

Name.....

Signature.....Candidates Personal Number.....

545/1

CHEMISTRY.

Paper 1.

Aug /2025.

2 hours

CHEMISTRY DEPARTMENT

New Lower Secondary Chemistry Examination

Ugandan Certificate of Education

Internal mock

Paper 1

2 hours

INSTRUCTIONS:

*This paper consists of **two** sections A and B. It has **six** examination items.*

*Section A has **one** compulsory items.*

*Section B has **two** parts, I and II. Answer **one** item from each part..*

*Answer **four** items in all.*

*Answers to section A **must** be written in the spaces provided while those of section B **must** be written on the provided answer sheets.*

*Any additional item(s) answered will **not** be scored*

Where necessary use , C = 12, H = 1, O = 16, Na = 23

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SECTION A

Answer all items in this section in the spaces provided.

Item 1

A company specializing in nuclear technology uses a radioactive isotope for different purposes . A sample of this isotope with an initial mass of 100 grams is being prepared for a test before use. The company's technical team has determined that the isotopes' nucleus **X**, (Atomic mass 60 and atomic number 27) transforms into a new daughter nucleus **Y**(Atomic mass 60 and atomic number 28) emitting particular radiations. For safety and regulatory compliance, the company must accurately track the isotope's decay. A measurement taken after 10.5 years shows that the mass of original isotope has decreased to 25 percent of its initial mass.

Task. As a Chemistry student,

- (a) Name the type of radiations emitted.

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- (b) Determine the half life of this radioactive isotope.

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(c) Suggest any industrial application of the radiations emitted.

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(d) What challenges are associated with the use of radiations emitted?

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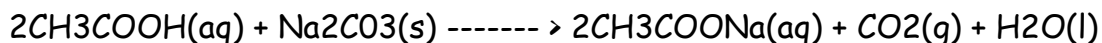
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Task 2

An investor wishes to establish a small- scale chemical production facility using ethanoic acid as a primary raw material. One of the intended products is sodium ethanoate, a salt extensively used as a food preservative, to be prepared by reacting ethanoic acid and soda ash (sodium carbonate) as equation below.



The investor requires to know the exact mass of soda ash that is needed to completely react with 0.25 kg of acid to produce the salt during p . This can guide him to minimize resources during scaling-up production and also need an overview of the environmental impact of the reaction. You have been invited for guidance

Task. As a learner of chemistry,

- (a) explain the category of organic substance used to produce sodium ethanoate.

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- (b) Suggest the suitability of organic raw material to its applications in every day life.

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- (c) Calculate the mass of soda ash required in above reaction .

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(d) explain the environmental impact associated with the gaseous product.

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SECTION B

Part I

Attempt one item from this part

Item 3.

Due to the need to increase agricultural production, the government has cleared a local investor to establish ammonium nitrate fertilizer production industry in Jinja industrial area. However, the locals would like to know how the process of production will be carried out, how they have raised concern about how they will benefit from this investment and environment responsibility.

Task. As a chemistry student, make a write up you will use during the presentation.

Item 4.

The government through Uganda Investments Authority has cleared an investor to set up a cement production facility in one of the district of Uganda. However the locals are concerned about it's 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 Kampala city council Authority, KCCA is moving forward with a plan to partner with an investor to establish a biogas facility at kiteezi landfill. This investment is a crucial step towards cleaner city and energy sustainability. Recognizing the public environmental concern, KCCA officials have launched an education campaign to make the public informed about this megaproject. You have been invited to attend and address the public at a radio talkshow.

Task. As a chemistry prepare a short presentation you will deliver in the radio talk show.

Item 6

Upon the discovery of the rich crude oil reserves in the Albertine region, the locals raised environmental impact associated with its exploitation. They also lacked comprehensive knowledge of importance of crude oil. This has prompted the government to conduct a regional workshops to raise awareness amongst the public to be informed about crude oil . You have been invited to attend address the public.



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

End.

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545/1

CHEMISTRY.

Paper 1.

Aug /2025.

2 hours

CHEMISTRY DEPARTMENT

New Lower Secondary Chemistry Examination

Uganda Certificate of Education

Internal mock set 2

Paper 1

2 hours

INSTRUCTIONS:

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Where necessary use , $C = 12$, $H = 1$ mole of a gas occupies 22.4 litres at s.t.p

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SECTION A

Answer all items in this section in the spaces provided.

Item 1

When Hamza felt sick, his mother prepared an aloe vera extract for him which provided a brief improvement on first day. However, his symptoms persisted the next day. He then went to a nearby facility where he was diagnosed with *gastrointestinal poisoning* known as *salmonella infection* resulting from taking contaminated food. He was given a product which he used and recovered.

Task. As a chemistry student,

- (a) State the type of the product used which enabled him to completely recover.

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- (b) advice him about any danger associated with the product he used.

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- (c) evaluate the substances he used for treatment from the time he felt sick to the time of recovery.

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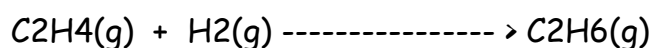
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Task 2

A production industry wants to convert ethene, an excess waste gas from its production processes into another useful product ,ethane. They plan to react the hydrocarbon with hydrogen under suitable controlled conditions. Below is the equation of reaction.



The manager needs to know the mass of product in Kg that can be produced when 10,000 litres of ethene at s.t.p reacts with hydrogen . He also needs to know the environmental concern associated with the product. You have been invited for guidance

Task. As a learner of chemistry,

- (a) explain the category of each hydrocarbon in the reaction.
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- (b) Suggest the suitability of product to its applications in every day life.
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[illegible]

SECTION B

Part I (Attempt one item from this part)

Item 3.

The demand for aluminium by several industries dealing in production of kitchen ware and duralumin alloy has increased. This has prompted that government to clear a local investor to establish an aluminium extraction plant in one district rich in aluminium reserves. However, the locals would like to know how the extraction will be carried out. They have also raised concern about how they will benefit from this investment and environment responsibility. You have been invited to talk to the locals in one of local radio stations organized by district officials.



Task. As a chemistry student, make a write up you will use during the presentation.

Item 4.

The government through Uganda Investments Authority has cleared an investor to set up a lime production facility in one district of Uganda. However the locals are concerned about it's 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.

Many water sources and forested regions in Uganda have been negatively impacted due to urban development and increased population. This has prompted many environmental bodies to raise awareness campaigns among the public on the need for environmental protection and sustainable use. You have been invited at one of sensitization workshops.

Task. As a chemistry prepare a short presentation you will deliver in the radio talk show.

Item 6

Upon the discovery of the coal reserves in the some parts of kigezi region, the locals raised environmental impact associated with its exploitation. They also lacked comprehensive knowledge of importance of coal . This has prompted the government to conduct a regional workshops to raise awareness amongst the public to be informed about crude oil . You have been invited to attend address the public.



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

End.

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CHEMISTRY.

Paper 1.

Aug /2025.

2 hours

CHEMISTRY DEPARTMENT

New Lower Secondary Chemistry Examination

Uganda Certificate of Education

Internal mock set 3

Paper 1

2 hours

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Where necessary use , Cu = 64, O= 16 mole of a gas occupies 22.4 dm³ at s.t.p

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SECTION A

Answer all items in this section in the spaces provided.

Item 1

A medical facility has just received sample Q of a radioisotope produced from a **heavy nucleus** of a specific atom as indicated on its label. The high energy emissions from Q are intended for use in medical imaging and also has **potential for other applications**. However, before Q can be safely and effectively utilized, the facility must accurately determine its half life. This will enable them to calculate appropriate dosage and ensure safety. They measured its decay by considering its total activity over time as shown in the table .

Time (minutes)	0	20	40	60	80	100	120
Total count rate (Counts/sec)	800	560	400	280	200	140	100

Task. As a chemistry student,

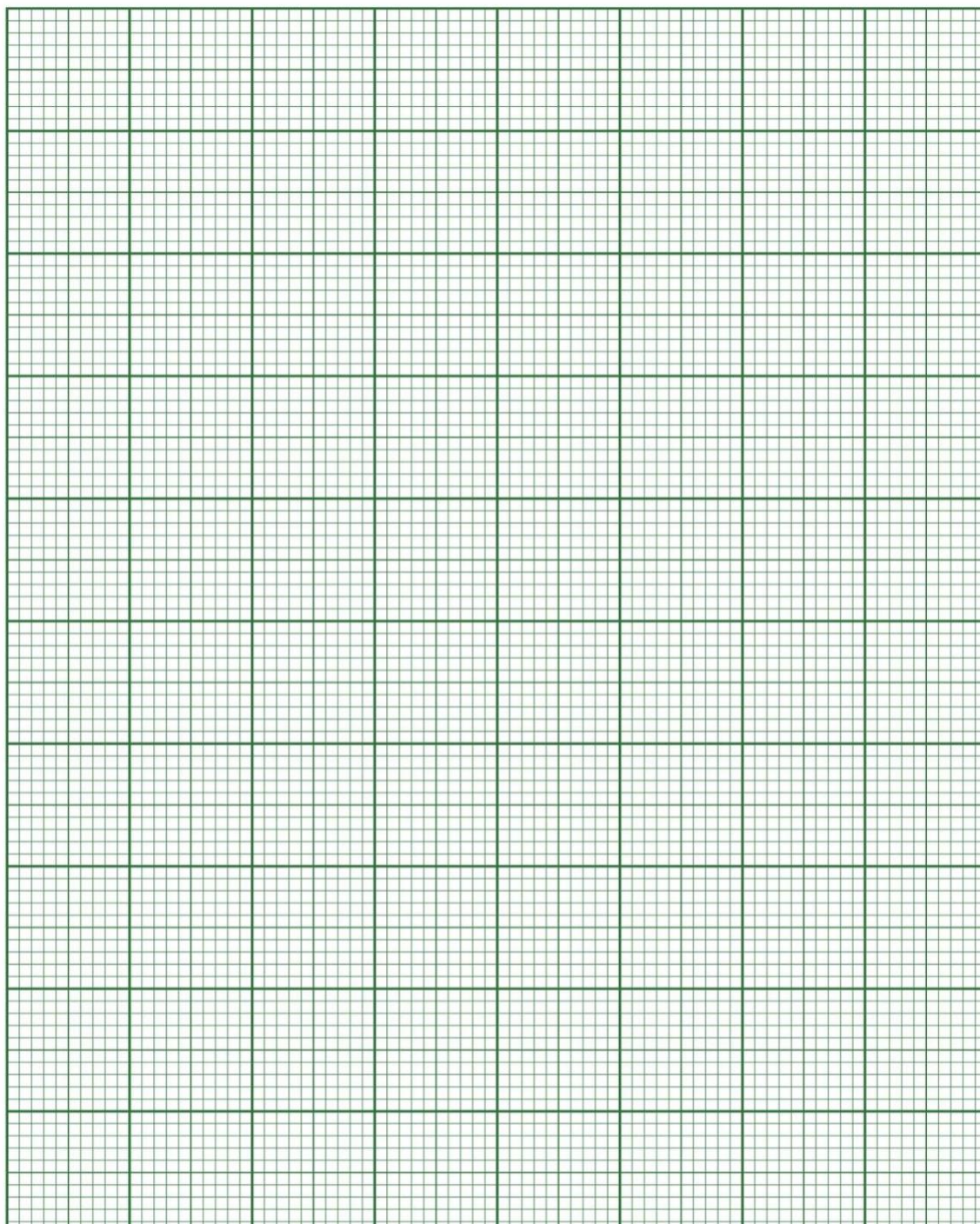
- (a) State the type of nuclear process from which sample Q was produced

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- (b) Suggest any other use of high energy emissions produced by Q

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- (c) Plot a graph of the total count rate against time and use your graph to determine half life of Q.



(d) Explain the dangers associated with use of Q.

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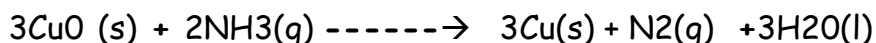
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Task 2

A small-scale metal production company intends to obtain copper . Their chosen method involves reduction of copper (II) oxide using ammonia gas as a reducing agent, under controlled heating as equation below.



To rapidly scale operations in response to market, the company needs to first know the volume of ammonia at s.t.p that would completely react with 32.0 g of oxide in preliminary experiment in the laboratory. Besides, they plan to make use of gaseous product to make production more economical.

Task. As a learner of chemistry,

- (a) explain the category of bond in each of the solid and gaseous product.
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- (b) Suggest the suitability of either the solid or gaseous product in every day life.
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SECTION B

Part I (Attempt one item from this part)

Item 3.

Due to very high demand for chlorine by National Water and sewage Cooperation (NWSC) for water treatment and plastics industries manufacturing PolyvinylChloride (PVC) products, the government has cleared an investor to establish a chlorine manufacturing plant in Mukono district. However, the locals would like to know how the manufacturing will be carried out. They have also raised concern about how they will benefit from this investment and environment responsibility. You have been invited to talk to the locals in one of local radio stations organized by district officials .



Task. As a chemistry student, make a write up you will use during the presentation.

Item 4.

The government through Uganda Investments Authority has cleared an investor to set up an ethanol production facility in one district of Uganda to increase on the production of ethanol needed by chemical manufacturing and pharmaceutical industries. However the locals are concerned about it's 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.

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Part II. (Attempt one item from this part.)

Item 5. A comprehensive report from the recently concluded National Census Indicated that most families in Uganda rely on firewood and kerosene for their energy needs. However, this has significantly impacted the environment. Ministry of Energy officials have raised concern and organized a massive campaign through radio talk shows to create awareness to the public about the impact and sustainable use of firewood and kerosene. You have been invited to address the public.



Task. As a chemistry prepare a short presentation you will deliver in the radio talk show.

Item 6 . Upon the discovery of the natural gas reserves in one region of Uganda, the locals raised environmental impact associated with its exploitation. They also lacked comprehensive knowledge of importance of its importance. This has prompted the government to conduct a regional workshops to raise awareness amongst the public to be informed about natural gas . You have been invited to attend address the public.



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

End.

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CHEMISTRY.

Paper 1.

Aug /2025.

2 hours

CHEMISTRY DEPARTMENT

New Lower Secondary Chemistry Examination

Uganda Certificate of Education

Internal mock set 4

Paper 1

2 hours

INSTRUCTIONS:

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SECTION A

Answer all items in this section in the spaces provided.

Item 1

Arafat, a local entrepreneur in the business of packaging fatty foods is facing a pressing issue. Customers are reporting that while the food's initial visual appearance is not good, what begins as a delightfully flavourful and tasty food product soon gives way to a sharp, foul odour and a completely unpleasant taste long before the food should be considered spoiled. The deterioration in quality is tarnishing the brand's reputation and leading to a wave of dissatisfied customers.

Task. As a chemistry student,

- (a) guide him to understand the category of substances he should use to improve the quality of his food product and ensure customers satisfaction

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- (b) advise him on the challenges associated with use of the substances

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- (c) evaluate the substances he should use to improve the quality of the food product

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Item 2.

In our lives, the contrast between two materials, diamond and graphite serves as a perfect example of how structure dictates function despite both being made of same element. An investor intends to set up a production facility that will exploit the structural composition of any of the substances but needs comprehensive knowledge about them and their environmental impact you have been consulted for guidance.

Task: As a Chemistry student,

- (a) explain the **type** of the structure possessed by the two materials.

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- (b) Suggest the suitability of any material in every day life.
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(c) explain the environmental impact associated with use of any material .

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SECTION B

Part I (Attempt one item from this part)

Item 3. In response to a limited supply of highly demanded sodium hydroxide, a raw material for making detergents, the government has contracted an investor to build the facility along Jinja road. While this project address critical market needs, the community is strongly worried about its impact and is seeking assurance on how they will benefit from it's operations. The Uganda Investments Authority, UIA has organized a workshop to educate the public. You have been invited to attend.



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Task. As a chemistry student, make a write up you will use during the presentation.

Item 4.

The government has contacted an investor to establish a copper extraction plant in kilembe, Kasese . This move is intended to address the limited supply of highly demanded metal , which is essential for electrical wiring, plumbing and electronics. However, the project has met strong worry from the local residents who are concerned about the potential for environmental damage from extraction process and is questioning how they will directly benefit from the plant's operations. The district official have organized workshops to address the locals . You have been invited to address the locals .

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

Part II. (Attempt one item from this part.)

Item 5. The heavy reliance on wood charcoal in many homes and the dominant use of petrol by many manufacturing industries and 78% of mobile vehicles are causing signifant environmental problems. This has prompted environmental bodies to take action and call for significant changes by investing in awareness campaign to promote and develop energy sustainability . They have organized radio talk shows to create awareness to the public. You have been invited to address the public.



Task. As a chemistry prepare a short presentation you will deliver in the radio talk show.

Item 6 The recently released National Census report has highlighted a concerning trend. Some of families in rural depend on charcoal burning and mostly stone quarrying for those in rocky regions as their source of income. This reliance has raised significant alarm among environmental officials who are worried about the potential consequences of these actions. The government has organized rural workshops to raise awareness amongst the public about these actions. . You have been invited to attend address the public.



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

End.

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CHEMISTRY.

Paper 1.

Aug /2025.

2 hours

CHEMISTRY DEPARTMENT

New Lower Secondary Chemistry Examination

Uganda Certificate of Education

Internal mock set 5

Paper 1

2 hours

INSTRUCTIONS:

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SECTION A

Answer all items in this section in the spaces provided.

Item 1

Fahiimah lives in an area which uses water from a well that originates from beds of nearby gypsum rock. When she washed her white cotton blouse using cleaning product **R** on one day, she noticed a chalky residue clinging on the fabric upon rinsing and blouse felt rough and stiff after drying. On another day, she used product **Q** and observed that blouse had no residue upon rinsing. When dried, it felt smooth and softer when touched

Task. As a chemistry student,

- (a) Categorize the cleaning products used.

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- (b) Explain how product R works.

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- (c) advise her on that challenges associated with use of any of the cleaning product.

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(d) evaluate the cleaning products used.

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Item 2

Umar is planning to build his residential home and wants to ensure the construction of highest quality. He is overwhelmed by several construction materials available on market among which are **steel**, **wood**, **plastics** and **clay bricks**. He is particularly concerned about choosing materials that are of good quality and needs to understand their impact so as to ensure environmental responsibility. He has invited you for guidance.

Task: As a Chemistry student,

(a) explain to him the **type** of materials to use.

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(b) guide him on suitability of any material

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(c) advise him the environmental impact associated with use of any material .

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SECTION B

Part I (Attempt one item from this part)

Item 3. Due to high demand of iron for production of steel, the government has contracted an investor to build an iron extraction plant in Mukono district. However ,the community is strongly worried about its impact and is seeking assurance on how they will benefit from it's operations. The Uganda Investments Authority, UIA has organized a workshop to educate the public. You have been invited to attend.

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Task. As a chemistry student, make a write up you will use during the presentation.

Item 4.

The government has cleared an investor to establish a sulphuric acid manufacturing plant in Namanve Industrial Park . This move is intended to maintain continuous supply of the acid which is an essential raw material for manufacturing soapless detergents, dyes , paints, ammonium sulphate fertilizer etc.,.However, the local residents are concerned about the potential for environmental damage from manufacturing process and are questioning how they will directly benefit from the plant's operations. The official from Uganda Investments Authority (UIA) have organized workshops to address the locals . You have been invited to address the locals .



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

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Part II.

(Attempt one item from this part.)

Item 5. The ministry of urban development, environmental officials and all leaders of cities and municipal councils in Uganda have noted with concern that the quality of air has deteriorated resulting from industrial set up. This has prompted a coordinated effort to develop and implement a joint action plan aimed at educating the public and mitigating these effects. . They have organized radio talk shows to create awareness to the public. You have been invited to address the public.



Task.

As a chemistry prepare a short presentation you will deliver in the radio talk show.

Item 6

Many metamorphic and sedimentary rocky areas in different regions of Uganda have been over exploited by locals. This has raised significant alarm among environmental officials who are worried about the potential consequences of these actions. The government has organized workshops to raise awareness amongst the locals living in such areas about their actions. . You have been invited to attend one of the workshops and address the locals in **any** of the rocky areas.

Task.

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

End.

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CHEMISTRY.

Paper 1.

Aug /2025.

2 hours

CHEMISTRY DEPARTMENT

New Lower Secondary Chemistry Examination

Uganda Certificate of Education

Internal mock set 6

Paper 1

2 hours

INSTRUCTIONS:

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Where necessary use, Mg = 24 , Cl = 35.5 , 1 mole of gas occupies 22.4 dm³ at s.t.p

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SECTION A

Answer all items in this section in the spaces provided.

Item 1

After a very busy day, Bushirah developed persistent aches characterized by muscle and back strain in the evening. Her mother advised her to use a product X, an extract of mixture of leaves from two plant species, she herself had used previously when she got the same problem. Unfortunately, it only brought her a brief bit of ease, wearing off after four hours. In the morning, she went to nearby healthy facility where she was prescribed a new product Y that provided definitive and effective resolution to her ailment.

Task. As a chemistry student,

- (a) Categorize the products she used.

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- (b) State how the new product enabled her to feel well.

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- (c) advise her on that dangers associated with use of the first product.

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(d) evaluate the products she used .

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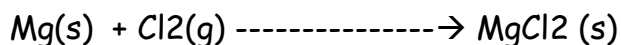
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Item 2.

An investor intends to set up a chemical company, whose production processes will utilize heating . To optimize these processes, he must first understand the melting trend of a few elements and how to use these elements responsibly . Given the table below.

Period 3 elements	Na	Mg	Al
Melting points (°C)	88.2	1091	2470

For preliminary experiment ,small scale experiment they plan to produce 500g of magnesium chloride, a common dietary supplement reacting chlorine gas over heated magnesium as equation below. He is interested to know the volume of gas at s.t.p required for the reaction . You have been invited guidance



Task: As a Chemistry student,

(a) explain to him the category of elements in the table..

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(b) guide him to understand the trend in melting points of the given elements

[illegible]

- (d) advise him the environmental impact associated with use of higher melting point element.

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SECTION B

Part I (Attempt one item from this part)

Item 3. Soapy detergents are cleansing products in every home. Due to high demand of the detergents on market, the government has cleared an investor to set up a mega soapy detergent manufacturing plant in Masaka city. However ,the locals are concerned about its impact and are seeking assurance on how they will benefit from it's operations. The city officials have organized a workshop to educate the locals. You have been invited to attend.



Task. As a chemistry student, make a write up you will use during the presentation.

Item 4.

The government has cleared an investor to establish an oxygen gas production plant in Nakawa - Kampala .This move is intended to maintain continuous supply of oxygen gas needed by many hospitals for patients under anesthesia and having operation . However, residents are concerned about the potential for environmental damage from production process and are questioning how they will directly benefit from the plant's operations. The official from Uganda Investments Authority (UIA) have organized workshops to address the locals . You have been invited to address the locals .



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

Part II

. (Attempt one item from this part.)

Item 5. The National Environmental Management Authority , (NEMA) officials have noted with concern about the heavy reliance on kerosene and wood charcoal for cooking in many homes which has posed serious environmental consequences. This has prompted a coordinated effort to develop and implement a joint action plan aimed at educating the public and mitigating these effects. . They have organized radio talk shows to create awareness to the public. You have been invited to address the public.



Task. As a chemistry prepare a short presentation you will deliver in the radio talk show

Item 6 Many **igneous** rocky areas in different regions of Uganda have been over exploited by locals due to due to useful substances they contain used for different purposes.. This has raised significant alarm among environment officials who are worried about the potential consequences of these actions to water and air quality in such regions. The government has organized workshops to raise awareness amongst the locals living in such areas about their actions. . You have been invited to attend one of the workshops and address the locals.



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

End.

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CHEMISTRY.

Paper 1.

Aug /2025.

2 hours

CHEMISTRY DEPARTMENT

New Lower Secondary Chemistry Examination

Uganda Certificate of Education

Internal mock set 7

Paper 1

2 hours

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SECTION A

Answer all items in this section in the spaces provided.

Item 1

Mariam, a small scale investor dealing in local juice production is facing a significant challenge. Her fruit juice, while praised for the delicious flavourful taste, the customers are complaining that it has a thin mouthfeel leading them to believe it's diluted. Further more , they are frustrated by the rapid settling of the fruit pulp ,which forces them to constantly shake the bottle to get a consistent product. She has come to you for guidance to address these issues to maintain her customer base in the competitive market.



Task. As a chemistry student,

- (a) Categorize the products she should use to ensure quality production.

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- (b) State how the products will ensure customers satisfaction.

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(c) advise her on that dangers associated with use of the products

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(d) evaluate the products used in ensuring customers satisfaction.

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Item 2.

Anthony, is an investor who intends to set up a manufacturing company, whose production process will involve converting many **ethene** molecules by *addition polymerization* to a **useful** material as equation below.



However, he is interested to know more about the reaction and the qualities of the material for various applications which can allow him to adapt to market demand while ensuring that his clients are well informed of environmental responsibility. He has consulted you for guidance.

Task: As a Chemistry student,

- (a) explain to him the category of the **hydrocarbon** from which the material is produced.

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- (b) guide him to understand the suitability of the material to its application in life.

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- (c) advise him about the environmental impact associated with use of the material so as he can guide his clients appropriately.

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SECTION B

Part I (Attempt one item from this section)

Item 3 Due to high demand of the large quantities of nitric acid on market needed for production of ammonium nitrate fertilizer, the government has cleared an investor to set up a nitric acid manufacturing plant city. However ,the locals are concerned about its impact and are seeking assurance on how they will benefit from it's operations. The city officials have organized a workshop to educate the locals. You have been invited to attend.



Task.

As a chemistry student, make a write up you will use during the presentation.

Item 4.

Uganda is actively pursuing the development of its first oil refinery to ensure domestic energy security. The refinery is planned to be built in kabaale village, Buseruka Sub county in Hoima district near the rich crude oil fields. However, residents are concerned about the potential for environmental damage from refinery process and concerned about how they will directly benefit from the plant's operations. The official from ministry of energy have organized workshops to address the locals . You have been invited to address the locals .



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

Part II

. *(Attempt one item from this part.)*

Item 5. The Nile river and the surrounding environment are facing a severe crisis. The once clean waters and surrounding environment are now degraded by a rapid population growth and industrialization which have led to devastating environmental consequences .These issues have created an urgent crisis, raising alarm among environmentalists . They have raised effort to develop and implement a joint action plan aimed at educating the public and mitigating these effects by organizing radio talk shows to create awareness to the public. You have been invited to address the public.



Task.

As a chemistry prepare a short presentation you will deliver in the radio talk show

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Item 6.

Uganda discovered **reserves of natural gas** found in the fields of Albertine region.. Large volumes of gas will be transported primarily through pipelines using network of high-pressure steel pipes connecting production sites to processing plants, storage facilities and eventually to customers. However, this has raised significant alarm among public where pipelines will pass and are worried about the potential consequences . The government has organized workshops to raise awareness amongst the locals living in such areas. You have been invited to attend one of the workshops and address the locals.



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

End.

Name.....

Signature.....Candidates Personal Number.....

545/1

CHEMISTRY.

Paper 1.

Aug /2025.

2 hours

CHEMISTRY DEPARTMENT

New Lower Secondary Chemistry Examination

Uganda Certificate of Education

Internal mock set 8

Paper 1

2 hours

INSTRUCTIONS:

*This paper consists of **two** sections **A** and **B**. It has **six** examination items.*

*Section **A** has **one** compulsory items.*

*Section **B** has **two** parts, **I** and **II**. Answer **one** item from each part.. Answer **four** items in all.*

*Answers to section **A** **must** be written in the spaces provided while those of section **B** **must** be written on the provided answer sheets.*

*Any additional item(s) answered will **not** be scored*

Where necessary use, Na = 23, Cl = 35.5 ,1 mole of gas occupies 22.4 liters at s.t.p.

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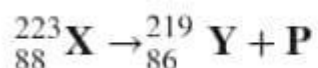
@Hasems – Chemistry Department.

SECTION A

Answer all items in this section in the spaces provided.

Item 1

Mulago National referral Hospital has received a new radiopharmaceutical isotope X (Initial mass is 100 g) for cancer treatment. It forms nuclide Y and emits particle P, through a **decay process**, which can be used for other applications



Due to its short half life of **11** days, the team needs to use the sample for its intended purpose within specific timeframe. However, the patient's treatment was postponed and **34** days have passed. They need to determine the remaining mass of the sample to ensure it's still safe and effective and ensure safety procedures.

Task. As a chemistry student,

(a) identify P

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(b) calculate the mass of the remaining sample.

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(c) suggest any other use of the type of decay process that took place

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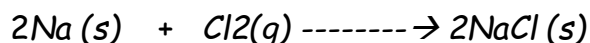
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- (d) explain the dangers associated with the applications of the type of decay process.
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Item 2.

A chemical and material manufacturing industry plans to utilize the properties of some elements of the periodic table below with high industrial value for their applications while ensuring their environmental consideration.

	I	II	III	IV	V	VI	VII	VIII
Period 2								
Period 3	Na		Al			S	Cl	
Period 4								

He needs to produce sodium chloride. A preliminary experiment will be carried out to know the volume of chlorine at s.t.p required to completely react with sodium to produce 117.6 g of sodium chloride. This will help to know the efficiency of the planned production line. You have been consulted you for guidance.



Task: As a Chemistry student,

- (a) explain the category of the substances in the table .
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(b) suggest the suitability of the group (III) element to its application in life.

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(c) Calculate the volume of chlorine required.

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(d) advise on the environmental impact associated with use of either group (III) or (VI) substance in the table.

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SECTION B

Part I (Attempt one item from this section)

Item 3 The vast majority of iron is used to produce steel an alloy of iron and carbon used for making bars of construction, tools and heavy machinery. To increase on quantities of iron on market needed , the government has cleared an investor to set up an iron extraction plant in kayunga . However ,the locals are concerned about its impact and are seeking assurance on how they will benefit from it's operations. The district officials have organized a workshop to educate the locals. You have been invited to attend.



Task.

As a chemistry student, make a write up you will use during the presentation.

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Item 4.

Due to large quantities of sodium hydroxide needed on market for production of detergents and bleaching agents, Jinja Municipal council officials have cleared an investor to set up a sodium hydroxide manufacturing plant. However, the locals are concerned about its impact to the environment and how they will socially benefit from the plant. The officials have organized workshop at the municipal hall. You have been invited to address the locals.



Task.

Prepare a write up message you will use.

Part II

(Attempt **one** item from part)

Item 5

Uganda is actively pursuing the development of its first crude oil refinery to ensure domestic energy security. The refinery is planned to be built in kabaale village, Buseruka Sub county in Hoima district near the rich crude oil fields. However, residents are concerned about the potential for environmental damage from refinery process particularly on air. Official from ministry of energy have organized workshops to address the locals . You have been invited to address the locals

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Task.

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

Item 6.

Many water sources in several districts are adversely affected by large scale crop cultivation and rapid establishment of medium -sized factories. While these endeavors have boosted the incomes of many families, they have become a source of significant concern for the district officials. In response, sensitization workshops have been organized to address the situation . You have been invited to address the public.

Task.

Prepare a write up message you will use.

End.

Name.....

Signature.....Candidates Personal Number.....

545/1

CHEMISTRY.

Paper 1.

Aug /2025.

2 hours

CHEMISTRY DEPARTMENT

New Lower Secondary Chemistry Examination

Uganda Certificate of Education

Internal mock set 9

Paper 1

2 hours

INSTRUCTIONS:

*This paper consists of **two** sections **A** and **B**. It has **six** examination items.*

*Section **A** has **one** compulsory items.*

*Section **B** has **two** parts, **I** and **II**. Answer **one** item from each part.. Answer **four** items in all.*

*Answers to section **A** **must** be written in the spaces provided while those of section **B** **must** be written on the provided answer sheets.*

*Any additional item(s) answered will **not** be scored.*

SECTION A

Answer **all** items in this section in the spaces provided

Item 1

A local investor is planning to establish a beverage processing factory on a small scale. For high quality production, a friend has advised him to use specific ingredients during the production process. These include **citric acid**, a common preservative extracted from lemon, **vanilla** obtained from cured unripe fruit of vanilla orchid and **honey**. Seeking further guidance on these substances, he has consulted you for expert guidance.

Task

As a learner of chemistry,

- (a) State the category of the substances he was advised to use.

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- (b) How does the substances ensure the quality of the product?

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- (c) explain the dangers associated with the use of the substances.

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(d) Compare the substances he was advised to use with **other type** of substances he would alternatively use.
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Item 2.

As part of the country's effort to transition to a low carbon future, the officials from ministry of energy have initiated a comprehensive education campaign to the public about the nature and use of two substances, **biogas** and **natural gas** as better alternatives in the energy landscape. This initiative will emphasize the need for the establishment of actionable strategies for the sustainable use of these substances in our daily lives. You have been invited to one of the country's most listened to radio, to educate the public.



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Task: As a Chemistry student,

(a) explain the category of the substances.

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(b) suggest the properties of **any one** substance that make it useful in life.

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(c) advise on the environmental impact associated with use of **any one** substance.

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SECTION B

Part I (Attempt one item from this section)

Item 3 Aluminium is a lightweight versatile metal used for making bodies of cars, kitchen pans and for electrical wiring among others .To increase on quantities of the metal on market needed , the government has cleared an investor to set up an aluminium extraction plant in one district. However ,the locals are concerned about its impact and are seeking guidance on how they will benefit from it's operations. The officials have organized a workshop to educate the locals. You have been invited to attend.



Task.

As a chemistry student, make a write up you will use during the presentation.

Item 4

Due to large quantities of ethanol needed on market for medical and pharmaceutical applications, production of alcoholic beverages and personal care products, Masaka city officials have cleared an investor to set up an ethanol manufacturing plant. However, the locals are concerned about its impact to the environment and how they will socially benefit from the plant. The officials have organized a workshop at the city hall. You have been invited to address the locals.



Task. Prepare a write up message you will use.

Part II

(Attempt **one** item from part)

Item 5

The industrial sector's contribution to the national economy and job creation is undeniable. However, this economic progress has often come at the expense of environment as observed by it's signifiant impact on water and and air quality. This has raised concern among many environmentalists. They have organized a radio talk show involving all stake holders and owners of different industries, both small and large scale. You have been invited to attend.



Task. Prepare a write up message you will deliver.

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Item 6

Uganda's recent discovery of large crude oil reserves within the Albertine region in Hoima presents a significant opportunity to meet its energy needs. However, this development has sparked considerable environmental concern among the locals. This stems from the potential impact of the extraction and refinery processes on waters of lake Albert and nearby community water sources. Officials from ministry of energy have organized workshops to address the locals. You have been invited to address the locals.



Task.

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

End.

Name.....

Signature.....Candidates Personal Number.....

545/1.

CHEMISTRY.

Paper 1

Aug /2025.

2 hours

CHEMISTRY DEPARTMENT

New Lower Secondary Chemistry Examination

Uganda Certificate of Education

Internal mock set 10

Paper 1

2 hours

INSTRUCTIONS:

*This paper consists of **two** sections **A** and **B**. It has **six** examination items.*

*Section **A** has **one** compulsory items.*

*Section **B** has **two** parts, **I** and **II**. Answer **one** item from each part.. Answer **four** items in all.*

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*Any additional item(s) answered will **not** be scored.*

Where necessary use $C = 12$, $H = 1$

SECTION A.

Answer **all** items in this section in the spaces provided

Item 1

At the end of year party, a variety of beverages were served. John chose one type which, after he drank it, initially made him feel excited and relaxed. However, his movements later became unconditioned and lacked self control. His friends, who were taking other type of beverage that didn't have the same effect on them, repeatedly warned him to stop consuming any more of that beverage.

Task

As a learner of chemistry,

- (a) State the **category** of the product John took.

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- (b) Suggest any other use of the active ingredient contained in the product John took.

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- (c) explain how excess consumption of such products John used can have serious consequences.

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(d) Compare the products served at the party

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Item 2.

In an effort to promote energy and environmental sustainability, the government has recommended a specific hydrocarbon product for public use. The label on the product indicates 74.98% carbon by mass and 1 mole of product weighs 16.01 grams. However, the government must first educate the public about the product and develop strategies for its environmentally responsible use. You have been invited to one of the educational workshops.

Task: As a Chemistry student,

(a) explain the category of the **structure** possessed by the product.

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(b) Determine the molecular formula of the product.

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(c) Suggest the properties of the product that make it useful in every day life.

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(d) advise on the environmental impact associated with use of the product.

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SECTION B

Part I (Attempt one item from this section)

Item 3 copper is a versatile metal used for electrical wiring, making cook ware , electronics , brass and bronze alloys among others .To increase on quantities of the metal on market needed , the government has cleared an investor to set up a copper extraction plant in kilembe ,Kasese Uganda. However ,the locals are concerned about its impact and are seeking guidance on how they will benefit from it's operations. The officials have organized a workshop to educate the locals. You have been invited to attend.

Task. As a chemistry student, make a write up you will use during the presentation.

Item 4

Large quantities of sulphuric acid are used as electrolyte in car batteries ,in production of ammonium sulphate fertilizer , dyes and paint. Jinja city officials have cleared an investor to set up an Sulphuric acid manufacturing plant. However, the locals are concerned about its impact to the environment and how they will socially benefit from the plant. The officials have organized a workshop at the city hall. You have been invited to address the locals.



Task. Prepare a write up message you will use.

Part II (Attempt one item from part)

Item 5 The dependence on **sedimentary rocks** for valuable minerals in vast areas of eastern Uganda has led to significant environmental impact particularly to nearby water sources . In response, the regional environmental officials have organized a series of public workshops aimed at raising awareness among the locals the importance of balancing resource use with crucial need for protecting their environment. You have been invited to attend and address the locals.



Task. Prepare a write up message you will deliver.

Item 6 The Uganda's National Development Plans (NDPs) Vision 2040 emphasizes the need for adoption and mitigation strategies to protect Uganda from climate change impact. One of the initiatives is to educate the public about **sustainable use of wood charcoal** and **natural gas** for energy. Officials from Ministry of Environment have organized radio education programs to address the public . You have been invited to one of the programs.



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

End.