

PROPOSED MARKING GUIDE

ST. FRANCIS COLLEGE BULOBA

END OF TERM ONE 2024 ASSESSMENT

NSUBUGA ABAASI (TR.)

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CHEMISTRY S.3

TIME: 2hrs

INSTRUCTION TO LEARNERS.

This paper consists of two section A and Section B. It has four items.

All items are compulsory

Answers to section A must be written in the spaces provided while those of section B must be written on the answer booklet(s) provided.

SECTION A (20 scores)

Answer all the items from this section.

Items 1

The local people of Mwera village in Mityana district locally manufacture drink product ripe from banana and sorghum which is used for consumption as drinks, sometimes socially affects them. On addition, it also causes liver related diseases.

It is informed that the product have essential purpose other than leisure consumption and people are cautioned on its negative effects, nature, composition and properties.

The chairperson of Mwera has approached you for guidance about concerns of the drink product manufactured always.



Tasks:

As a chemistry student;

- Give the advice to the chairperson about;
 - The category of the product and its nature,

The product is an organic compound because it has carbon and hydrogen as the major constituents. For example Alcohol.

TS Q3
Q3

iii) The composition of the product. (2mks)

The Alcohol is ethanol with two Carbon atoms, five hydrogen atoms and the OH functional group: (C_2H_5OH)

Ts

02
02

b) His main issue is "what are properties of the product make it suitable for purposes and negative effects associated" help him to find out. (3mks)

Ethanol is flammable, hence combusts in excess air to produce Carbon dioxide and water. The reaction is accompanied by loss of heat. Energy for surroundings. Therefore, it's used as fuels for domestic cooking.

Ethanol dissolves in non-polar solvents making it suitable as solvent in perfumes and cosmetics products hence their manufacture. Accept one (correct)

c) The chairperson is inquisitive of its uses, clarify. (2mks)

Ethanol is used in traditional ceremonies as one of bride price items.

It is used in clinical thermometers in hospitals.

Ts

02
02

Used in manufacture of disinfectants like hand sanitizers, methylated spirits, etc.

Accept any 3

Used for sterilizing surgical instruments in hospitals. correct uses.

d) He is still doubtful about the negative effects of the product. Take him through. (3mks)

Excess consumption of ethanol leads to affect the nerve system of the body which disturbs the mental stability. It can be mitigated by sensitizations about impacts of ethanol to people's lives.

Ts

03
03

Excess consumption of ethanol leads to failure of pancreas and liver functioning which results to dysfunctioning of circulatory system and later to death. It can be mitigated by reducing on excess consumption of alcoholic drinks.

Item 2

Residents of Katwe in Makindye division use objects in everyday life. Which are made from different kinds of materials. Most of the objects were plastics because of their suitability for use. Due to poor disposal of the objects, it threatens human health by having direct and indirect impacts. This was due to ignorance of composition and properties of the plastics, thus brought some doubts from the residents and called for help from St. Francis college school Buloba.



Task;

As a chemistry learner in St Francis college;

a) Guide the residents on;

i) Category of material mostly used. (3mks)

Artificial polymers which are made by man. For example
Plastic bottles.

Ts 03
03

ii) Characteristics/ properties of material making it suitable for use. (2mks)

- Plastics are more durable than other materials

Ts 02
02

- They do not conduct heat and electricity.

- They are not porous, water proof.

- They are more flexible than other materials.

Ace, Any three

b) They are in question "the material of objects have impact to environment? If so can this impact be reduced? Advise them. (2mks)

Excessive carbon monoxide and other pollutant gases when plastics are burnt, this accumulation of gases in atmosphere leads to green house effect hence global warming. This can be mitigated by recycling, reducing and reusing of wasted plastic materials.

Ace, Any one

SECTION B (20 scores)

Answer all the items from this section (start each number on fresh page)

Part 1

Item 3

Large deposits of crude oil were discovered near Hoima city around Lake Albert. It contains a variety of different compounds of different purposes. In response, government has constructed Total energies Uganda for its refinery te company is organizing an awareness company on crude oils, formation, nature, composition, benefits and its likely impact on the environment.



Task;

As a chemistry student, write a message to the Total Energies officials that may be used in awareness campaign.

Part 2

Item 4

Mpugwe village in foot rocks of masaka district. People of this village for a long time have suffered on the nature of water from different sources. In addition the water leaves a lot of dirty mark's on clothes upon washing with ordinary soap. The villagers are frustrated with nature, composition of the water and why all the effects and end up putting allegations that the water is be witched by certain people.



1000 ft. -
at bottom forest well -
shady tree top part -
Wetland some part -

Task;

As a chemistry student, write a message you will use in the village meeting to avoid the false allegations.

“Always Believe In Yourself”

END

SECTION B

PART I

Item 3

A SENSITIZATION MESSAGE TO TOTAL ENERGIES OFFICIALS

ABOUT CRUDE OIL EXTRACTION. Total Score = 10 scores

Crude oil is a product of fossil fuels obtained from remains of animals and plants died many years ago.

a) Category;

Non-renewable fuels are fuel which can not be replaced.

For example crude oil and other fossil fuels.

Ts $\frac{03}{03}$

b) Composition;

Crude oil is composed of various alkanes organic compounds with C-H functional group and molecular formula (C_nH_{2n+2})

Ts $\frac{02}{02}$

The components are; Natural gas, Petrol, Diesel, Naptha, Kerosene, Heavy oil, Lubricating oil, etc.

Acc; Any 4 components
Acc; homologous series

c) Functions (How it works);

The components of crude oil, Alkanes are hydro carbon compound which burns in air to produce Carbon oxides and water.

i.e $(C_nH_{2n+2} + O_2 \rightarrow nCO_{2(g)} + \frac{n+2}{2}H_2O) + \text{Energy}$.

Ts $\frac{02}{02}$

The products formed are accompanied by excess loss of heat energy to the surrounding. This results to production of heat and light energy thus very essential fuels.

Acc; chemical comb
ustion of Alkanes

d) Impacts to the environment;

Global warming caused by accumulation of excess Carbon-based gas (Green house-effect gases) which leads to climatic changes.

This can be mitigated by use of inhibitors to the extraction of plants.

Ts $\frac{02}{02}$

Air pollution due to pollutant gases released to atmosphere from refinery plant which leads to respiratory diseases. It can be mitigated by appropriate use of proper protective equipments.

Acc; Any one +
its mitigation

* Other points \rightarrow land pollution
 \rightarrow suffocation

e) Social benefits;

Source of employment hence workers get salaries which improves on people's standards of living.

Ts $\frac{01}{01}$

Source of government revenue due to exports of crude oil components to other countries.

Acc; Any one

Item 4

A MESSAGE TO THE CHAIR PERSON OF MPUGWE VILLAGE

ABOUT EFFECTIVENESS OF SOAPY AND SOAPLESS DETERGENTS

The villagers are frustrated and are in doubts due to the effect of soapy detergents on the permanent hard water which obtain from the rocky sources. Instead they would have used non-soapy detergents to avoid false allegations.

a) Category;

Soapy detergents form scum with hard water. For example soap.

T_s $\frac{02}{02}$

b) Functions (How it works);

Soapy detergents contain two major parts i.e hydrophobic (water loving head) and hydrophilic (water-loving end). The polar end dissociates in water while the non-polar end emulsifies the grease by emulsification process. After the interaction with cloth or any material, it is rinsed in water and its dried.

c) Evaluation;

Similarities; Both soapy and non-soapy detergent are cleansing agents of cotton materials and surfaces.

Differences;

| Soapy detergents | Soapless detergents |
|--|---|
| They are biodegradable | They are non-biodegradable. |
| Obtained from fatty oily components. | Obtained from crude oil components. |
| Forms scum with hard water | Does not form scum with hard water. |
| Sodium salts of long chain benzene sulphonlic acids. | Sodium salts of long chains of carboxylic acids |

d) Side effects of product.

Soaps contain chemicals that can cause;

Skin burns and irritation hence pain and skin cancer, it can be mitigated by washing of affected areas like skin.

Soap less detergents are non-biodegradable hence cause;

Land and water pollution caused by phosphates components, hence results to dirty water diseases. It can be mitigated by use of proper handling managements and reduction on the use of them.

T_s $\frac{03}{03}$

Total; 10 scores