limestone	
Gypsum	

(b) State any two importances of rocks in our daily life. (2 marks)

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2 (a) Describe how you can carry out a test for water in your laboratory. (2 marks)

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(b) State any two physical properties of water. (2 mark)

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(c) In the making of soap, the quality of soap made does not only depend on the reagents used but also on how the reagents are mixed. State three precautions taken when making soap. (3 marks)

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3 (a) What is meant by water pollution? (1 mark)

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(b) Complete the table below by stating any two pollutants of water, their sources, one effects and one measure taken to control them. (4 marks)

Pollutant	Source	Effect	Measure

4 Mr. Nkaire instructed students of S3 to burn liter of dry leaves that had dirtied the School Compound.

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

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(b) State the two forms of energy produced by the above reaction. (2 marks)

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(c) State one importance and two problems of burning of materials in nature. (3 marks)

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5 Guga Namasoko forgot a Panga in the forest for one night. He got it in the morning.

(a) State what was observed on a Panga. (1 mark)

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(b) Name the process that took place. (1 mark)

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(c) Outline the conditions that promoted the process in d(ii). (3 marks)

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(d) State two advantages of the process in nature. (2 marks)

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6 (a) What is meant by the following terms.

(i) Chemical formula. (1 mark)

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(ii) Radical. (1 mark)

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(iii) Valency. (1 mark)

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(b) Write the chemical symbols of the following elements. Fill in the table below.

(2 marks)

Element	Chemical symbol
(i) Oxygen	
(ii) Aluminium	
(iii)Copper	
(iv)Magnesium	

7 (a) Define the following terms

(i) Salt. (1 mark)

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(ii) Soluble salt. (1 mark)

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(b) State whether the following salts are soluble or not. Copy the table and fill. (2 marks)

Salt.	Soluble or not soluble.
(i) Sodium chloride.	
(ii) Calcium carbonate.	
(iii) Sodium hydrogen carbonate.	
(iv) Lead(II) sulphate.	

8 (a) (i) Distinguish between renewable and non-renewable fuels. (2 marks)

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(ii) Give two examples of renewable and non-renewable fuels. (2 marks)

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(b) Explain one way in which an average household can reduce energy consumption.

(2 marks)

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9 Borehole water of Bugisu High School need a lot of soap to lather.

(a) Identify the type of water responsible for the above observation. (1 mark)

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(b) State the cations in this water that are responsible for the observation. (1 mark)

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(c) State two advantages of water stated in (a). (2 marks)

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(d) State two ways in which this water is made soft. (2 marks)

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10 Apparatus in the Science laboratory are mainly made up of plastics, glass or metals.

(a) List two apparatus in the Chemistry laboratory that are made up;

(i) Plastics. (1 mark)

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(ii) Glass. (1 mark)

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(iii) Metals. (1 mark)

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(b) Describe briefly one advantage of;

(i) Plastic over glass made apparatus. (1 mark)

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(ii) Glass over metal made apparatus. (1 mark)

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(c) State one example of naturally occurring polymers. (1 mark)

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SECTION B.

Attempt three questions from this section. Write your answers on the given answer sheets.

11 **(a)** Distinguish between the following physical processes.

(i) Freezing and melting. (2 marks)

(ii) Condensation and evaporation. (2 marks)

(b) State the process for the changes below and predict whether the processes require high or low temperature. In each case, state whether heat is released or absorbed. Copy and fill in the table below. (4.5 marks)

Change	Process	High or low temperature	Heat is released or absorbed
Gas to solid			
Solid to gas			
Liquid to gas			

(c) The table below shows the temperature of a solid sample, Q, that was heated up to its boiling point for 25 minutes. Study it carefully and answer the questions that follow.

Time (minutes)	Temperature (^{o})
0	25
5	40
15	40
20	55
25	55

(i) Plot a graph of temperature against time. (4 marks)

(ii) Explain the shape of your graph. (1.5 marks)

(d) Using your graph, state the;

(i) boiling point of Q. (1 mark)

(ii) melting point of Q. (1 mark)

12 (a) Describe the following methods of preparation of salts.

(i) Double decomposition method. (2 marks)

(ii) Neutralization method. (2 marks)

(b) With the aid of a well labelled diagram, describe how a dry sample of iron(III) chloride is prepared in the laboratory. (5 marks)

(c) State two uses of salts in agriculture. (2 mark)

(d) Complete the following equations and balance correctly. (1 mark each)

(i) Al_2O_3 (s) + H_2SO_4 (aq) ⟶

(ii) Na_2CO_3 (s) + HCl (aq) ⟶

(iii) Zn (s) + HNO_3 (aq) ⟶

(iv) $Ca(OH)_2$ (s) + HCl (aq) ⟶

13 A geologist from Busitema University visited Tororo rock and obtained three elements which he identified as P, Q and R with atomic numbers 8, 11 and 16 respectively. The mass numbers of P, Q and R were found to be 16, 23 and 32 respectively.

(a) Distinguish between atomic number and mass number. (2 marks)

(b) Determine the number of;

(i) electrons in each element. (3 marks)

(ii) neutrons in each element. (3 marks)

(c) State the group and period of the periodic table to which elements P and Q belong. Give one reason for your answer in each case. (3 marks)

(d) Elements P and Q chemically combined to form compound Z.

(i) State the type of bonding in Z. Suggest one physical property of Z. (1 mk)

(ii) Using the electronic structure, show how the atoms of elements P and Q combined to form Z. (3 marks)

14 (a) Describe how a dry sample of carbon dioxide is prepared in the laboratory from a reaction of dilute hydrochloric acid and calcium carbonate (Use a labelled diagram to illustrate your answer). (7 marks)

(b) Write an equation for the reaction that takes place for the reaction above. (1.5 marks)

(c) Explain how carbon dioxide brings about;

(i) acid rain. (2.5 marks)

(ii) photosynthesis. (1 mark)

(d) State three uses of carbon dioxide. (3 marks)

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