

Student's Name: Stream:

School:

Class	Stream
S. 2	

(Write your Name, Class Stream and School in the spaces provided.)

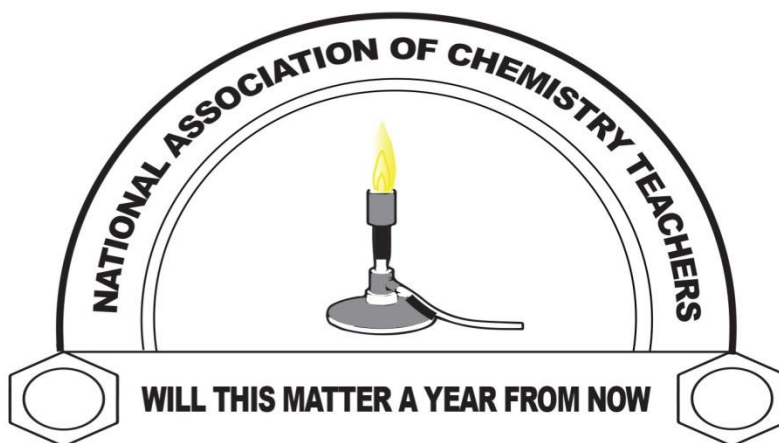
2023

CHEMISTRY

Paper

MAY/JUNE 2023

2 hours



NATIONAL ASSOCIATION OF CHEMISTRY TEACHERS

BEGINNING OF TERM II EXAMINATIONS 2023

COMPETENCE BASED ASSESSMENT EXAMINATIONS

CHEMISTRY

Paper

S.2

TIME: 2Hours

INSTRUCTIONS:

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

For official use only

<i>Number</i>	<i>Score</i>	<i>Teacher's comment</i>

Question 1

- a) Make a list for different pieces of apparatus that can be used to measure volume of a liquid in the laboratory and discuss condition under which each of them would be most appropriate to choose for measurement of volume. (05 marks)

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Question 2

- (a) The table below show the component of air and its percentage composition by volume, you are required to fill in the blank spaces. (05 marks)

Component	Percentage composition by volume
Nitrogen
Carbon dioxide
.....	0.03%

.....	0.9%
Water vapour

(b) Identify the component of air which can be detected by (03 marks)

- Glowing splint
- Anhydrous copper (II) sulphate
- Calcium hydroxide solution

Question 3

3. Matter is anything that occupies space and has weight. Matter exists in different *States* . A *state* of matter is one of the distinct physical forms in which matter exists.

(a) Below are diagrams showing different states of matter. Use them and answer the questions that follow



P

QR

- (i) Name the state of matter,

(1.5 marks)

P

.....

Q

.....

R

.....

(b) Complete the table below for the properties of states **P**, **Q** and **R**

(04 marks)

State of matter	How particles are arranged	Attractive forces of attraction between particles
P		
Q		Very weak.
R		

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(c) State the properties of each state of matter as a result of arrangement of particles and the attractive forces between them.

(i) P (1.5 marks)

.....

(ii) Q (1.5 marks)

.....

(iii) R (1.5 marks)

.....

(d) In the table below; name the **process** for the change of state and in each case; state whether **heatenergyisabsorbed** or **heatenergyisreleased** during the change of state (03 marks)

Change of state	Name for the process	State whether heatenergyisabsorbed or heatenergyreleased during the change of state
R to P		
Q to R		
P to Q		

4. Radical is a group of atoms or an atom which exists in several compounds but cannot exist on this own, therefore they are applied when deriving formulae of compounds due to the fact that they have specified valences. Use the information below to answer the questions that follow

Radical	Valency
Sulphate	2
Nitrate	1
Peroxide	2
Carbonate	2
Hydroxide	1

Come up with the chemical formula of the following compounds (05 marks)

Compound	Formula
Iron (III) sulphate	
Sodium nitrate	
Potassium peroxide	
Lead (II) Carbonate	
Aluminium hydroxide	

(b) The density of mercury is 13.5g/cm^3 . The density of water is 1.0g/cm^3 . Using the density values given, determine whether each of the following objects will sink or float in mercury and in water. (Choose either sink or float) (07 marks)

Object	Density	Mercury	Water
Aluminum	2.7 g/cm^3		
Lead	11.3 g/cm^3		
Silver	10.5 g/cm^3		
Steel	7.8 g/cm^3		
Platinum	21.4 g/cm^3		
Pine wood	0.85 g/cm^3		
Water (ice)	0.90 g/cm^3		

5. In chemistry laboratory we often encounter many chemicals such as acids, bases and different salts which are used when during both qualitative analysis and volumetric analysis. Give a brief meaning of the following terms (03 marks)

(a) Acid

(b) Base

(a) Salt

(b) Lynette mixed an acid and a base and formed a new solution (02 marks)

(i) What was the composition of the new solution

(ii) Write a word equation between an acid and a base to show the formation of new solution

.....

(c) Name 3 examples of indicators found in the laboratory (03 mark)

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(d) Namayanja was given two beakers A and B. Beaker A was containing dilute sulphuric acid and beaker B was containing sodium hydroxide solution. Explain how she can identify the

beaker containing an acid and a base

(02 marks)

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6. a) .Mr. Ayub is a sugar cane out grower at Lugazi. He has been countinously applying ammonium sulphate fertilizers to his sugar cane plantation to improve yields. But of recent the yields have drastically reduced. When soil sample from his plantation was analyzed, it was found out that the soil was too acidic.

(i) Explain why soil become too acidic?(2mks)

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.....

.....

.....

(ii) What advise can you give to Mr. Ayub to reduce on the acidity of the soil so as to improve on the yields?(2mks)

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.....

7. For each of the following materials, state the best materials that can be used for its manufacture and give reasons for your choice.

i) A tea pot. (1mk)

.....

ii) Mineral bottle. (1mk)

.....

iii) Electrical wires. (1mk)

.....

iv) A blanket. (mk)

.....

8. Study the table below having chemicals listed and answer the questions about them.
Table 1

Iron	Water
Sand	Oxygen
Gold	Carbon dioxide
Helium	Carbon
Rust	Sea water

(a) Name the two metals. (1 mk)

.....

.....

(b) Name a gas that is not an element. (1mk)

.....

(c) Name two compounds present. (1mk)

.....

.....

(d) Name a mixture. (1mk)

.....

(e) Name a non-metallic element that is a solid listed above.(1mk)

.....

9. Argon, oxygen and Nitrogen are obtained from a mixture of air in liquid air at -250°C . Where liquid air warmed up and the gases are collected on by one.

(a) State the method used in separation of the individual components of air from the mixture. ($\frac{1}{2}$ marks)

.....

(b) Explain why the above method is preferred in the separation of the mixture of air. ($1\frac{1}{2}$ Marks)

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c) During the distillation of the above gases Nitrogen is obtained first then argon and oxygen.

Explain this phenomenon. (1 mark)

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.....

d) Name the other gases which are not collected through the fractionating column during the above process. (1 mark)

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10. Chemistry is a discipline of science that deals with the study of matter and the substances that constitutes it. It also deals with the properties of these substances and the reactions undergone by them to form new substances. Chemistry is around us and involved in everything we need, do and interact with. Use the chemical reactions below to fill in the spaces below.

i) Combustion

ii) Rust

iii) Batteries

iv) Digestion

v) Fermentation

vi) Baking

vii) Photosynthesis

viii) Washing

Green plants use a chemical reaction called _____ to convert carbon dioxide and water into food (glucose). It avails food to plants and animals.

_____ Involves the breakdown of food substances into smaller soluble particles that can be absorbed in the body

_____ Is a substance formed when Iron reacts with oxygen and water. It weakens Iron particles and makes Iron cutlery tools blunt

_____ Use the Chemistry of storage of chemical energy and converting it to electrical energy.

SECTION B

Attempt only two questions.

11. Read the information below and use it to answer the following questions.





Fig. 1.0: Support resources

(i). As s.2 student who now understands what Chemistry is and how it is studied, prepare a brief message to deliver to the new students on why:

(ii). Laboratory is important in the study of Chemistry.

(iii). You should not enter the laboratory and carry your own experiments without instruction from the teacher or laboratory worker.

(iv). It is important to consider safety precautions while in the laboratory and to discuss how you can ensure safety in the laboratory.

(i) It is important to understand the essential steps that you would follow to carry out an experiment in a Chemistry laboratory

(15marks)

12. the last **30 to 40** years, plastics have taken over as replacement materials for metals, glass, paper and wood as well as for natural fibres such as cotton and wool. However, plastics such as polyethene bags have contributed significantly to household waste problem, up to 10% in some countries, and it is getting worse. a) Outline any **three** advantages of using polyethene packaging (3 marks)

b) Explain any **three** ways how polyethene bags are dangerous to our environment

(06 marks)

c) Explain any **three** ways of how to prevent the effects of polyethene bags on the environment

(06 marks)

13. Chemistry has contributed to the society both positively and negatively.

a. Explain any **three** ways in which chemistry has contributed;

i. positively to the society

(06

marks) ii) negatively to the society

(06

marks)

- b. Mention any **three** sectors where chemistry plays an important role in the economy of Uganda (03 marks)
14. (a) You are given two solutions **A** and **B**. The pH of solution **A** is 6 and pH of solution **B** is 3.
- i) Which solution has more hydrogen ion concentration (01 mark)
 - ii) Explain your answer in (a) (i) (02 marks)
- b) Explain why sulphuric acid is a strong acid while carbonic acid is a weak acid. Write ionic equations to support your explanation. (6 marks)
- c) Outline any four uses of acids in your society (04 marks)
- d) Briefly explain why dry carbon dioxide does not change the colour of dry blue litmus paper. (02 marks)