UGANDA CERTIFICATE OF LOWER SECONDARY EDUCATION

S.3 END OF TERM TWO - 2023

CHEMISRY

PAPER ONE

TIME: 2 HOURS

SECTION A

Answer all questions in this section. Write your answers to the questions in the spaces provided.

1. Students were asked to identify examples of the changes that can take place in the atmosphere but use the same components of air. One student mentioned the burning of magnesium in air and the rusting of iron.

   (a) What component(s) of air are used during burning of magnesium and rusting of iron. (1 mark)

   ……
   ……

   (b) What is the similarity between the two chemical changes (1 mark)?

   ……
   ……

   (c) c) What makes rusting of iron different from burning of magnesium in air in term conditions for the reaction (1 mark)

   ……
……

   (d) d)Write the formulae of the products of each of the changes (1mark)

   ……
   ……

2. A student dropped a few pieces of calcium carbonate in dilute hydrochloric acid contained in a test tube. The gas produced was passed through calcium hydroxide solution (lime water) for a long time.

   (a) What changes would be observed in lime water? (2 marks)

   ……
   ……

   (b) Write balanced chemical equation for the changes observed.

   ……

Edit with WPS Office

……

(2 marks)

3. Food cooked without common salt is tasteless. Only those suffering from hypertension (high blood pressure) and associated illnesses are advised to eat food without salt. This is because the ions of the chemical elements in salt can worsen their health conditions.

(a) Identify the chemical elements present in common salt and write the formula of their ions. (2marks)

……
……
…

(b) write the chemical formula of sodiumchloride (1 mark)

……
……
……

(c) name two substances from which sodiumchloride can be manufactured in the laboratory

……
……

4. A group of students found out that different metals react differently. They observed this when some metals were made to react with cold water and steam. The changes they observed are summarised in the table below.

Metal	Reaction with water	Reaction with steam
Sodium	Reacts rapidly	Reacts violently
Calcium	Slow reaction	Fast reaction
Copper	No reaction	No reaction
Magnesium	Very slowly	Relatively fast
Iron	Too slow	Slow

(a) Use the information in the table to arrange the given metals starting with the most reactive to the least reactive (1mark)

……

(b) Explain if calcium could be suitable for making roofing sheets (2 marks)

……
……

(c) Which of the metals would be most suitable for use in making water pipes? (1 mark)

……
……

Edit with WPS Office

5. A juice vendor makes juice by mixing passion fruit, water and sugar. The vendor separates the passion fruit seeds from the mixtures and adds sugar to make it sweet.

a) Name the process by which passion fruit seeds are separated from the mixture. (1 Mark)

……
……

b) Explain why it is possible to separate passion fruit juice by the process named. (2marks)

……
……

c) What do you expect to have happened to the sugar crystals when added to the fruit juice? (1mark)

……
……

6. A carpenter was contracted to fix a door lock for a new house. He went to a hard ware shop but found different metal types of locks with handles made from iron, brass, zinc and copper. However, the carpenter opted to use locks made of brass out of the different types.

(a) What is the composition of brass? (1 mark)

……
……

(b) Explain why the carpenter preferred to use brass to the other metal materials available in the hard ware? (3 marks)

……
……
……
……

7. The table below shows the melting point, boiling points and densities of substances A to D.

substance	Melting point (^oC)	Boiling point (^oC)	Density (g/cm^3)
A	1110	2606	9.1
B	- 266	- 252	0.07
C	60	120	1.6
D	- 14	60	0.9

State with reasons which substances are;

a) gas at room temperature (1 mark)

……

b) liquid at room temperature (1

Edit with WPS Office

mark)

……

c) solids at room temperature (1 mark)

……

d) Comment on the relationship between melting point and density of the of the substances (1 mark)

……
……

8. Match the following items of column 1 with column 2 and choose the correct answer.

S/N	COLUMN 1	COLUMN 2
a)	Acetic acid	Stomach
b)	Formic acid	Curd
c)	Lactic acid	Bee sting
d)	Hydrochloric acid	vinegar

9. The table below show the component of air and its percentage composition by volume, you are required to fill in the blank spaces. (05 marks)

Component	Percentage composition by volume
Nitrogen	……
Carbon dioxide	……
……	0.03%
……	0.9%
Water vapour	……

(b) Identify the component of air which can be detected by (03 marks)

i. Glowing splint ……

ii. Anhydrous copper (II) sulphate ……

iii. Calcium hydroxide solution ……

SECTION B

Answer any two questions from this section.

Begin each question on a fresh page.

10. A student found a container of Hand sanitizer with a label shown below.

S.O HAND SANITIZER *Effective on common germs* Active component: absolute ethanol

Edit with WPS Office

Other components: water and Glycerine

a) State one use of hand sanitizer (1 mark)

b) Explain why the liquid is not regarded as a pure substance (2 marks)

c) Explain why the liquid is thick and less viscous (2 marks)

d) Describe a practical method that could be used to separate the components the hand sanitizer? (6 mark)

e) Describe a chemical test that can be carried out to show the presence of water in the hand sanitizer (2 marks)

f) Explain why it is not advisable to keep a hand sanitizer near a source of fire.

(2 marks)

11. Students were asked to develop a project that would result into repair of cracked pathway. The practical report developed by the students had the following set of instructions for making concrete:

To make good, strong concrete, thoroughly mix together 4 buckets of gravel, 3 buckets of sand and one bucket of cement. When this is done then add a half bucket of water.

a) State one property of concrete that make it suitable for its uses. (1 mark)

b) Copy and complete the table below showing the percentage of each ingredient in the concrete mixture. (Give your answer to the nearest whole number)

Ingredient	cement	water	sand	Gravel
Number of buckets				
Percentage				

(4 marks)

c) Describe an investigation that could be performed to determine what particular mixture of gravel, sand and cement makes the strongest concrete. (6 marks)

d) What would be varied, what would be kept the same to test the strength of the concrete and explain the effect? (4 marks)

12. What term can be used to describe the reaction between baking soda and acidic liquid injected by bee sting? (1mark)

a) You are given two solutions A and B. The pH of solution A is 6 and pH of solution B is

Edit with WPS Office

3.

(i) Which solution has more hydrogen ion concentration?

(ii) Give reason for your answer. (2 Marks)

b)

i) Sulphuric acid is a stronger acid than carbonic acid? distinguish between a strong acid and a weak acid and 2 examples of strong acids and one example of weak acid other than the ones mentioned above. (4marks)

ii) dilute sulphuric acid is added to sodiumhydroxide and the resultant solution tasted with universal indicator.

state was observed and write a molecular equation that took place. (4mark)

.....END.....

Edit with WPS Office