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Signature

NEW LOWER SECONDARY CURRICULUM

NAME Excellent?

STREAM A

545/1
Chemistry
Paper 1
2024



POST MOCK EXAMINATION 2024

2 HOURS

Instructions to item takers

This paper consists of six scenario items.

Attempt all the items in section A and any two from section B, one from each part.

Write your responses in section A in the spaces provided.

Write your responses in section B on separate answer sheet provided.

For official use only					
Item No.	1	2	3	4	Total score
Score					

Don't loose hope and
don't fear, It's not late

Inbox (TAAJA) in case of
any facilitation

SECTION A

Attempt all items in this section.

Item 1

On a certain introduction ceremony every one kept wondering and amazed by the aroma and taste of food served that was delicious. People wanted to understand the spices that were used but the master of ceremony only referred them to the service provider for more details.



Task

As a student of chemistry with knowledge, help people to:

- a) Understand the categories of the spices used.

Food additives such as food ^{C1} enhancers. ^{C2} or sure.

Food enhancers improve ^{C1} on the taste and aroma ^{C2} or sure of food.

- b) Know the challenges associated with the spices used by the service provider.

Some food enhancers can cause ^D allergic reactions to some people, making them loose ^F concentration and this can be mitigated by using recommended ^E food enhancers.

Since both natural and artificial food enhancers ^G improve the taste and aroma of foods ^H or sure.

Natural food enhancers have less side effects ^I while artificial food enhancers have more side effects ^J.

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Item 2

Arnold is in construction business and is looking for suitable roofing materials that can help him build a quality roof with minimal environmental impacts.



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Arnold knows that choosing quality materials for roofing depends on the nature of the materials and has come to you for advice:

Task

Use your chemistry to:

a) Explain

i) Categories of materials.

Materials used in roofing can be both natural and artificial. (63 score)

Natural materials are materials which are made by God and their existence is not influenced by man for example wood.

Artificial materials are materials which are made by man for example aluminium.

ii) Suitability of the materials.

Aluminium (Reject if material is not selected)

- It is durable

(63 score)

- It has a high melting point

- It is strong

- It is non-biodegradable

- It is malleable

Any (4) properties

Based on the above properties, aluminium can be used to make roofing sheets.

- b) Guide Arnold on the challenges associated with the use of the materials to the environment.

Since aluminium is non-biodegradable, if dumped and left to accumulate in the soil can deplete the soil fertility leading to low crop yields and thus can be mitigated by proper disposal of aluminium products. (O2 save)

SECTION B

Attempt one item from each part in this section.

Part I

Item 3

Many farmers in Eastern Uganda grew a lot of sunflowers expecting good market outside Uganda. Unfortunately, there is no market. After getting government SACCO money, a group of some farmers want to buy the sunflower invest into soap manufacture but they lack the knowledge of the process and its effects.



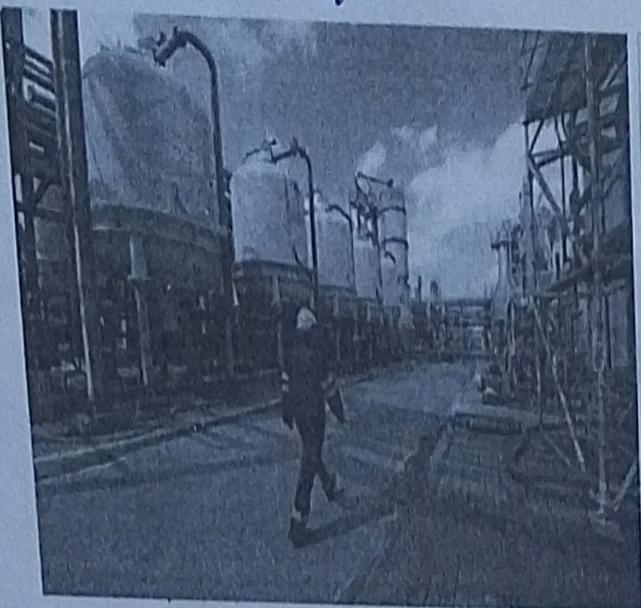
TASK

Help the famers achieve their objective.

Item 4

There is high demand of chlorine in Uganda for treating water due to increased levels of water pollution. An investor wants to tap into the opportunity to manufacture chlorine at Kabale near Lake Bunyonyi. However, the residents seem not to understand how the process will occur plus its consequences and are resisting the project.

→ platforms have been created for us to learn
What's your role as a Chemist ??



As a senior four candidate with the knowledge of chemistry, you are required to create awareness to the members and provide the necessary information.

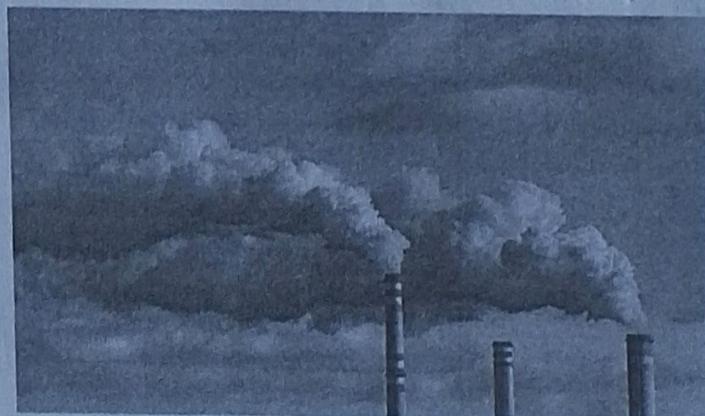
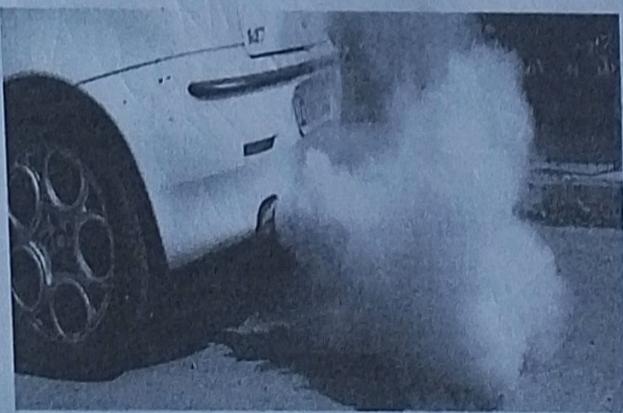
TASK

Write a presentation you will use upon meeting them.

Part II

Item 5

It has been observed that there are more people suffering from asthma and other respiratory diseases in densely populated towns and cities due to air pollution by a number of human activities but the community does not know what to do.



NEMA has organized a workshop on the theme "improving the quality of urban environment is every body's responsibility".

Your school has been invited to make a presentation in the workshop and you have been chosen as the presenter.

Task:

- Prepare a message to be delivered.

6. Fresh water bodies like lakes and rivers have been heavily polluted as a result of rapid urbanization. On World Environment Day, the Ugandan government, in particular the National Environmental Management Authority (NEMA), wishes to raise public awareness among the citizens



The science club at your school has selected you to give a presentation on the theme "fresh water is basic necessity".

TASK

Write the presentation you can use.

END

Item 3

MANUFACTURE OF SOAP

Raw materials.

- Sunflower ^{seeds} ✓
- Sodium hydroxide ✓
- Sodium chloride ✓

(03 scores)

✓ ch

Process of production.

Sunflower ^{seeds} are crushed and squeezed to obtain vegetable oils. The vegetable oils are then boiled together with sodium hydroxide solution in a large container to form a mixture. The mixture is then allowed to cool and the sodium chloride is then added to it in order to precipitate out dyes and perfumes can be added. The soap is called "salting out of soap". Soap is skinned off and purified by washing it with plenty of clean water. It is then dried and packed.

Social benefits.

The soap production plant provides employment opportunities to the people make them earn income hence improving on their standards of living.

(02 scores)

✓ B

Side effects and mitigation.

During the production process, toxic fumes may be released in the atmosphere which when left to accumulate can cause global warming leading to increased temperatures and this can be mitigated by installing catalytic converters to make the harmful gases harmless.

(03 scores)

T/S 08 score

Item 4 MANUFACTURE OF CHLORINE

Raw materials

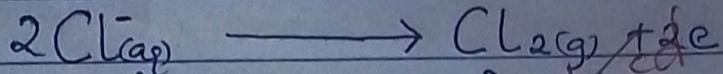
- Brine Rm
- Graphite anode Rm
- Mercury cathode Rm

Process of production.

Brine ^{solution} undergoes electrolysis using graphite anode and mercury cathode in a mercury cathode cell.

Brine solution contains Na^+ , Cl^- , H^+ , OH^-

During electrolysis OH^- and Cl^- move to the anode where the Cl^- are discharged by gain of electrons because they are more concentrated in solution than the OH^- .



The chlorine gas formed is then collected, purified, dried and packed into large tanks.

Side effects and mitigation.

During the production process, toxic fumes may be released in the atmosphere which when left to accumulate there can cause global warming leading to increased temperatures and this can be mitigated by installing catalytic converters to make the harmful gases harmless.

Social benefits:

The production process will provide employment opportunities to the people making them earn salaries hence improving their standards of living.

02 score

$$\text{P/S} = 0.8 \text{ score}$$

Item 5

(03 scores)

Air is a renewable natural resource which can be replaced easily and naturally once used up. It is composed of various gases like oxygen, nitrogen and carbon dioxide among others.

Air is important to human life in the various ways.

Air aids in photosynthesis of green plants. Carbon dioxide a component of our combine with water in presence of sunlight energy trapped by chlorophyll to form starch.

(02 scores)

Various human activities have affected air as a natural resource in the following way.

Industrialization, this leads to emission of fumes in the atmosphere when left to accumulate in the atmosphere can cause global warming leading to increased temperatures and this can be mitigated by installing catalytic converters to convert the harmful gases to harmless gases.

(03 scores)

Item 6

T/S = 08 score

FRESH WATER IS A BASIC NECESSITY.

Water from these lakes and rivers is a renewable natural resource which can be replaced easily and naturally once used up. It is composed of oxygen and hydrogen atoms.

(03 scores)

Water is important to human life in the following way.

Water aids in photosynthesis of green plants. Water combines with carbon dioxide in presence of sunlight energy trapped by chlorophyll to form starch.

(02 scores)

Various human activities have affected water bodies in the following ways.

~~Crop farming~~ + people who grow crops near water bodies always apply fertilizers which can run or flow into the water bodies causing algae bloom leading to cutting off of the oxygen supply hence leading to death of aquatic animals. This can be mitigated by putting strict laws to farmers who grow crops near water bodies.

(03 scores)

P/S = 08 scores

⇒ Chemistry will be simple for you if you only allow and accept to learn from the exposed and experienced colleagues.

⇒ 0705517234 / 0779856294

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Inbox we shall work.

"Be known by your works"