**HANDS OF CHRISTIAN HIGH SCHOOL KABAGA**

UGANDA CERTIFICATE OF LOWER SECONDARY EDUCATION

CBC END OF TERM III ASSESSMENT 2023

S.3 CHEMISTRY

2 HOURS

INSTRUCTIONS:

Answer all questions

SECTION A (60 MARKS)

1. When substances are burnt in air, they react with one of the components of air.
2. Identify this component of air and its percentage. (2 marks)

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1. Write word equations to show how the following elements react with the component of air in (a) above. (6 marks)
2. Carbon

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1. Sodium

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1. Calcium

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1. (a) Three beakers X, Y and Z are taken, beaker X is half filled with tap water, beaker Y is half filled with boiled water and beaker Z is left empty. Iron nails are added to all three beakers, a layer of oil was added to beaker Y. With a reason, state what was observed in each beaker. (3 marks)
2. X

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1. Y

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1. Z

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(b) What do you think is the given to the process being demonstrated or investigated? (1 mark)

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(c) Mention the chemical name and write down the chemical name of the substance formed during the process you given in (b) above. (2 marks)

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(d) Mention any two disadvantages of the process given in (b) (2 marks)

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(e) State two ways how the process can be prevented. (2 mark)

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1. (a) In a certain school, the toilet is near the senior three class. The four smell disturbs the students in the class and the smell becomes much more on the hot days.
2. Briefly explain how the smell molecules are able to move from the toilet up to the class room. (2 marks)

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1. Why do you think the smell from the toilet become more during the hot day?

(2 marks)

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(b) With a reason, classify the following examples that occur in our everyday life as either physical or chemical changes. (8 marks)

1. Rusting of iron sheet

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1. Burning of wood

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1. Evaporation of water

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1. Rotting of meat

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1. A student dropped a few pieces of marble chips (calcium carbonate) in dilute hydrochloric acid contained in a test tube. The gas produced was passed through calcium hydroxide solution (lime water) for a long time.
2. Name the gas produced. (1 mark)

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1. What changes would be observed in lime water? (2 marks)

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1. Write a balanced equation for the production of the gas from the marble chips. (2 marks)

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1. Of what importance is the gas produced? Give two importances.

(4 marks)

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1. A group of students found out that different elements react differently. They observed this when some metals were made to react with cold water and steam. The changes they observed are summarized in the table below.

|  |  |  |
| --- | --- | --- |
| Metal | Reaction with water | Reaction with steam |
| Sodium | React rapidly | React violently |
| Calcium | Slow reaction | Fast reaction |
| Copper | No reaction | No reaction |
| Magnesium | Very slowly | Relatively fast |
| Ron | Too slow | Slow |

1. Use the information in the table to arrange the given elements starting with the most reactive to the least reactive. (5 marks)

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1. Explain if calcium could be suitable for making roofing sheets. (2 marks)

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1. Which of the metals would be most suitable for use in making water pipes?

(1 mark)

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1. Write an equation to show the reaction between magnesium and steam (water vapour). (2 marks)

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1. A juice vendor makes juice by mixing passion fruit, water and sugar. The vendor separates the passion fruit seeds from the mixture and adds sugar to it sweet.
2. Name a process by which the passion fruit seeds are separated from the mixture.

(1 mark)

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1. Give a reason for your answer in (a) above. (2 marks)

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1. Why do you expect to have happened to the sugar crystals when added to the fruit juice? (2 marks)

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1. Briefly describe the how sugar crystals can be re-obtained from the fruit juice solution. (6 marks)

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**SECTION B** (SCENARIO QNS)

**Attempt any two (2) questions from this section**

1. At home your father buys items in large quantities as a way of saving money. Among them is salt. You one day return home and find your little sister adding sand to a 20kg sack of salt your father bought.

Describe any scientific producer or method you would conduct at home in order to restore the salt purity and save your father from wasting more money.

1. In our day to day life at home much of us use carbon compounds such as petroleum products, wood and charcoal as sources of fuel. Research shows that continued use of these fuels has greatly affected our natural resources from which they are obtained, explain any ten (10) ways how we can sustainably use the available resources. (20 marks)
2. (a) Atoms of elements A,B,C and D have atomic numbers 9,12,8 and 6 respectively.
3. Write electronic configuration of these elements. (4 marks)
4. Which of the elements are metals and non-metals? Give a reason for your answer in each case. (6 marks)
5. Elements A, B, C and D form ions. Write the formula of the ions formed for each element. (4 marks)

(b) Carbon is an element whose allotropes are diamond and graphite.

1. Name any other allotrope of carbon. (1 mark)
2. Outline the differences between the physical properties of diamond and graphite. (3 marks)
3. Name one amorphous form of carbon and state its importance in our every day life. (2 marks)

END