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CHEMISTRY EDUCATORS' SOCIETY

ITEM BOOKLET

O LEVEL CHEMISTRY SEMINAR

DATE:
SATURDAY 22ND JUNE, 2024

VENUE:
ELITE HIGH SCHOOL, ENTEBBE.

FOREWORD

The Chemistry Educators Society is your companion to achieve excellent results. This seminar has been organized for you to interact with the most celebrated and knowledgeable facilitators of Chemistry. Their role is to guide you in the question approach and also equally to caution you about the mistakes that you make in the final examination which cost you excellent grades.

Nothing is more difficult and more precious than making the right decision, Kindly students, and always spare time to select questions where you can get maximum marks. Always do a comparison of the questions before responding.

Mulabbi Nicholas Elijah (President CES)

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SECTION A

Attempt all items in this Section

1. In a washing competition held in Kikuta village in Bushenyi district, two ladies were each provided with a full jerry can of spring water, a basin, one with detergent **P** and another with detergent **R**. Mrs. Mugisha, the usual annual winner of the competitions used detergent **P** to clean the cloth but it remained with some dirty marks even after rinsing it several times. Mrs. Karungi used detergent **R** and won the race as she cleaned the cloth with one rinse. Mrs. Mugisha was frustrated and could not understand what went wrong this time round.

Task;

(a) As a chemistry learner,

(i) Explain categories of products, **R** and **P** used by the two ladies.

(ii) Help Mrs. Mugisha to understand how the product works.

(b) Advise the two ladies on the challenges associated with the use of the products.

2. Wig is in the process of making good and strong window and door frames for his newly constructed house without affecting the environment. He is aware that there are various materials on the market for making window and door frames. He also knows that in order for one to produce good quality frames and windows; he should select the right material with suitable qualities and properties. However, he is still confused with the choice and has approached you for some advice.

Task

Use your Chemistry knowledge to:

(a) Explain

(i) the categories of the materials.

(ii) the suitability of the materials.

(b) advise Wig on the choice of the materials.

SECTION B

Part one

Attempt one item from this Part.

3. Of recent, the prices of iron nails and bars have abnormally increased. This is due to low production of iron all over the world.

Uganda Builders' Forum has raised its concern to the government about the high prices of iron nails and bars. Due to this, government has contracted a local investor to produce iron locally so that affordable nails and bars can be made.

The investor plans to set up an iron production plant in one of the villages in Kisoro due to the availability of iron ore.

However, the locals are worried of the environmental impacts of the plant and their valuable land.

The locals also do not know how iron will be obtained from its ore.

As a result, the District Development Officer has organised a sensitisation workshop and has invited both the investor and local representatives.

Task

As a chemistry learner, write a brief message that you will deliver during the workshop.

4. A women's group in Tororo town is planning to manufacture a soapy detergent as a new business project to increase their annual gross sales. The group is planning to set up a soapy detergent production plant with minimal environmental concerns in one of the villages in the district.

Some locals are also complaining of their valuable land about to be taken up.

However, the science club members in your school would like to know how the process of production will be carried out.

The head of science club has appointed you to sensitize the club members.

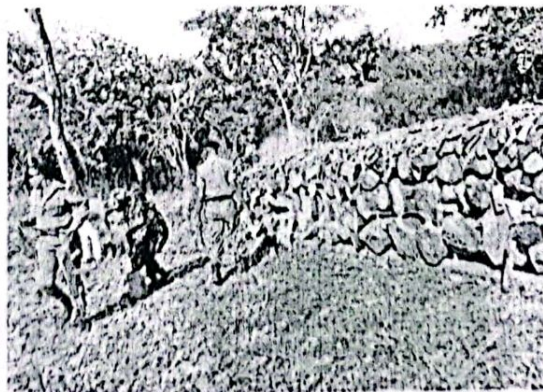
Task

Prepare a write up that you will use during the presentation.

Part two

Attempt one item from this Part.

5. Due increase in population in Tororo District, many natural forests have been cleared to provide charcoal for use as fuel and natural swamps have reclaimed to create space for settlement. These happenings have left the district officials wondering.



As a result, the government through the district officials is planning to create awareness to the people in Tororo District through sensitization workshops organized in different village.

Task:

As a chemistry learner, prepare a short presentation that you will deliver during the workshop when invited.

6. Kyevunze, a rocky region in Luweero district is developing at a fast pace. There are many trading centres that have been established. Many swamps and forests have been reclaimed and filled with new buildings. Stone quarrying is the order of the day. Recently both the vegetation and wells have started drying up, and yet the little water that is available is not fresh. The few residents that practice crop husbandry also say that seasons have changed and this has caused famine in the area. All these happenings have left many residents wondering.

A sensitization workshop is to be organised by the chairman through the village environmental management committee.

Task;

As a learner of chemistry, present the message you will share when called upon.

SECTION A

Attempt all items in this Section

1. Mama-Muto opened up a new restaurant in one of the trading centres in Buikwe District. Her restaurant often receives many customers during lunch time, because of the good taste of the food she serves. While the other restaurant owners in the same locality often receive very few or no customers at all. This has created jealousy resulting into regular quarrels between Mama-Muto and the other restaurant owners.

The local council chairperson of the area understands the cause of the quarrels is the ingredients the restaurant owner's use.

As a result, the chairperson of the area has scheduled a meeting to solve the issues at hand.

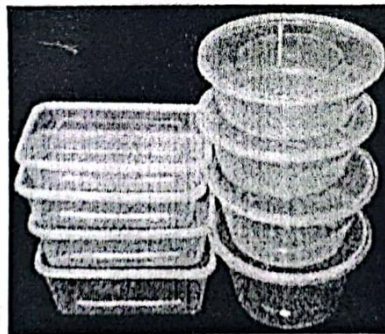
Task

As chemistry learner, write down a short message you would deliver if you were invited to the meeting.

In your message,

- (a) Categories the ingredients.
- (b) Explain the suitability of the ingredients.
- (c) Advise the restaurant owners on the use of the ingredients.

2. Masaka District Development Officials recently cleared a group of youths in the district to setup a bakery. However, the officials have cautioned the youths to use sustainable and environmentally friendly packaging materials for their bakery products.



As a result, the youths have organized a meeting to discuss possible alternative packaging materials.

Task

As a chemistry learner, write a short message you would deliver to the youths upon invitation. In your message:

(a) Explain

(i) categories of materials.
(ii) the suitability of the materials.

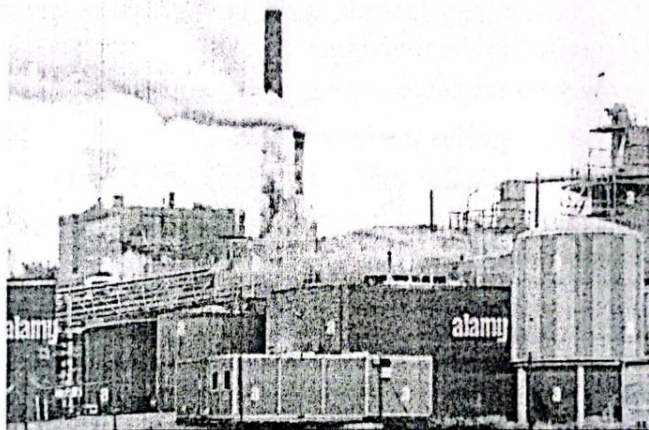
(b) Advise the youths on the choice of the materials.

SECTION B**Part one**

Attempt one item from this Part.

3. A soap manufacturing plant uses sodium hydroxide as one of the chief raw materials in the production process. To ensure that sodium hydroxide is readily available and at a cheaper cost, the manager is planning to set up a sodium hydroxide production plant near Lake Katwe in Kasese District.

Unfortunately, the residents have raised concerns about its environmental effects and their valuable land about to be taken by the investor.



The science club in your school is also wondering how the production process of sodium hydroxide will be carried out.

As a result, the chairperson of the club has appointed you to make a presentation to be published in one of the local newspaper.

Task:

As a Chemistry learner, prepare a brief message that you will use during the presentation.

4. Fertilizers are often added to boost soil productivity. One such fertilizer is ammonia nitrate which is often imported at higher costs. To boost the local production of ammonium nitrate, government recently cleared Bloom Uganda

limited to set up ammonium nitrate production plant in one of the villages in Kotido district with minimal environmental impact.

The locals however, don't know how the process of production will be carried out.

As a result, a radio talk show has been organized in one of the local radio stations by the government to sensitize the locals.

Task;

Prepare a presentation you will make during the talk show if you were invited.

Part two

Attempt one item from this Part.

5. Natural resources have been destroyed as a result of increasing population and human activities. This has attracted the attention of the officials from the National Environment Management Authority (NEMA)

The officials are planning to create awareness to the people of the country through sensitization workshops organized in different district communities.

Task:

As a chemistry learner, prepare a short presentation you will deliver during the workshop upon invitation.

6. Kyevunze, a rocky region in Luweero district is developing at a fast pace. There are many trading centres that have been established. Many swamps and forests have been reclaimed and filled with new buildings. Stone quarrying is the order of the day. Recently both the vegetation and wells have started drying up, and yet the little water that is available is not fresh. The few residents that practice crop husbandry also say that seasons have changed and this has caused famine in the area. All these happenings have left many residents wondering.

A sensitization workshop is to be organised by the chairman through the village environmental management committee.

Task;

As a learner of chemistry, present the message you will share when called upon.

SECTION A

Attempt all items in this Section

1. In Nsangi village, Mpigi district, a building has been completed but several huge cracks have developed and is about to collapse.

Residents are planning to arrest and beat the construction workers, accusing them of using sub-standard materials. The Chairperson Local Council I together with the community development officer have organised a community meeting to talk to the residents and discuss the other possible alternatives to rebuild the society's house without affecting the environment.

Task

Use your chemistry knowledge to:

(c) explain

(iii) Categories of materials.

(iv) The suitability of the materials.

(d) Advise residents and the concerned authorities on the choice of the materials.

2. Isack, a renowned body cyclist in Gayaza town always visits his grandmother, whenever he falls sick. He trusts her grandmother's skill as a traditional healer. One day, on his way back home from a work with a friend, he fell down and got bruises on all the knees.

His friend rushed him to one of the local health centres, instead of taking him to his grandmother. At the health centre, she was given penicillin tablets.

To his surprised, after about one week, he felt relieved from the pain. He has approached you to help him understand why he got relieved.

Task

As a chemistry learner, write a message you will share with Isack. In your message, include:

(a) The category of the product.

(b) The function of the product.

(c) Advice to Isack on the challenges associated with the use of the products.

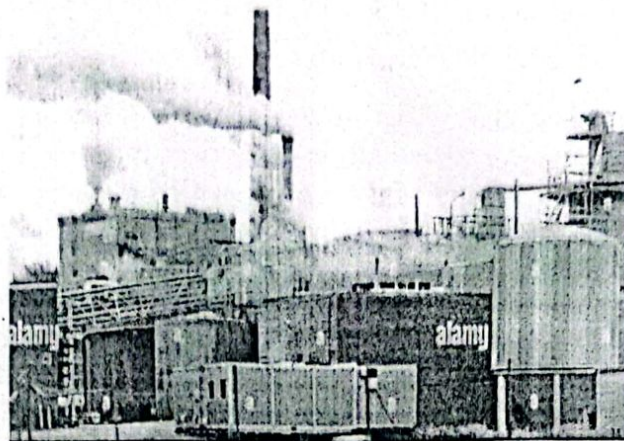
SECTION B**Part one**

Attempt one item from this Part.

3. One of the large scale uses of sulphuric acid is as an electrolyte in car batteries. However, its supplies are low in the country partly because of the few industries are producing it.

As a result, government recently cleared a group of youths to set another sulphuric acid production plant in one of the villages in Wakiso District.

However, some residents in the selected village are worried about its environmental impacts and claim that the government wants to steal their valuable land.



The science club members in your school would like to know how the production process will be carried out.

The chairperson has chosen you to sensitize the members of the club.

Task;

As a chemistry learner, make a write up they will use during the presentation.

4. Due to need to provide its citizens with alcohol-based sanitizers, government, is planning to set up an ethanol production plant with minimal environmental impact in one of the villages in Mukono District.

However, the locals in the selected village are wondering how the production process will be carried out.

A sensitization workshop has been organized in the village by the government through the Local Council Chairperson.

Task

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

Part two

Attempt one item from this Part.

5. River Rwizi is located in Mbarara, south western Uganda. People around the river survive on sand mining, crop husbandry and brick making. There are also many ongoing construction works for factories and settlement.

Of recent, the water levels have reduced drastically and even the little water available is not fresh. The fish is dying.

These happenings have left the local authorities worried.

The city mayor has called for a workshop to sensitize the local community on the existing situation around the river.

Task

As a Chemistry student, make a write up you will deliver if you were invited for the workshop.

6. Kitinda village in Wakiso district is developing at a rapid pace. Many of the recently existing swamps and forests are now filled with buildings. Stone quarrying is the order of the day among most the locals in the village. Recently the wells have started drying up and yet the little water available is not fresh. The few residents that practice crop husbandry also say that seasons have changed and this has caused famine in the area. All these happenings have left many of the residents wondering why. A sensitization workshop is to be organized in the district by the government through National Environmental Management Authority (NEMA)

Task;

As Chemistry learner, prepare a brief presentation you will deliver in upon invitation.

PRACTICAL PAPER

Item 1

An organization operating in fishing around Lake Kyoga organized a workshop to train local fish dealers on how to make common salt on a small scale which they can use to preserve fish fresh. This involved mixing sodium hydroxide and hydrochloric acid. During the training, a participant was randomly picked and instructed to add a prepared solution of an acid to a base solution in a container. The participant noted that the container became warmer as he kept on adding the acid. He could not understand why and how much heat had been generated.

Sodium hydroxide reacts with hydrochloric acid according to the following equation.



The heat produced varies with the volume of acid added to the base.

The acid provided is labelled **BA1** and the base provided is labelled **BA2**.

Task:

- (a) As a learner of chemistry;
 - (i) Design an experiment you will carry out to determine the amount of heat, produced during reaction between **BA1** and **BA2** or produced when **BA1** is added to **BA2**.
 - (ii) Carry out the experiment and record your findings.
 - (iii) Obtain the maximum heat produced during the reaction.
- (b) What can the participant deduce from your findings?

