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Signature .....

<b>CLASS:</b>	<b>STREAM:</b>
<b>S.2</b>	

## **S.2 CHEMISTRY**

April 2022

2 hours



SENIOR TWO GOMBE SEC 2022

### **Uganda Certificate of Education S.2 END OF TERM ASSESSMENT**

2 Hours

#### **INSTRUCTIONS TO CANDIDATES:**

*This paper consists of 10 questions.*

*Answer ALL questions*

*You may use a pencil for any diagrams or graphs.*

*Do not use staples, paper clips, highlighters, and glue or correction fluid.*

<b>1</b>	
<b>2</b>	
<b>3</b>	
<b>4</b>	
<b>5</b>	
<b>6</b>	
<b>7</b>	
<b>8</b>	
<b>Total</b>	

1. A student from Gombe secondary school was sent to the shop to buy a rope for straining some domestic animals. She was not told to purchase a specific rope, but knew about some properties of some common ropes. At the shop, she found two kinds of ropes; **Manilla fibre**, which is made from plants and **Poly-propene** made from some substances in oil. The table below shows some of the physical properties of the two materials used to make the ropes.

Material	Durability	Breaking strength for 10 mm long rope	Flexibility
Manila fibre	Rots slowly	5400	Very flexible
Poly-propene	Does not rot at all	10,800	Very flexible

a) Which one of the two ropes would you advise the girl to buy? Give a reason for your answer (02 marks) W

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b) State any two advantages of poly-propene ropes over manila ropes (02 marks)

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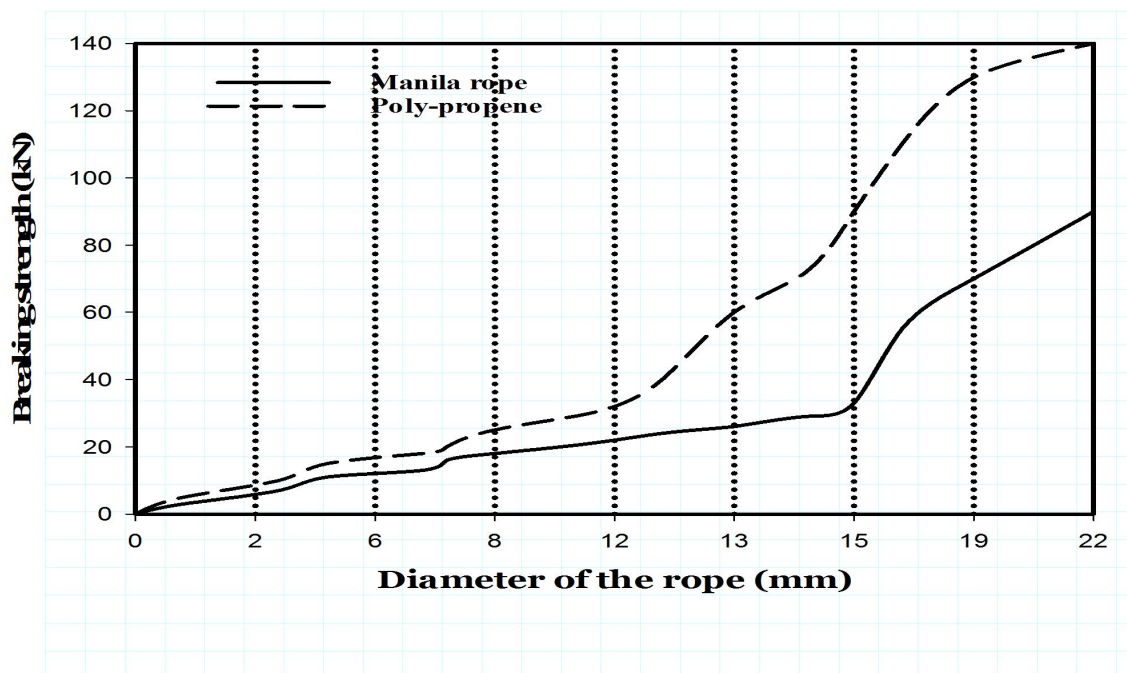
(ii) manila ropes over poly-propene ropes (02 marks)

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c) The graph below shows how the strength of Manilla and Poly-propene ropes changes as rope diameter increases



- i) Using your graph, find the Breaking strength of the manila and Poly-propene at the diameter of 15 mm **(02 marks)**

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- ii) State any two disadvantages of the material from which poly-propene is made in the environment **(02 marks)**

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2. a) Give two properties shown by: **(1 mark each)**

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- (i) a solid

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- (ii) a liquid

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- (iii) a gas  
b) In the boxes below, draw the diagrams to show the arrangements of particles in each of the states of matter (03marks)



SOLID



LIQUID



GAS

- c) Use the particle theory of matter to explain the following:

- i) When a liquid like water is heated, it turns a gas

(02 marks)

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- ii) When a solid is heated, it melts and turns into a liquid

(02 marks)

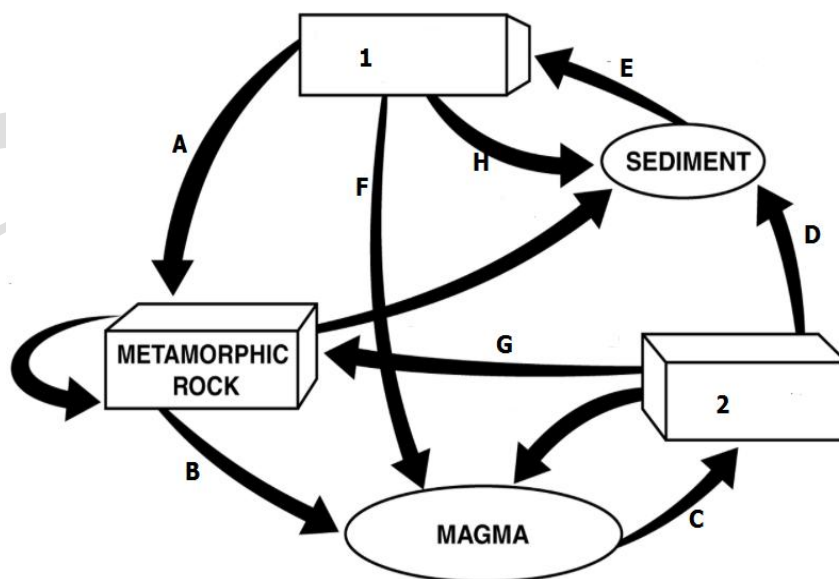
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3. The following diagram shows the rock cycle. Use it to answer the questions that follow.



a) Name the processes A-H

(04 marks)

- A. ....
- B. ....
- C. ....
- D. ....
- E. ....
- F. ....
- G. ....
- H. ....

b) What rock types are represented by figures 1 and 2?

(01mark)

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c) The photograph below shows a piece of sandstone containing a fossil



(a) (i) What is a fossil?

(01 mark)

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(ii) Which group of rocks does sandstone belongs to?

(01 mark)

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(b) Basalt and granite are igneous rocks. They never contain fossils.

(i) How are igneous rocks formed?

(01 mark)

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(ii) Explain why igneous rocks never contain fossils.

(02

marks)  
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4. Water pollution is very common problem today. Water is such a very important substance in the life of all living things. Application of fertilizers is a one common way of polluting water

a) State other four ways in which water is polluted

(02 marks)

i. ....

ii. ....

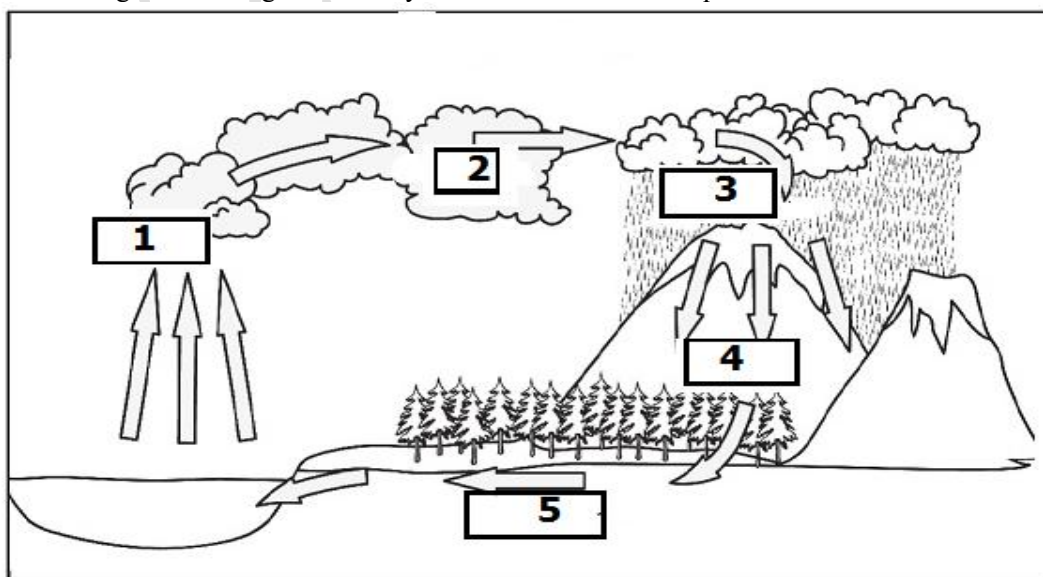
iii. ....

iv. ....

b) Name one nitrogen containing fertilizer that is always applied in agriculture, but can pollute water. (01 mark)

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c) Below is a diagram showing the water cycle. Use it to answer the questions that follow



i) Identify the processes named 1, 2, 3, 4 and 5

(05 marks)

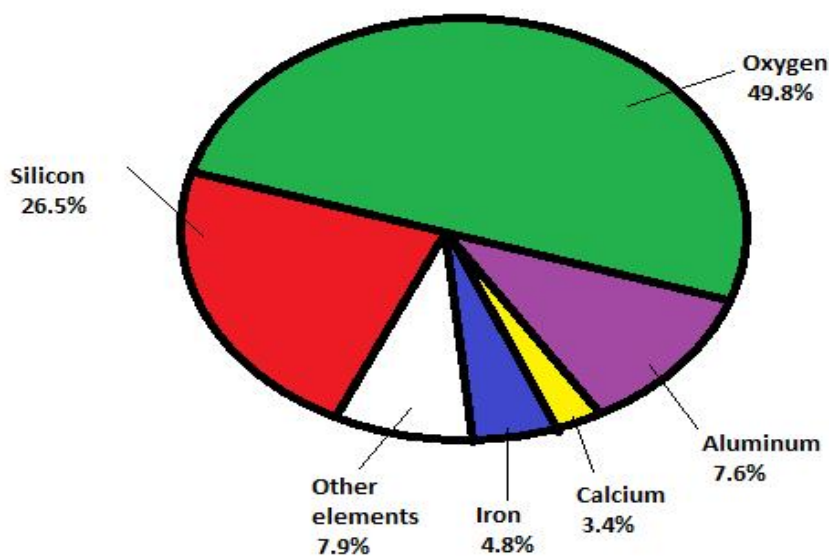
1. ....
2. ....
3. ....
4. ....
5. ....

ii) State two ways in which process 3 can be enhanced in nature? **(02 marks)**

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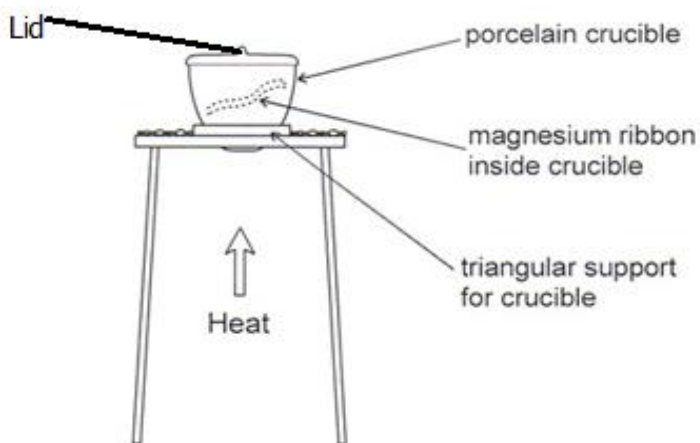
5. The pie chart below shows the percentage by mass of the different elements that make up the different substances on the earth's crust



a) In the table below, write down the names and chemical symbols of six(6) elements on the earth's crust **(03 marks)**

Name of element	Chemical symbol of the element


b) Nsubuga, a senior two student, wanted to investigate mass changes when he burns a metal in air. He knows that a compound will be formed. He uses the following apparatus to investigate the mass change of magnesium when it burns in air to make a compound called magnesium oxide.



Nsubuga writes down the hazards of the investigation. Complete the table to show how he can control the risks from these risks. **(02 marks)**

Hazard	How to control risks from the hazards
Magnesium is highly flammable/can catch fire	
Burning magnesium has a very bright flame	

c) Nsubuga writes down his results as follow;

- $\text{Mass of crucible} + \text{lid} = 32.00\text{g}$
- $\text{Mass of magnesium} = 0.24\text{ g}$
- $\text{Mass of crucible} + \text{lid} + \text{magnesium oxide} = 32.40\text{g}$

i) Calculate the mass of magnesium oxide formed **(02 marks)**

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ii) Calculate the mass of oxygen that combined or joined with magnesium in the experiment **(02 marks)**

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d) Write a conclusion that can be given to Nsubuga's experiment?

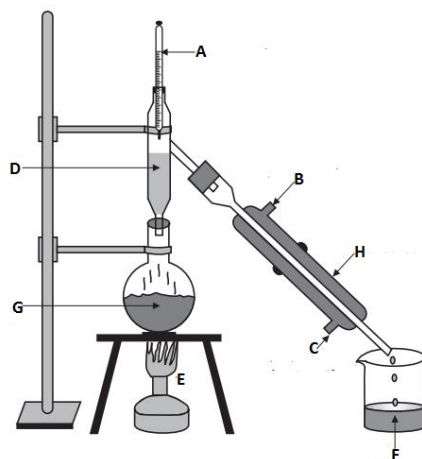
(01 mark )

6. In chemistry, working with materials sometimes poses a great danger to the person handling. These are called hazards. In order to avoid these dangers, it is important to read and understand the labels given about the substance.

Complete the table below by indicating the meaning of the hazard symbols and two ways of reducing risks from the hazards (10 marks)

Hazard symbol	What it means	How to reduce the hazard
		
		
		
		
		

7. The diagram on the right shows an apparatus used for separating some mixtures. The labels have been replaced with letters



a) Name the parts labeled A-H in the diagram (08 marks)

- A. ....
- B. ....
- C. ....
- D. ....
- E. ....
- F. ....
- G. ....
- H. ....

b) Mention two mixtures that can be separated using the method in the diagram above (02 marks)

- (i) .....
- .....
- (ii) .....
- .....

8. a) What is meant by the term 'acid'? (01 marks)

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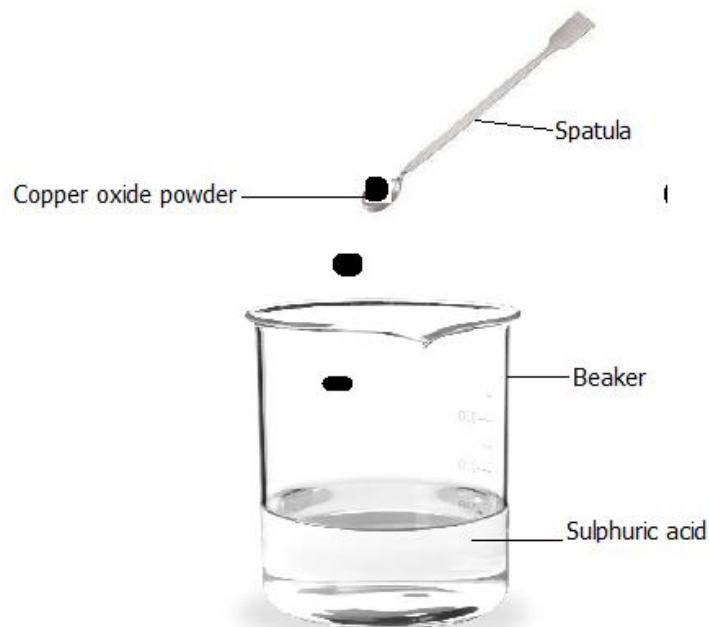
b) The reaction between some metals and acids usually forms salts. Some salts are formed in each of the following reactions. Complete the following reactions and state the names of the salts formed in each case (01 mark each)

- i. Magnesium + Sulphuric acid .....
- ii. Zinc + Hydrochloric acid .....
- iii. Magnesium + Nitric acid .....

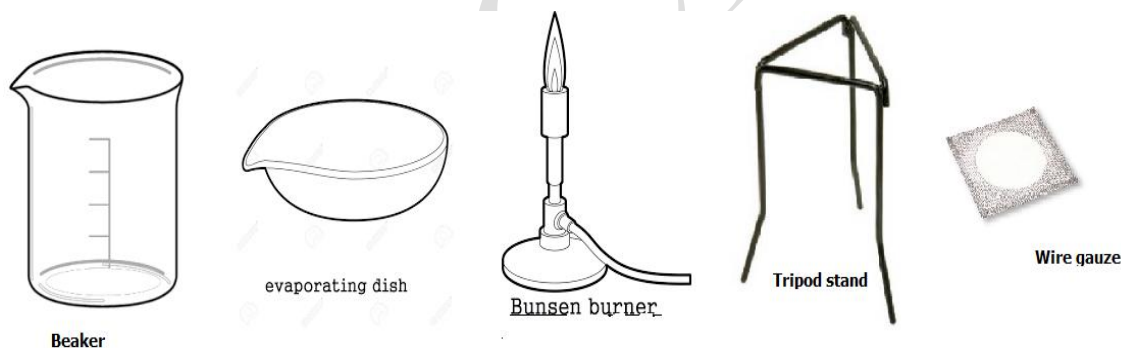
iv. Copper carbonate + Hydrochloric acid .....

v. Sodium + sulphuric acid .....

c) Fahimah wants to prepare copper sulphate and she decides to use copper oxide. She pours 25 cm<sup>3</sup> of sulphuric acid into a beaker. She then adds black copper oxide powder until the copper oxide stops reacting



She is then done with the process. She wants to prepare crystals of copper sulphate from the reaction in the beaker above using the following apparatus.



Describe how Fahimah can use the above apparatus to prepare crystals of copper sulphate from the solution obtained from the reaction between copper oxide and sulphuric acid

(04 marks)

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9. Chemistry is one of the most prestigious science subjects studied at the secondary level of Education. When you study chemistry, you not only acquire knowledge about many chemical reactions and other substances, but you can also take up various careers after school.

(a) Identify any three careers that you can take up through studying chemistry. **(03 marks)**

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(b) Briefly describe how the knowledge of chemistry has been applied in the following field in the Ugandan economy;

(i) Agriculture. **(03 marks)**

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(ii) Medicine. **(02 marks)**

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(iii) Cosmetics industry. **(02 marks)**

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10. From the particle theory of matter, all matter is made up of small particles that are in a constant and random state of motion. A group of senior two students from Gombe secondary school carried out an investigation about particles of air using a balloon. They inflated it as shown below;

(a) Explain how the particles of air inside the balloon create pressure to make it swell outwards. **(02 marks)**

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(c) When the students put the balloon under sunshine for some hours, it was observed that the balloon increased in size. How can you explain this observation using the particle theory of matter? **(03 marks)**

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(c) The students left the balloon in the laboratory for seven days, after which they observed that the balloon had decreased in size. Give an explanation as to why the balloon reduced in size after seven days. **(03 marks)**

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END

Success