



Acknowledgement

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I want to thank my family members who were there in my ups and down during the production of this book. They made sure that that my mind is always okay.

Dedication.

I dedicate this book to my mum **Ms. Nante Sarah** and my Dad Mr. **Muhebwa Sulait** who helped me with mental support during the production of this book.

Special dedication goes to my friend and a senior teacher of chemistry **Mr. Kyoita Paul**.

Caution

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Format of the paper

This is chemistry paper one

code **545/1**

This is a theory paper which is based on the knowledge, understanding and application of chemistry concepts and values.

The items are scenario- based

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.*
- ✓ *Answer to Section A **must** be written in the spaces provided while those of*
- ✓ *Section B **must** be written on the answer booklet(s) provided. Any additional item(s) answered will not be scored*

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ELEMENT OF CONSTRUCT TWO (2)

It appreciates the application of Chemistry in daily life



MODE OF ASSESSMENT

Basis assessment		Criteria of assessment
A	Category/type of product	Any one product and category identified
B	Function(s) of product(s)	Any one function() of the product
C	Dangers or side effects of the product and mitigation	Any one danger /side effect explained and mitigated
D	Evaluation	Evaluation of the product/ process basing on both similarities and differences

TOPICS

- Chemistry and society
- Chemicals for consumers mainly;
- Food additives
- Chemicals in medicine
- Detergents
- Nuclear processes

Summary notes on the assessable areas of item 1

1. Food additives



These are chemicals added to food to add flavour, taste, enhance colour, texture and supply nutrients.

Food additives are classified into;

- Flavouring agents
- Preservatives
- Stabilizers
- Thickeners
- Food colouring agents or dye

Category of the product

Food additives like flavor enhancers, food colors and food preservatives are classified as;

- Natural food additives**
- Synthetic food additives**

Sample item with solution

Item one

Kisitu lives in an area where they use borehole water. He slide and fell and his shirt became dirty. He decided to use a detergent to clean his shirt. The shirt remained dirty with some brown spots yet he had rinsed it several times.

Task

As a chemistry learner;

- Point out the problem Kisitu made while choosing a product. **(they need a category or type)**
Kisitu chose a soapy detergent instead of soap less detergent

- b. Help Kisitu understand how the product works(**they need how it works**)

Detergent has two parts: hydrophilic part and hydrophobic part.

The hydrophobic part penetrates the dirt while the hydrophilic part remain in water.

The dirt is split into tiny globules which are then carried away by water.

- c. Advice Kisitu on the challenges associated with the long use of this product. (**they need dangers and mitigation of the product**)

- Soapy detergents contain chemicals which can cause irritation and redness of eyes which is painful. This can be solved by washing eyes using plenty of water.
- Soapy detergents are not effective in hard water which can end up leaving stains on clothes. This can be solved by use of soap less detergent.

Item 2

A new restaurant in Kakindu village in Entebbe has a myriad of customers during lunch time because of the good taste of the food. Mrs. Mutamba owns a restaurant in the same locality and one day she added some lemon extract to her food. Unfortunately, she did not receive any client to her restaurant and she was frustrated.



This has created jealousy among the two proprietors. The village cell leader has scheduled a meeting to solve the issues at hand. He has contracted you prior to the meeting.

Task

As a learner of chemistry;

- a. Assist the leader to know the problem she made when choosing the product.
She used natural food additive instead of artificial food additive.
- b. Guide her know how the product works.
- The product adds a taste in the food prepared
 - The product maintains the colour of the product produced.
- c. Sensitize her about the risk associated with the long term use of the product and guide her on what should be done to overcome such.
- Some people are allergic to some food additives which may cause nausea and headache. This can be solved by the recommended amount.

MODE OF ASSESSMENT

Basis assessment		Criteria of assessment
A	Category and example	Any one product and category identified and reason
B	Suitability	Property and use
C	Dangers or side effects of the product and mitigation	Any one danger /side effect explained and mitigated
D	Evaluation	Danger and mitigation

The element of construct involves the following criteria or assessment areas

- Identifying category with a reason and example
- Suitability/properties/characteristics/prediction of trends. (you can give more than one)
- Evaluation or evaluate the choice/uses/application
- Impact on environment/life and mitigation.

Topics

- Air
- Using materials
- The periodic table
- Trends in the periodic table
- Structure and bonding
- Reactivity series and Alloys
- Carbon in life
- Formulae, stoichiometry and mole concept.

NOTE: The possible categorization in specific topics

Topic	Categories	Suitability	Advice
Periodic table	Metals Non-metals	Properties and uses	Uses, impact and mitigation
Trends in periodic table	Position of metals and non-metals	Predicting properties in relation to position	Predicting uses, impact and mitigation
Reactivity series. Alloys	Pure metals and alloys	Difference in properties of pure metals and alloy	Uses of alloys, impact and mitigation
Compounds	Ionic/giant ionic Covalent/giant molecular	Physical properties	Uses, impact and mitigation
Materials	Natural and synthetic/ artificial	Properties	Uses, impact and mitigation

Mixtures	Heterogeneous Homogeneous	Properties	Uses, impact and mitigation
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Summary of the notes

1. Materials

Materials are generally categorized as **natural** or **artificial materials**.

Natural materials are materials are naturally found in nature for example wood

Artificial materials/ synthetic materials are materials that are made by man for example polyethene, plastics and others.

OTHER CATEGORIES

- Polymers
- Metals
- Ceramics
- Composites
- Semi-conductors

a. Polymers

A polymer is a very large molecule with high relative molecule with high relative molecular mass formed by joining of simple molecules called monomers.

SAMPLE QUESTIONS AND SAMPLE SOLUTIONS

SCENARIO ONE

Soap is the chief material commonly used to facilitate washing. Of recent, there has been country wide out cries to the government about the high costs of soap for domestic use. This is partly because of the few industries producing soap in the country. To ensure efficient supply of soap, recently the government secured some land for the local investors to set up another soap production plant in one of the villages in Tororo District. However, the local people are concerned about its environmental impact and their valuable land that is about to be taken by the investor. The community members are also wondering how the process of soap production will take place. As a result, the district chairperson has called for a meeting with the investor and the local representatives.

Task

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

Solution

MANUFACTURE OF SOAPLESS DETERGENTS.

Process of production

The simsim oil is boiled together with concentrated sodium hydroxide in a large container to obtain a mixture.

Concentrated sodium chloride solution then added to the mixture in order to precipitate out the soap. Dyes and perfumes are also added to the soap to make it better.

Soap is then purified by washing it using clean water. It is dried and then processed into bars.

Side effects and mitigation

Acid spills on the surfaces that may cause falls/accidents leading to injuries on workers. This can be mitigated by careful handling of the acid.

Burns from acids when in contact with skin causing wounds. This can be mitigated by careful handling of acids.

Social benefit

Employment opportunities; increased income among residents hence improved standards of living.

Government revenue which is going to be obtained from the taxes which is used to construct hospitals, schools and others..

ITEM 18

Uganda has substantial natural resources including forests, lakes and rivers, oil reserves, rocks and small mineral deposits. Due to increasing population and human activities. These resources are being over exploited which have led to environmental awareness club in your school.

The club is planning to sensitize the entire students' community in the school on an assembly. You have been selected on behalf of senior four candidates to address an assembly.

Task

As a student of chemistry, prepare a write up you will deliver during that time.

THANK YOU

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