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**CHEMISTRY**  
**PAPER 1**  
**NOV/DEC 2023**  
**2 HOURS**



**ARCHDIOCESE OF MBARARA**  
**S4 ENTRANCE EXAMINATIONS 2024**

**CHEMISTRY**

**Paper 1**

**2 Hours**

**INSTRUCTIONS TO CANDIDATES:**

- Attempt all questions.

Number	MARKS
O1	
O2	
O3	
O4	
TOTAL	

**Turn Over**

1. You are going to carry out a water audit, how much water do you use in a day?  
The National water and Sewage Cooperation estimates that each of us uses an average of 178 litres of water each day.

a) Use the table to workout the water use in your home.

Activity	Average use (litres)	No of times per day	Total water used
Bathing	85		
Flushing the toilet	10		
Washing Hands	12		
Cleaning teeth	15		
Running tap	35		
Washing up the sink	8		
Cooking	12		
Drinking	15		
Gardening	38		
Washing the car	45		

- b) i) Imagine you had to fetch all this water in 20 litre pots. What would be the mass of all this water if a litre of water = 1 kg.  
ii) How many pots would be needed.

2. Air is a mixture of gases. Oxygen is one of the components of air with a percentage of 21%. There is a high increase of babies born with breathing problems and most of them die due to limited supply of oxygen in the hospitals in Uganda. The government is therefore calling upon the investors to come up and save the situation by producing large amounts of oxygen to be put in hospitals, given the fact that it is abundant in air and it is necessary to save the lives of the babies and other patients who may need it.

### Task:

As a chemist, you have been approached by one of the investors to talk to their staff about how to go about the task before them. Write a message that you would deliver to them.

### 3. OUT OF THE PAST INTO THE FUTURE

Since the ancient times, people have always needed some where to shelter. In the past, people who looked after animals or who worked in different places at different times of the year built shelter.

Once people started to settle down and live in one place, it was worth building a house which was bigger and which took longer to build. As new building materials were developed, new ways of using them were found. People could live in big houses, ground houses, small houses and even flats and bungalows.

As our understanding of the chemistry of materials grew, artificial materials like plastics and metals began to replace natural materials like wood. However engineers lack adequate knowledge about the most appropriate materials to use in order to come up with houses which outcompete the ancient ones.

### TASK

As a chemistry student you have been approached by one of the engineers to help him to do his work perfectly. Write a letter you would address to him.

4. In Uganda, over 90% of household energy is derived from firewood and charcoal. Most of it is used for cooking. Charcoal is the predominant source of energy used in urban setting while firewood is more common in rural areas. With the increased population, National Environment Management Authority (NEMA) has advised Government to think about alternative forms of fuel because the rate at which charcoal and firewood are used has put a risk on mankind and other natural resources.

The table below shows the rate at which charcoal and firewood have been used for the last ten years.



Yen Wood Charcoal produced

2021

2024

66

2022

2025

2017

4482

71

71

71

71

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Year	Wood Charcoal produced
2022	9314
2021	8135
2020	7133
2019	6428
2018	5607
2017	4482
2016	3387
2015	2722
2014	2082
2013	1871

**Task:**

- With the use of a bar chart, Write an article explaining whether the advice by NEMA should be taken up by Government of Uganda.
- Write a letter to the government advising it on the alternative forms to be adapted, stating clearly reasons why.

**END**