

P545/1

CHEMISTRY

Paper 1

APRIL, 2023

2 hours



## SHAPTA JOINT ASSESSMENT BOARD

Uganda Lower Secondary Certificate of Education

CHEMISTRY

Paper 1

2 hours

### INSTRUCTION TO LEARNERS

Attempt all questions in **section A** and any **TWO** questions in **section B**.

Answers to **Section A** should be filled in the spaces provided and answers to **section B** should be written on the answer sheets provided.

## SECTION A

1. a) What do you understand by the following terms in chemistry. (1 mark each)

i) An acid

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ii) An alkali

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b) In an effort to find out the effect of an acid on a metal, Jumba dropped a small piece of sodium metal in a conical flask containing dilute hydrochloric acid. He observed that the metal dissolved with effervescence.

i) Why do you think the metal dissolved? (1 mark)

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ii) Which gas do you think was given off? (1 mark)

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iii) How would you confirm the presence of the gas identified in (ii) above in the laboratory. (2 marks)

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c) Write a chemical equation for the reaction performed by Jumba. (1.5 marks)

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d) State three uses of acids in your daily life. (3 marks)

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2. You are provided with a solid mixture of sodium chloride and sodium carbonate.

- i) Briefly describe the how you would obtain sodium chloride out of the mixture. (3 marks)

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- b) State three uses of common salts in your community (3 marks)

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3. Phosphorous is one of the first 20 elements of the periodic table with atomic number 15.

- a) i) What do you understand by the term atomic number? (1 mark)

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- ii) Draw the electronic structure of the phosphorous atom (2 marks)

- iii) Predict the group and period to which phosphorous belongs. (2 marks)

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b) Write the chemical formula of; (1 mark each)

i) The ion formed by phosphorous

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ii) The compound formed between phosphorous and oxygen

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4. Kintu heated ammonium chloride and lead(II) nitrate in two separate boiling tubes to find out the type of changes each of the two substances undergoes.

a) Predict the type of change undergone by each of the two substances  
(2 marks)

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b) State two properties of the type of change undergone by ammonium chloride when heated. (2 marks)

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c) Mention two other examples of the change in (b) above in your daily life (2 marks)

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5. Aluminium is one of the first 20 elements of the periodic table and it is usually used to make saucepans.

a) State three reasons why aluminium is suitable for making saucepans.  
(3 marks)

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b) What do you understand the term an ion? (1 mark)

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c) Draw the electronic structure of the ion formed by aluminium. (atomic number of aluminium = 13) (2 marks)

6. Kitandwe was given 20g of water and was required to make a saturated solution of common salt (sodium chloride) at room temperature (25°C). he used 7g of the salt to make the solution.

a) What do you understand by the term saturated solution? (1 mark)

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b) What is the solubility of sodium chloride at room temperature? (3 marks)

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c) What do you think would happen to the solubility of sodium chloride if the temperature of the solution was increased to 45°C? (2 marks)

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7. In Nakinyuguzi village, community members mainly use charcoal as their major fuel. However in the recent community meeting the they have been advised to use other fuels to supplement it as it is a non renewable fuel.

a) Why is charcoal regarded as a fuel? (1 mark)

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b) Distinguish between a renewable fuel and a non renewable fuel. (2 marks)

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c) Suggest three other reasons why you think the community members should stop using charcoal. (3 marks)

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- .....
- d) Suggest two other fuels the community members can use instead of charcoal. (2 marks)
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- .....

### SECTION B

8. S.2 students were given a solution of sugar containing some small stone particles and they were required to obtain both pure water and the sugar out of the mixture.
- a) Why is the solution not regarded as a pure substance (1 mark)
  - b) State three criteria that can be used to determine purity of a substance (3 marks)
  - c) Describe a scientific method that can be used by the students to obtain pure water and sugar from the solution. (8 marks)
  - d) State three physical properties of the solution given to the S.2 students. (3 marks)
9. Carbon based fuels are the major sources of energy used in Uganda. However the use of carbon-based fuels is regarded as unsustainable and not environmental friendly by the president of Uganda in his speeches.
- a) Why is carbon and its compounds used as fuels? (1 mark)
  - b) Briefly explain why the use of carbon based fuels is unsustainable. (3 marks)
  - c) Describe the impact of using carbon-based fuels on the environment. (6 marks)
  - d) What solutions would suggest to the president to solve the negative effects of using carbon based fuels. (5 marks)

10. Barium sulphate is an insoluble salt commonly used in qualitative analysis in school laboratories. However the shops selling laboratory chemicals are in shortage of the salt and schools are in a crisis.

- a) Name a process that can be used to prepare by schools to prepare this salt in their laboratories to solve the crisis. (1 mark)
- b) Describe how the salt can be prepared using a scientific method. (8 marks)
- c) Name two other insoluble salts you know (2 marks)
- d) Briefly explain two factors that affect the solubility of a salt. (4 marks)

**END**