NAME……. stream ……

S.3 END OF TERM TWO EXAMINATIONS 2023

CHEMISTRY PAPER ONE

TIME: 2 HOURS

INSTRUCTIONS

- Attempt all questions in section A and B
- Answers to questions must be written in the spaces provided.

SECTION A

1. Recently in Kyoga wheat milling industry, they brought more wheat harvests from their plantations in Bukedea. However, this wheat produce has very many impurities before being milled into wheat flour. Identify the methods used to separate wheat from different impurities and a reason for the choice of method. (3 marks)

a) Wheat from wheat husks…….
Reason …….....

b) Wheat flour from the unground wheat ……...
Reason. ……

2. A fossil fuel Q contains 82.76% carbon and the rest being hydrogen. Determine the

i) Empirical formula of Q (3 marks)

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ii) Molecular formula of Q given that Q has a vapour density of Q is 29. (2 mark)

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3. Cryogenic oxygen used in hospitals is obtained first as pure oxygen from air by a certain physical method.

a) Name the physical method (1 mark)

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b) Which principle is behind the choice of the method above. (1 mark)

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c) Other than being used in hospitals, identify 3 other ways in which oxygen is useful. (3marks)

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4. During soil sampling it was realized that most soils in Mbale are generally acidic. It is one the major reasons why coffee grows well in Mbale soils.

a) Define the term an acid. (1 mark)

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b) Describe briefly how can pH a soil sample can be determined. (3marks)

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5. In a laboratory analysis of the solubility of sodium hydrogen carbonate, it was found that 40g of water dissolved 35g of the salt to form a saturated solution at 25^{o}C.

a) Describe briefly what is meant by the term solubility. (2 marks)

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b) Determine the solubility of potassium hydrogen carbonate. (3 marks)

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c) Identify three factors that would change the value of solubility in b) above (3 marks)

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6. Elements **P**, **Q**, **R** and **S** are different metallic elements in the periodic table.
   S reacts vigorously with cold water. P and Q do not show any reaction with cold water. But P displaces Q from its oxide, while element R displaces P from its oxide and reacts slowly with cold water.

a) Identify the least reactive element. (1 mark)

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b) Write the equation for the reaction between R and steam given that R is a group(II) element. (1 mark)

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c) Arrange elements P, Q and S in their order of increasing reactivity (1 mark)

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7. Sewage from different Kampala suburbs is always taken to Bugolobi for treatment to prevent eutrophication, spread of diseases and other effects of human wastes in water.

a) Write brief notes about the following.

i) Sludge (1 mark)

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ii) Effluent (1 mark)

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b) Explain briefly 3 ways in which sludge is used. (3 marks)

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8. Element J, K and L have atomic numbers 8, 12 and 14 respectively.

a) Write the electronic configuration of J, K and L. (3 marks)

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b) Write the formula of compounds formed between

i) J and K (1 mark)

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ii) J and L (1 mark)

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c) Show how the compound in b(i) above is formed using the electronic structures of the component elements. (2 mark)

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9. Using physical properties explain why the materials identified as used as construction materials.

a) Concrete (2 marks)

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b) Iron nails (2 mark)

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c) Timber. (2 marks)

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d) Iron sheets (2 marks)

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10. Recently, all the metallic hoes, pangas and axes had turned brown after MR. Mutebi left them outside accidentally after some farm work.

a) Write the chemical name of

i) Process that happened. (1 mark)

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ii) The brown solid on the tools. (1 mark)

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b) Suggest three ways in which the above process can be minimized. (3 marks)

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11. a) Analysis of an organic salt gave the following results gave 29.27% carbon, 3.66% of Hydrogen, 28.05% sodium and the rest being oxygen.

i) Determine the empirical formula of the salt. (4 marks)

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ii) Conclude the molecular formula of the salt given that the molar mass of the salt is 82.
(2 marks)

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12. a) Describe briefly what is meant by the term an acid. (2marks)

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b) outline 3 types of acids based on their basicity. (3 marks)

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c) describe briefly how an indicator can be prepared from a known flower in your locality. (4 marks)

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d) an alkaline was found in an aloe Vera extract which was being used to treat ulcers.

i) why was the extract being used to treat ulcers? (2 marks)

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ii) describe five uses of alkalis and bases on industrial scale and daily life. (5 marks)

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SECTION B

13. Malaria is an infectious disease that has affects human beings. it can easily be treated by taking artemether lumefantrine (coartem) tablets which have the molecular formula $C_{46}H_{58}Cl_3NO_6$ .One tablet contains 20g of coartem .

The prescription of coartem for an infected adult is 4×2 for 3 days (10 marks)

a) How many tablets are taken by an adult:

(i) on daily basis

(ii) for a full dose

b) On daily basis

(i) how many moles of coartem ar swallowed?

(ii) How many molecules of coartem are swallowed?

(ii) how many atoms of carbon are orally swallowed?

END