

Student nameStream.....

545/1

CHEMISTRY

Paper 1

Augst-Sept 2023

02 hours

MAKERERE HIGH SCHOOL MIGADDE
END OF TERM ASSESSMENT
S.3 COMPETENCE-BASED ASSESSMENT EXAMINATION
CHEMISTRY (THEORY)
Paper 1

INSTRUCTIONS;

- *This paper consists of two SECTIONS.*
- *Attempt all questions in section A*
- *Answer all questions in the space provided.*
- *Answer all questions section in B*
- *Illustrations in form of drawings should be made where necessary, with a sharp pencil.*

For official use only

question	1.	2.	3.	4.	5.	6.	7.	8.	9.	Total
Scores										

1. Mary was given an assignment about atoms and their structures, Help her complete her assignment. You are provided with the table showing the number of electrons, protons, neutrons in the atoms of elements A, B, C, D and E.

Atoms	Electrons	Protons	Neutrons
A	8	8	8
B	13	13	14
C	16	16	16
D	Y	11	11
E	8	Z	10

Study the table and use it to answer questions that follow

a). Determine the values of

i) Y.

(Score 1)

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ii) Z.

(Score 1)

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b) State the mass number of atom C

(score 1)

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c) Indicate which of the atoms

(scores 2)

i) Are isotopes

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ii) Belong to the same group in the periodic table

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d) Write the electronic configuration of

(score 3)

i) atom C

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ii) ion of A

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iii) ion of B

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2. In Uganda, most people use underground water from lakes, Wells, rivers, boreholes, and springs. This water is said to be polluted. This is attributed to the presence of salts dissolved in water.

a) Name one substance that causes (score 2)

i) Temporary hardness of water

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ii) Permanent hardness of water.

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b) You are required to advise the communities on how to remove (score 1 @)

i) Temporary hardness in water

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ii) Permanent hardness in water

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3) During installation of satellite dishes, alloys are preferred to pure metals.

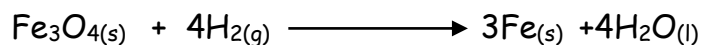
(a) Explain why (score 2)

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b) In Uganda, mineral elements are extracted in the areas of Karamoja (gold), Kitaka-Mbarara (silver), Kilembe(copper and Cobalt). These minerals play a great role in stimulating the economic growth of the country. Suggest three ways of how minerals can be extracted giving reasons why. (scores 3)

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4) Hydrogen reacts with iron(II) oxide according to the following equation



Calculate the volume of hydrogen measured at room temperature that would be required to produce 3.36g of Iron. (Fe =56, 1mole of gas occupied 24dm³ at room temperature) (score 4)

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5) Mary was cleaning at home and she found a bottle containing a substance **J** whose molecular formulae is **C₃H₈** .Help her identify the compound. (score 5)

i) Write the structural formula of **J**

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ii) Name **J**

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iii) Name the group of organic compounds to which **J** belongs giving a reason why.

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b) The bottle had a precaution that stated that " it is not wise to burn **J** in a living room with closed windows and doors. Explain why

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c) Suggest one use of **J**

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- 6) In our daily lives, bonding plays a very vital and significant role. The air we inhale, the gas used in automobiles, the diet we take, the medicines we consume all explains the role of bonding. Using illustrations, describe three ways how chemical bonding is useful. 6scores

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- 7) A certain compound T was analyzed in the laboratory by bio chemists and it was found to contain 40.0% carbon, 6.7% hydrogen and the rest being oxygen.

a) Calculate the empirical formula of T ($H=1$, $C=12$, $O=16$) (3scores)

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b) Determine the molecular formula of T
(Relative formula mass of T=60).

(scores 2)

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8) There are very many processes and changes that occur to matter. Some of these processes are accompanied by chemical reactions under favorable conditions for example fermentation, burning, rusting, digestion and so many others. You are required to write balanced chemical equations for the following reactions.(score 8)

a) Sulphur burns in oxygen to form Sulphur dioxide gas.

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b) Methane burns in oxygen to form Carbon dioxide and water.

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c) Zinc metal reacts with hydrochloric acid to form Zinc chloride and hydrogen gas.

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d) Copper oxide reacts with hydrogen gas to form copper metal and water vapour.

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SECTION B

9) Mukasa got an abrupt call while he was washing which took him six hours off. On his return, he found dirty marks on the clothes. He was advised to use detergents for cleansing on addition to soap. Using Mukasa's experience, answer the following questions. **(15scores)**

- a) Define the term soap **(1score)**
- b) Describe how soap can be prepared in the laboratory. **(4scores)**
- c) Briefly describe how soap removes dirt from clothes. **(4scores)**
- d) Why do you think detergents do not form scum with hard water. **(1score)**
- e) Explain five reasons why it is not advisable to dispose off detergents in water bodies. **(5scores)**

END

"Success is earned not given"

[illegible]