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545/1  
CHEMISTRY  
Paper 1  
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HP

MAKINDYE SECONDARY SCHOOL  
MID TERM 2 EXAMS (S3)  
Uganda New Lower Secondary Certificate of Education  
CHEMISTRY

X/28

Paper 1

**INSTRUCTIONS TO CANDIDATES:**

This paper consists of two sections: A and B. It has three examination items.

Section A has two compulsory items.

Section B has one Item compulsory

Answer all three items

Answers to section A and Section B must be written in the spaces provided.

## Section A

### Item 1.

One of the SDGs (Sustainable Development Goals) by 2030 in Uganda is access to clean water. Previously the government embarked on distributing water points in different villages that lacked access to clean water. Some villages received pumped water by solar, boreholes and in others the government decided to renovate their wells. Complaints have arisen from different villages that received the water points. The villagers claim that, grey spots are always left on their clothes after washing, even if they rinse them several times. They have also complained about the increase in the amount of the cleansing material they use for washing their clothes.

#### Laundry Bar Soaps:



#### Task:

As chemistry learner:

a) Help the villagers benefiting from the programme understand the problem they made when choosing the cleansing materials.

..... They chose soapy detergent, instead of soapless ..... 02  
..... detergent; .....

Note; Learner is supposed to bring out the category.

b) Also explain to the community how the chosen cleansing material works during the washing process.

Detergent has two parts, hydrophilic and hydrophobic part.  
Hydrophilic part dissolves in water while the hydrophobic part  
attacks the dirt. Continued agitation causes emulsification  
of dirt. 02

c) Advise the villagers on the challenges associated to long term use of the cleansing material they use.

Soapy detergent  
Eye redness; mitigated through washing eyes with water;  
Soapless detergent; 03  
Non-biodegradable; Pollutes water; mitigated through proper  
disposal of the used up water with detergent;

d) Evaluate the products

Similarities

Both are effective in soft water. ✓

Differences

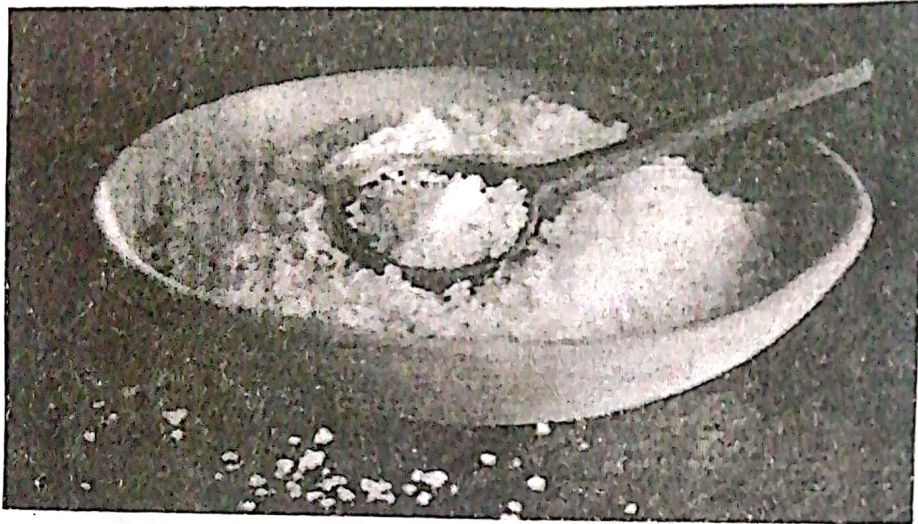
Soapy	Soapless 02
Forms suds in hard water. ✓	Does not form suds in hard water. ✓

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## Item 2.

According to an industrial chemist hosted on a national television, table salt plays a vital role in various industrial applications due to its properties. Your siblings watching the television are left wondering about what the chemist said and want to know the composition and properties of crystals of table salt.



Task:

As a chemistry student;

(a) Help your siblings to

(i) Explain category of the product

Table salt is ~~Na~~ sodium chloride,  $\text{NaCl}$   
Sodium chloride is a compound. A compound is a substance  
made up of more than one element. ~~Na~~ Sodium<sup>03</sup> chloride is  
made up of ~~sed~~ Elements, sodium and chlorine. An element  
is a substance that cannot be split into further substance.

Learner identifies ① sodium chloride

② categorize it as a compound

③ Define an element

(ii) Predict the properties of the product

Because NaCl is ionic compound, has the following properties

- Soluble in water ✓
- High melting and boiling point ✓
- Conducts electricity ✓

any 2 (02)

(ii) Show them the possible uses of the product

Used in baking of chapattis ✓  
used in manufacture of soap ✓  
Adds taste to food ✓

any 2 (02)

(c). Guide them on whether the product is environmentally friendly or not.

The product is environment friendly because it is neutral; ✓

(02)

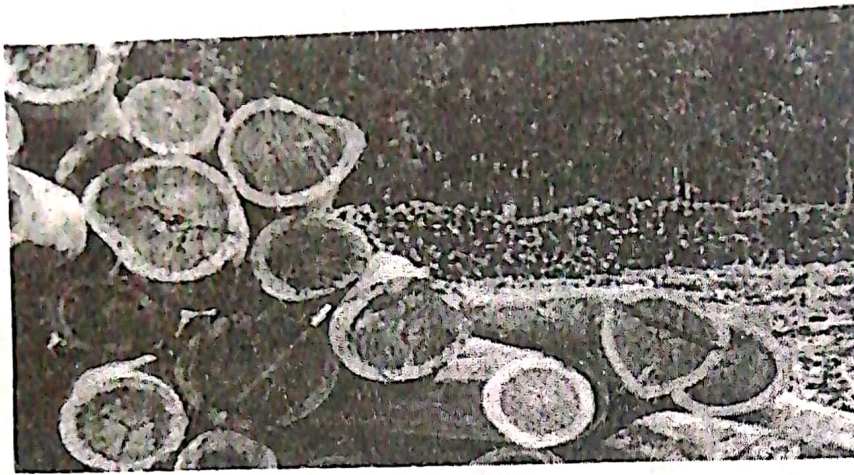
## SECTION B

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Item 3.

Uganda is landlocked country which covers an area of approximately 242034 square kilometers with a population of about 45 million people. Uganda has substantial natural resources including forests, lakes and rivers, oil reserves, rocks and small mineral deposits such as copper, limestone and gold. Due to the increasing population and human activities these resources are being over exploited which has led to environmental degradation. The environment club in your school is planning to create awareness to the people around your school community through a sensitization workshop organized by the village L.C 1.





Task.

As a student of chemistry, prepare a presentation you will deliver during the workshop upon invitation. (10 scores)

Category: Natural resources are categorized into two: Renewable and

Any 6 Non-renewable resources.

score Renewable natural resources are resources that can be replaced after use. For example, Air and water.

03 Non-Renewable natural resources are resources that cannot be replaced after use. For example, fossil fuels and rocks and minerals.

Composition: Air is made up of oxygen, Nitrogen, Carbon-dioxide, rare gases.

any 2 Water is made up of hydrogen and oxygen.

score Minerals include copper, cobalt, calcium, etc.

02 Fossil fuels are made up of Carbon, hydrogen and oxygen.

Rocks are categorized into metamorphic, sedimentary, igneous rocks.



Impact of human activities on natural resources, how it occurs and mitigation;

Impact;

A learner must explain the impact and mitigate only one human activity

Deforestation involves cutting down of trees; which increases the level of carbon dioxide in the atmosphere since the trees that would have used carbon dioxide for photosynthesis are reduced. This in turn results into global warming since carbon dioxide is a greenhouse gas.

Mitigation

This can be mitigated through afforestation which involves planting of trees.

Benefits of Natural resources. (Note; learners should only give natural benefits).

Air contains oxygen that facilitates respiration  $O_2$  which involves breaking down of food to release energy.

Air contains carbon dioxide that facilitates photosynthesis which involves making of food by green plants;

Water is aquatic habitat for aquatic organisms.

any two score (02)

END

10