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## ***ST. MARY'S COLLEGE RUSHOROZA***

*Uganda Certificate of Education*

*S. 3 Chemistry*

*Paper one*

*2 hours*

### **SECTION A**

**Attempt all items**

1. Carbon compounds exist in fuels which are used by man for various purposes. Some of these fuels are renewable while others are non- renewable.

Tasks

(a) (i) distinguish between renewable and non - renewable fuels.( 1 scores)

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(b) What are challenges associated with the burning of fuels and suggest the possible solutions to these challenges. (4 scores)

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2. Dmitri Mendeleev a Siberian born Russian chemist was the first person to make a periodic table much like that we use today. By 1869, only 63 elements had been discovered and by 2019, they were 118 elements. Use the knowledge of the periodic table to answer the following items

Tasks

(a) Explain the following terms in line with the periodic table.

(i) Atomic number. (1 score)

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(ii) Mass number. (1 score)

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(iii) Isotopes. (1 score)

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(b) Name the fundamental particles that make up an atom and locate them in an atom. (3 scores)

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(c) (i) The full symbol of an atom of an element is  $^{32}_{16}\text{T}$ . state what the numbers 16 and 32 stands for. (2 scores)

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(ii) If the full symbol of another atom is  $^{34}_{16}\text{R}$ ; state the difference between atoms T and R and the name given to these atoms. (3 scores)

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## **SECTION B**

**Attempt any two items from this section**

### **Item three**

People have encroached on wetlands in search of land for settlement and setting up industries. The most affected area is the Lubigi wetland in Nansana municipality, which serves as a vital water catchment area for the city of Kampala and neighboring districts. The government through its watch dog **NEMA** has ordered the demolition of all structures in the Lubigi wetland. This has left many people homeless.

#### **Task.**

As a chemistry learner, write a speech explaining to members of this community why the government is against wetland encroachment.

### **Item four**

Charcoal burning is one of the sources of income and the main source of fuel in Uganda but recently charcoal burning has attracted a national concern where the majority of people are against it.

#### **Task.**

As a chemistry learner, explain the effects of this economic activity and how they can be mitigated. (11 scores)

Fishing is the major economic activity in most waters of Uganda. The fisher men use a variety of methods including local herbs and undersize nets for catching fish. Some of the boat engines are old and pour oil in water. Chemicals like detergents are released directly in the water including some human wastes.

Factories around the water showers release hot water and sawage into the water bodies.

This has prompted the government to strictly over sea the activity and ensure fish is not contaminated and there is market for it a broad. The head of the unit plans to sensitize the fishermen.

**Task.** As a chemistry learner,

Help the head of the unit to sensitize the fishermen about the natural resource, how to harvest them, their contribution and the impact. ( 11 scores)

### **Item five**

Below is an article extracted from the new vision of 07<sup>th</sup>/May/2022. Read the article carefully and answer the items that follow. Top story “air pollution killing more than AIDS” – New Vision official. Gerald Tenywa. Journalist @ New Vision. Every home in Uganda has either been infected are affected by HIV and AIDS. They have either lost a relative or have suffered as a loss of a bread winner. Air pollution has gone two steps ahead of HIV in affecting Ugandans as it has claimed more lives than HIV, Daniel Okello , director in charge of environment at kampala capital city authority(KCCA) ,has said. “We lost 23000 people in 2019 due to HIV in Uganda. In the same period, 26000 people died as a result of cardiovascular diseases linked with air pollution, “he said. Okello was speaking during the launch of the air quality awareness at Uganda media center in Kampala on 04<sup>th</sup>/May/2022.The event, themed “be aware, be prepared”, attracted top officials from National Environment Management Authority (NEMA), Makerere University and Ministry of Health, who called for increased awareness and actions to curb air pollution . Okello mentioned two types of air pollution-outdoor air pollution and household or indoor air pollution which are all greatest environmental threat to human health around country pointing out Kampala, Mukono and Jinja with the poorest air quality which is five times away above the critical threshold of the world health organization. Okello said indoor air pollution results from cooking with biomass fuels particularly charcoal, firewood, burning of organic fuels such as kerosene, burning of bushes and other waste products like plastics. Partial combustion of these fuels lead to emission of carbon monoxide gas which is poisonous if inhaled. Worse than indoor pollution, he added, is outdoor air pollution that results from old cars spewing fumes. As the cars burn fuels, such as diesel and petrol to power engines, they release poisonous gases such as carbon monoxide and also lead from motor vehicle emissions, dust from unpaved roads and construction sites, factories release fumes filled with sulphur dioxide gas which leads to acid rains and carbon monoxide gas which is poisonous. Burning of wastes including plastics, produce dioxins and furans which cause cancer.

Dr Ivan Kimuli from Makerere University's lung institute said they have done studies that indicate that 11% of the pollution suffers from asthma and that being aggravated by poor air quality and the same study indicated that children in rural settings had “better and less damaged lungs” than those in urban settings, who were exposed to pollutants in the air. NEMA's director for the environment monitoring and compliance, Waswa Ayazika, said: “the government is currently making a clear plan to improve air quality involving everybody's responsibility to save the current and future generation.”



### Tasks.

- (a) State what is meant by the term air pollution (1 score)
- (b) From the article, state the types of air pollution and outline how each type of air pollution is caused. (6 scores)
- (c) Suggest any four solutions that can be adopted into the government strategic plan of how air pollution in the country can be greatly reduced. (4 scores)

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