RWENZORI REGION SESEMAT

END OF YEAR ASSESSMENT 2023

SUBJECT: CHEMISTRY

CLASS: S.3

TIME: 2HOURS 30 MINUTES

STUDENT'S NAME:.....

SCHOOL:.....

Name.....Stream.....Signature.....

INSTRUCTIONS TO STUDENTS:

- This paper consists of two sections A, and B
- Section A consists of 10 structured questions. Section B has five semi-structured questions
  (i) Answer all questions in section **A** in the spaces provided.
  (ii) Answer any **two** questions in section **B**.

SECTION A

Qn.	1	2	3	4	5	6	7	8	Total
Maximum Marks	5	5	5	5	5	5	5	5	40
Actual Marks									

SECTION B

Qn.	9	10	11	12	13	Total
Maximum Marks	10	10	10	10	10	20
Actual Marks						

1. S.2 chemistry class was asked to carry out an activity on preparation of indicators using purple cabbage leaves.
They were provided with the following materials; mortar, and a pestle, beaker, a dropper, ethanol and purple cabbage and a measuring cylinder.
State ;

(a) the role of ethanol. **(01mk)**

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(b) Why purple cabbage were used.

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(c) Explain why the solution was covered after sieving.

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d) What was the importance of grinding the purple cabbage leaves? **(01mk)**

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2. Lake Katwe is a historical source of common salt in Uganda. However salt extraction from the lake is disorganised.
You as a chemistry student give alternative ways on how common salt can be obtained or made available. Describe the procedure followed to obtain the salt.

(05mks)

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3. Iron is a commonly used metal. Give the properties of iron which make it suitable for use as

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b) A school gong/bell **(01mk)**

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c) A clothes hanger **(02mks)**

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4. Some 'fur' was found on the bottom of kettle surrounding the heater system.

(a)Briefly describe how the fur was formed on the bottom of the kettle. **(02mks)**

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(b)State the effect of the 'fur' in the kettle. **(01mk)**

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(c)Explain how fur can be overcome. **(02mks)**

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5. Among the materials used in making dry cells is carbon.

(a) Identify the allotrope of carbon used in dry cells. **(01mk)**

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b) Describe the structure of that allotrope you have identified in (a)**(2mks)**

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c) Explain why that allotrope is used as a material in making of the dry cells. **(02mks)**

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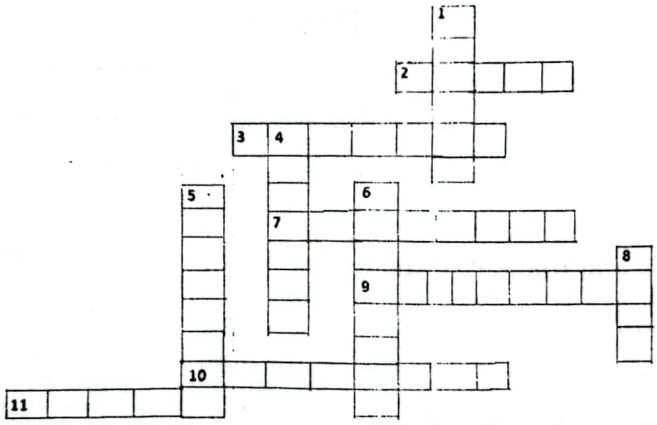
6. Study the crossword puzzle and fill in one relevant terms related to structure and bonding. **(05mks)**



CROSS:

2 Attractive forces holding atoms, ions or molecules together in chemical compounds.

3 The sub-atomic particle with no charge

7 A group of two or more atoms chemically combined together.

9 A type of bond where electrons are shared between atoms.

10 Atoms with same number of protons but different number of neutrons.

11 Type of bond formed by transfer of electrons

DOWN:

1. The sub-atomic particle with a positive charge

4. A pure substance that cannot be broken into simpler forms by chemical means.

5. A type of bonding where electrons are attached by positive ions.

6. A sub-atomic particle that determines the properties of an element.

8. The smallest indivisible particle of an element that can take part in a chemical change.

7. (a) State the values of standard temperatures and pressure conditions used by chemists. **(02mks)**

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b) Calculate the volume of carbon dioxide that would be produced at s.t.p when 10g of calcium carbonate is heated. (Ca = 40, C = 12, O = 16, 1 mole of gas occupies 22.4 litres at s.t.p) **(03mks)**

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8. Soap is used for washing clothes and other materials

(a) Describe what happens to the soap molecules when it mixes with

Water molecules **(02mks)**

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b) Explain why the soap molecules behave in the way you have described in (a) above. **(03mks)**

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SECTION B

- Attempt any two questions in this section.

9. A small quantity of iodine crystals is added to the boiling tube. A clean copper strip is placed into the boiling tube and bent at one end so that it fits over the month of the boiling tube. The part of the copper strip nearest the iodine crystals is heated gently in a fume cup board until no more purple vapour is observed. Once the boiling tube is cool, the copper strip is carefully removed and reweighted. The yellow coating of copper iodide is scrapped from the surface of the copper strip reweighed. The following results are obtained.

Initial mass of copper strip	2.94
Mass of copper strip and copper iodide	3.28
Final mass of copper strip	2.77

(a) Draw the apparatus that can be used to determine the formula of copper iodide. ***(1mk)***

(b) Explain why the iodine crystals are not heated directly. ***(1mk)***

(c) Suggest why the procedure is carried out in a fume cup board. ***(1mk)***

(d) Calculate the mass of iodine that reacted. ***(01mk)***

(e) Calculate the mass of copper that reacted. ***(01mk)***

(f) Calculate the empirical formula of the copper iodide formed. ***(04mks)***

(Cu = 64, I = 127)

10. Many areas in Kyaka and Bundibugyo are made of rocks. Communities believe that rocks are associated with special powers and often perform rituals on rocks.

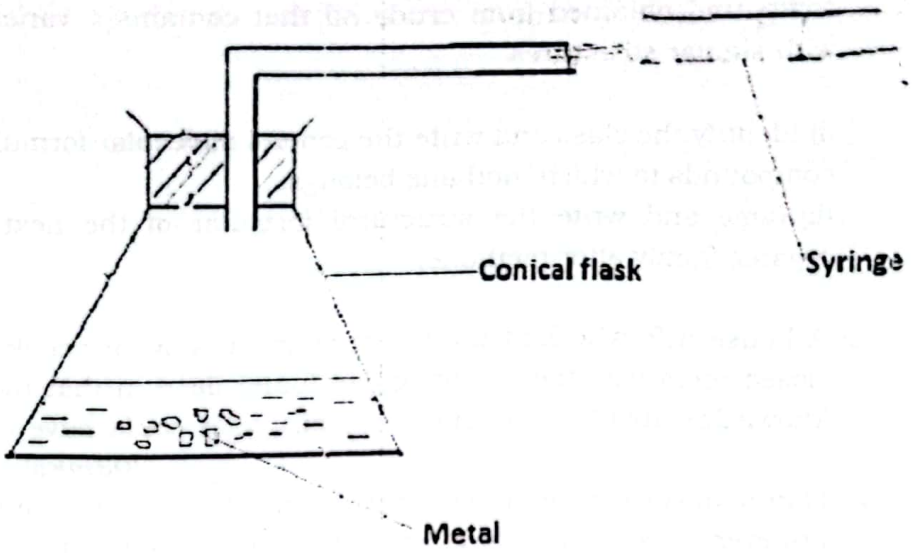
(a) State the components of rocks. ***(02mks)***

(b) What is a rock? ***(03mks)***

(c) How are rocks formed? ***(03mks)***

(d) Briefly describe how rocks are important to your community. **(03mks)**

11. A company that produces fertilisers for use in agriculture investigated how fast metals can react with water to generate hydrogen gas as one of the starting materials for ammonia production. They placed six metals M, T, N, U, B and C, each metal in a conical flask containing 200cm^3 of water and measured the volume of hydrogen gas produced after two minutes as shown in the figure below;



The table below shows the results of the investigation after 2 minutes.

Metal	Volume of hydrogen gas produced after 2 minutes
M	0
T	5
N	10
U	8
B	20
C	29

From the results above;

(a) Arrange the metals in decreasing order of reactivity. ***(01mk)***

(b) Given that metals were selected from group I and group II of the periodic table, identify any two of the metals that are likely to be in group I. ***(02mks)***

(c) For the two elements identified in (b) above, state the element that is likely to be in:

(i) Period 3 of the periodic table ***(01mk)***

(ii) Period 4 of the periodic table. ***(01mk)***

(d) Give a reason for your choice in (ii) above. ***(02mks)***

(e) Describe any three properties of metals related to their use in daily life and in each case give an example. ***(03mks)***

12. (a) Domestically most of us use carbon compounds such as wood, charcoal, biogas and petroleum products as fuels. Research shows that continued use of these fuels has greatly affected our environment from which they are obtained. Explain any three ways how we can sustainably use these fuels. ***(03mks)***

b) The main component of biogas is methane(CH_4). Methane is the simplest compound obtained from crude oil that contains a variety of compounds with similar structures.

(i) Identify the class and write the general molecular formular of the organic compounds to which methane belongs. ***(02marks)***

(ii)Name and write the structural formular of the next member of the organic family after methane. ***(02marks)***

c) A house wife who had used a lit charcoal stove for cooking on her small closed room was the following day found dead in that room. Using your knowledge about combustion, explain what could have led to her death. ***(03mks)***

13. Plants absorb mineral elements from the soil in solution with water however these elements exist in the soil as compounds or non-charged atoms. Rain water also dissolve some of these elements to form dilute acids that also react with the mineral compound to release these metallic ions and radicals that plants need for proper growth.

(a) Using free metals such as Magnesium, Zinc and Calcium write word equations to show how they react with dilute hydrochloric acid.**(03mks)**

(b) Using oxides of the metals in (a) above, write word equations to show how they react with dilute hydrochloric acid.**(03 mks)**

(c) Describe one chemical reaction that can be used to remove soil acidity. **(04mks)**

END