

Candidate's Name:
Signature;.....

(Do not write your School / Centre Name or Number anywhere on this Booklet)

545/1

CHEMISTRY

Paper 1

July. 2025

2 hours

UGANDA CERTIFICATE OF EDUCATION

INTERNAL MOCK

CHEMISTRY

Paper 1

2 hours

INSTRUCTIONS TO CANDIDATES:

The paper consists of **two** Sections; **A** and **B**.

It has **six** examination items.

Section **A** has **two compulsory** items

Section **B** has two Parts; **I** and **II**: Answer one item from each part.

Answer **four** items in all.

Section **B must** be written on the answer booklet(s) provided.

SECTION A.

Answer **all** items in this section.

Item 1

Kibali Uranium mine uses the radioactive substance to obtain energy they use to generate electricity that powers the region. However, the citizens are concerned about radioactive waste management in a temporary facility which could pose environmental contamination.

The plant management has collected data on the count rate per minute of the radioactive waste over a period of 24 hours in order to determine the half-life of the waste and ensure safe storage and disposal. The data collected is presented in the table below.

Time (hours)	0	4	8	12	16	20	24
Count rate.	800	355	157	69	31	14	6

Task: As a chemistry learner;

- a. Identify the reaction employed at Kibali Uranium mine to generate electricity.

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- b. Suggest any other use of form energy used in the mine to generate electricity.

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- c. Plot a graph of count rate against time and use it to determine the half-life of the radioactive substance and recommend on proper disposal of the waste that will not harm the community.

- d. Explain any other danger associated with the form energy used in the mine to generate electricity if not properly manage and give its mitigation.

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Item 2

Alex was carrying research on the reaction of period 3 elements with water. He first carried out the reaction on elements A and B where he observed the following.

Element	observation
A	It reacts vigorously with cold water to form an alkaline solution and evolution of hydrogen gas
B	It reacts very slow in cold water to form an alkaline solution and evolution of hydrogen gas but it reacts vigorous with steam to form a metal oxide and hydrogen gas.

This left him excited to know how other elements in period 3 react with water.

Task

As a learner of chemistry,

- a) categorize the elements in period 3

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- b) Predict the reaction of other period 3 elements with water or steam.

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c) Explain the impact of the reaction to the environment and how it can be mitigated.
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SECTION B

Part I

Attempt one item from this part

Item 4

Following the discovery of large mineral ore deposits in Kericho rocky area, the government has rolled a project plan to construct an aluminium manufacturing plant in the area.

The members claimed that they don't know how aluminium production process will be carried out and that manufacturing plant has no associated social benefits but instead will lead to a decline of their environmental quality. You are among the officials which government sent to address the concerns of the area members.

Task:

Prepare a brief write-up you will use while addressing the area members.

Item 4

Detergent production facilities require large amounts of sodium hydroxide as a raw material. To increase its supply, an investor has been cleared by the Uganda Investments Authority (UIA) to establish sodium hydroxide production facility in one sub county of Mukono district. However, the locals are concerned about its impact resulting from the process of production. You have been invited to address the locals in one of the sensitization workshops conducted at the sub county hall.

Task. Write a write up presentation you will use during the presentation.

Part II.

Attempt one item from this part.

Item 5

The district officials of Kisoro have raised concern about the destruction of the rocky areas due to increasing population and the deterioration of water quality in the region as well. This has prompted the officials to organize sensitization workshops in the region.

Task. As a chemistry prepare a short presentation you will deliver in the workshop.

Item 6

The government plans to engage an investor to exploit its coal reserves in Western region particularly Kasese, Bushenyi and Rubirizi districts, along side it's intended large scale imports to meet the increasing demand. This initiative has raised among the locals regarding potential impact particularly on air. You have been invited to attend a workshop organized by the environmentalists to create awareness to the locals about government's plans.

Task. As a chemistry student, prepare a short message you will use to deliver in the workshop.

END