**ST KIZITO SS KABOWA**

**S.4 CHESTRY HOLLIDAY WORK 2024**

**Name …………………………………………………………**

**Instructions to candidates**

* *Attempt all questions.*
* *Answers to the questions must be written in the space provided under each question.*
* *Neat work will earn you a credit.*

1. Assuming you are doing research in your school laboratory and you come across a colourless solution **X**, which turns blue litmus paper red;
   1. Sodium chloride, sodium hydroxide, dilute hydrochloric acid, are some of the colourless solutions in the laboratory. Which one of these is likely to be **X**?

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…………………………………………………………………………(1 score)

* 1. Write the chemical formula of **X**.

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………………………………………………………………………(1 score)

* 1. **X** can react with other substances in a process called neutralisation.

i) Name any substance which can react with **X** in the above reaction

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………………………………………………………………………(1score). ii) Write a chemical equation for the above reaction.

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……………………………………………………………………(1score)

1. Iron(II) sulphate (FeSO4) is a salt found in tablets given to pregnant women who appear pale due to having a certain element in insufficient amounts in their bodies. This salt can be prepared in the laboratory by reacting a certain metal in excess amounts with a dilute acid. a) Name the

i) Acid used.

………………………………………………………………………(1 score )

………………………………………………………………………………. ii) Metal used.

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………………………………………………………………………(1score)

* + 1. Explain why the metal used should be in excess.

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………………………………………………………………………(1score)

* + 1. State the deficiency disease that requires administration of the above tablets.

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………………………………………………………………………(1score)

1. The atomic numbers of atoms of elements **M**, **R** and **W** are 7, 13, and 17 respectively. **M**, **R**, and **W** are not the usual symbols of the elements in the Periodic Table.

a) Umar, a local electrician in Kasambya wants to select an element to be used for his job.

i) Which of the above elements can he use?

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………………………………………………………………………(1score)

ii) Suggest **two** reasons to support the choice of your answer in (i) above.

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………………………………………………………………………(1score)

b) **Two** of the above elements belong to the same period in the periodic table.

i) Write the symbols of these **two** elements.

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…………………………………………………………………………(1score)

ii) Suggest a reason for your answer in (i) above.

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…………………….…………………………………………………(1score)

1. Charcoal (C) and ethane (C**2**H**6**) are some of the substances that are good sources of fuel in homes and factories. a) What is a fuel?

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………………………………………………………………………(1score)

* 1. Write a chemical equation for the complete combustion of ethane.

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………………………………………………………………………………………

……………………………………………………………………………(1score)

* 1. Suggest the **disadvantage** of excessive use of the above fuels to the world.

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……………………………………………………………………………(1score)

* 1. A Village Health Team (VHT) in Kasambya, Kyotera is always advising his people to avoid cooking using charcoal stoves while inside rooms with closed doors and windows. Suggest a reason for the VHT`s advice.

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……………………………………………………………………………(1score)

1. The observations made when some metals were allowed to react with water are shown in the table below

|  |  |
| --- | --- |
| **Metal** | **Observation** |
| A | No observation with water nor steam |
| E | Vigorously react with cold water |
| T | Fairly react vigorously with cold water |
| X | Very slow reaction in water but fast when heated in steam |

a) Identify the metal which is

i) Most reactive

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………………………………………………………………………(1score) ii) Least reactive

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………………………………………………………………………(1score)

* + 1. Arrange the above metals in order of decreasing reactivity.

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………………………………………………………………………(1score)

* + 1. Giving reason(s), suggest which of the above metal(s) can be used to make a tank for storing water in your school. (1score) i) Metal(s)

……………………………………………………………………………… ……………………………………………………………………………… ii) Reason(s)

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1. Ethanol is an organic compound that belongs to a homologous series of compounds called alcohols, having the general formula C**n**H**2n+1**OH , where n≥1.
   * 1. Write the molecular formula and the name of any other **two** members in this homologous series. (2scores)

|  |  |
| --- | --- |
| Molecular formula | Name |
|  |  |
|  |  |

* + 1. Ethanol may be used as a fuel. Write a chemical equation for the complete combustion of ethanol.

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* + 1. Describe how each of the chemical products of the reaction in (b) can be tested in the laboratory.

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1. (a). Mukwano bar soap is one of the soaps that can be prepared by boiling palm oil and a substance Y and after which sodium chloride is added to the boiled mixture.

i) What is the role of sodium chloride?

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……………………………………………………………………………(1score)

ii) What name is given to the process leading to the formation of soap?

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……………………………………………………………………………(1score)

b) Water collected from the borehole (**T**) and also that freshly harvested in tanks from rain (**Q**) can be used to wash clothes with the help of soap. One of these two (**T** or **Q**) requires more soap to form lather.

* + - 1. Which one of the above requires more soap to lather?

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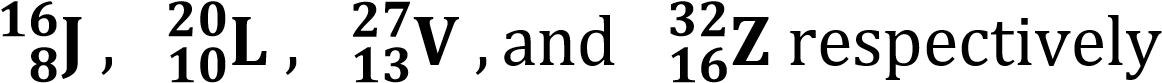
……………………………………………………………………………(1score)

* + - 1. Suggest what can be done to the water in (i) above such that it can also requires less soap to lather.

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………………………………………………………………………….…(1score)

1. The full symbols of atoms of elements **J**, **L**, **V**, and **Z** are

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* 1. Which one of the above elements is a noble gas?

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……………………………………………………………………….……(1score)

* 1. (i). State **two** elements that can react together to form a compound which is a solid at room temperature, soluble in water and can conduct electricity when it is only in molten form or aqueous state and not when in solid state.

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……………………………………………………………………………(1score)

(ii). State the reason why the compound formed by the elements in (i) can only conduct electricity in molten form or aqueous state but not in solid state.

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……………………………………………………………………………(1score)

* 1. State **two** elements which can react together to form a substance which is a gas at room temperature

…………………………………………………………………….………………

……………………………………………………………………………(1score)

End