Student'sName:_____**SIGN:** _____

MERRYLAND HIGHSCHOOL

Class	Stream
S. 2	

S2 CHEMISTRY

END OF TERM III

A COMPETENCY BASED CHEMISTRY PAPER FOR CREATIVE LEARNERS

TIME: 2 HOURS

INSTRUCTIONS

1. **This paper consists of two sections A and B**
2. **Answer all questions in section A and only 2 Questions in section B**
3. **ANSWER EACH QUESTION ON A FRESH PAGE IN SECTION B.**
4. **NUMBER 8 OF SECTION B IS COMPULSORY**

SECTION A (50 marks)

1. We are surrounded by matter, a book is matter, a computer is matter, food is matter etc. Sometimes matter maybe hard to identify. Forexample air is matter but because it is so thin compared to other matter like a book, we sometimes forget air is matter. With a reason, identify if the following are matter or not matter

   i) Pancakes ***(1 mk)***

   _____
   _____
   _____

   ii) Love ***(1 mk)***

   _____
   _____
   _____

iii) The moon ***(1 mk)***

_____
_____
_____

iv) An idea of new invesion ***(1 mk)***

_____
_____
_____

2. a). The full symbols of the atoms of a certain element are:-

$^{40}_{19}W$, $^{39}_{19}X$, $^{27}_{13}y$, $^{16}_{8}Z$.

(i) Suggest a reason for the difference in the atomic masses of the atoms of W and X. ***(1 mk)***

_____
_____
_____

(ii) state what the numbers 39 and 19 on element X stand for ***(2 mk)***

_____
_____
_____

(iii) state the number of electrons in element Z. (1 mk)

_____
_____

b**)** Element X belongs to Period 3 of the periodic table. The ion formed by element X is X^{3+}.

(a)State the,

i) atomic number of element X ***(1 mk)***

_____

ii) Electronic configuration of element X. ***(1 mk)***

_____

iii) group of the period table to which X belongs. ***(1 mk)***

_____

c). The atomic numbers of elements **Q** , **R** and **T** are 15, 20 and 17 respectively. Write the electronic configuration of each element.

(i) **Q**. ***(1 mk)***

_____

(ii)**R**. ***(1 mk)***

_____

(iii)**T**. ***(1 mk)***

_____

3. a) While in the lab, S2s mixed the following chemicals together and formed different salts. Unfortunately, they could not come up with the word equations for every reaction that they had carried out. Help your fellow S2s come up with the word equations for the reactions they carried out.

i) Sodium hydroxide and dilute sulphuric acid. ($1\frac{1}{2}$ mark)

_____

_____

i) Calcium carbonate and dilute nitric acid. ($1\frac{1}{2}$ mark)

_____

_____

ii) Copper (II) oxide and dilute sulphuric acid ($1\frac{1}{2}$ mark)

_____

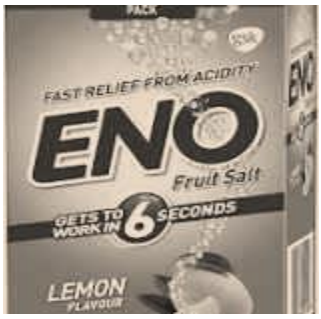
_____

iii) Magnesium metal and dilute hydrochloric acid ($1\frac{1}{2}$ mark)

_____

_____

b) In Uganda, drugs such as Eno, Aprazole, Magnesium are being used as faster relievers of burning pain.



Explain how Eno has been effective in reducing burning pains caused by ulcers. ***(3 mk)***

_____
_____
_____
_____
_____

c). Explain why the acidic lemon flavor added to Eno has no effect on the composition of Eno. ***(1 mk)***

_____
_____
_____

4. a). Alkalis are slippery and bitter as some of their physical properties. Manufactured tooth pastes are slippery but not bitter. Explain;
   i) why manufactured tooth pastes are not bitter yet they contain alkalis. ***(2 mk)***

_____
_____
_____

ii). The significance of the tooth paste not being bitter though ***(2 mk)***

_____
_____
_____

b) Explain why some salts like potassium nitrate are preferred to be used in manufacture of fire-works, gun powder and rocket repellants. ***(1 mk)***

_____
_____
_____
_____

5. a). How is water used in the pictures below. ***(3 mk)***

_____
_____
_____
_____
_____
_____
_____
_____

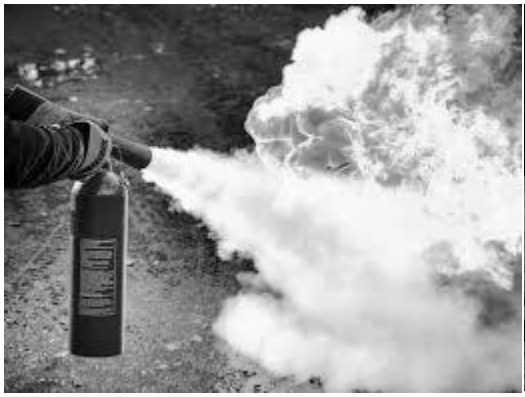
b) how are those uses of water important to our community. ***(3 mk)***

_____
_____
_____
_____
_____
_____
_____

c) How can water be tested in the lab, and write the negative test in case the liquid tested contains no water. ***(2 mk)***

_____
_____
_____

6. Ordinary air contains 0.03% of carbon dioxide and 21% oxygen. Air breathed out contains 4% carbon dioxide and about 16% oxygen the picture below shows how carbon dioxide is used




a). How is carbon dioxide used in the picture above. ***(1 mk)***

_____
_____

b) Which property of carbon dioxide favors its use in the activity above? ***(1 mk)***

_____
_____

c) How can oxygen be used in our daily life using the information in the above picture? ***(1 mk)***

_____
_____

d) Which property of oxygen favors its use in the activity you have mentioned above? ***(1 mk)***

_____
_____

7. a) Carbon based fuels are fuels whose combustion results in release of carbon into the earths atmosphere. It is estimated that more than 80% of all man made carbon dioxide originates from fossil fuels that are burnt. The released carbon based fuels can be in form of carbon dioxide or carbon monoxide, Sulphur dioxide or Sulphur trioxide. The pictures below show items which we use.




For each picture, identify the name of the fuel used and the importance of it in daily life. ***(2 mk)***

_____
_____
_____
_____
_____
_____
_____

b) Outline four examples of;
i) Carbon based fuels. ***(2 mk)***

_____
_____
_____
_____
_____
_____

ii).Non carbon based fuels. ***(2 mk)***

_____
_____
_____
_____
_____

c) Mention two advantages of using
i) Carbon based fuels over non carbon based fuels ***(2 mk)***

_____
_____

_____
_____
_____
_____

ii).Non carbon based fuels over carbon based fuels. ***(2 mk)***

_____
_____
_____
_____
_____

SECTION B (20 MARKS)

1. **ATTEMPT QUESTION 8 AND ANY OTHER QUESTION OF YOUR CHOICE**
2. **ANSWER EACH QUESTION ON A FRESH PAGE**
3. **NUMBER 8 OF SECTION B IS COMPULSORY**

8. The table below shows the solubility of potassium nitrate at arrange of different temperatures. Look carefully at the table and answer questions that follow.

Temperature °C	Solubility of salts in grams (g/100g of water)		
	Potassium nitrate	Sodium nitrate	Copper sulphate.
0	14	73	13
10	21	81	15
20	32	88	17
30	45	96	20
40	63	105	30
50	84	114	35
60	108	124	40
70	136	134	47
80	169	148	56

a) Plot a graph to represent the information in the table. (6 marks)
b) Describe the 'general' trend for the solubility of all the three salts. (2 marks)
c) What is the solubility of sodium nitrate at 55 °C (1 marks)
d) Which salt is more soluble at 80 °C, why(1 marks)

9. Soil pH is one of the major factors which affect crop growth. Most crops grow in soils which are slightly alkaline and others slightly acidic. Too much acidity or alkalinity of the soils affects crop growth leading to low crop yields. Too much acidity reduces availability of nutrients like pphosphorus and also increases toxicity. Too much alkalinity affects drainage of the soil and reduces soil nutrients. (10 marks)

TASK. Using the knowledge of acids and alkalis. Write a a letter to Yawe a farmer in Kayunga district on ways she can reduce acidity and alkalinity of her garden soil to ensure that crop yields are high every year.

10. Musa rents a single room where he sleeps with his wife, their five children, hens and 2 goats. The room has small ventilators with a door which is always closed at night. Most of the time, his wife keeps burning charcoal stove more so when cooking beans in the night. Write an informal letter to him telling him of the possible dangers which could happen to his family. Also advice him on what he should do to avoid the dangers. (10 marks)

'END'

zinartjonah@gmail.com **Working for a just full world**