

Name.....  
Stream.....

**LIGHT COLLEGE KATIKAMU**  
**PROGRESSIVE ASSESSMENT 2024**

**S. 4 CHEMISTRY**

**TIME: 1 HOUR.**

**Instructions: Attempt Any two questions of Your Own Choice.**

1. Deus, a soap engineer was advised to make soap for Ugandans at a low cost. He was assigned to access all the Ugandan butchery clubs and all the business men engaged in the salt process at Lake Katwe in Uganda. This man was freely provided with potassium hydroxide by the government of Uganda.

Task: As a chemistry student,

(a) Describe briefly how the engineer is likely to manufacture soap for the Ugandans and state the chemical name of soap he is likely to make for the Ugandans.

(b) Describe briefly how Soap manufactured above is able to remove dirt from a cloth. (Hint. Cleansing action of Soap.)

2. Mary went to the village for holidays and while in the village, he noticed and observed villagers washing their clothes using detergents and also grazing their animals by the shores of the river. Of recent the villagers had filed a complaint to the authorities about the change in colour of the river water of to green.

Task: As a Chemistry student, educate the villagers about the likely cause of the change in colour of the river water and also tell them about the likely effects that could result from such a phenomenon.

3. Onawa, a resident of Osukuru village is currently living in fear. This is because he has noticed that whenever he uses water from the well for washing clothes and dishes, he happens to use a lot of soap on top of finding marks on the clothes and the dishes. However, this isn't the case when he uses rain water or boiling the well water before washing. Onawa is really confused, frightened and is attributing this to witchcraft. As a chemistry student,

(a) Help Onawa to understand the type of water in the well and explain to him how it's formed and name the ions responsible for the effects of that particular water type

and the possible ways of removing those ions and improve the quality of that water from the well.

4. Large oil deposits have been found in south western Uganda. Crude oil is a natural resource found many metres below the earth. It contains a mixture of compounds such as petrol, paraffin and diesel.

(a) Name the process by which crude oil is separated into those different components and give reasons why it is possible to separate it using the above method?

(b) Briefly describe how petrol is obtained from crude oil.

5. (a) Sugar, sucrose and cane sugar are the same molecule. Cane sugar got from sugar canes is Added to hot water as a sweetener. The sucrose chemical formula is  $C_{12}H_{22}O_{11}$ . It is recommended that a mature person takes 24 grams of sugar per intake. Mr Mutaaya the head teacher of vision college takes tea twice a day with each time taking 500cm<sup>3</sup>. What is the concentration of sugar in tea in each intake.

b(i) Calculate the empirical formula of a compound containing 80% carbon and 20% Hydrogen.

(ii) If the molar mass of the compound is 30g, determine its molecular formula.

(c) 0.2 moles of ammonia gas measured at stp were passed over copper(II)oxide. The equation for the reaction is;



Calculate

a) The number of moles of copper(II)oxide used

b) The mass of copper formed

c) The volume of ammonia used at stp

(Cu=64,O=16,N=14,H=1, 1 mole of a gas occupies 22.4 l at stp)

**END**

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